MISSISSIPPI STATE UNIVERSITY
JAMES WORTH BAGLEY COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

Samee U. Khan
[redacted]

August 31, 2024

The Search Committee,
Associate Dean for Research,
College of Engineering,
Wichita State University

Dear Search Committee Members:

I am excited about the opportunity to serve as the Associate Dean of Research (ADR) for the College of Engineering at Wichita State University (MSU). The university's commitment to student success resonates with me, and I am eager to apply my experience at Mississippi State University (MSU) to assist WSU students, staff, and faculty in reaching their full potential.

I was pleased to read about the college's visions, mission, and strategic goals, especially its commitment to applied learning, student success, and engineering+. My roles as Department Head at MSU's Department of Electrical and Computer Engineering (ECE) and Lead Program Director at the National Science Foundation (NSF) have equipped me with the skills and experience to lead your college. As Department Head, I managed a $5.2M+ budget, oversaw 32 faculty, seven staff, and 700+ students, and led the department to achieve annual research expenditures of over $14.69M. At NSF, I managed yearly appropriations of $35M+ and led a team of nine, further honing my leadership abilities. Over the last eight years, I have acquired a deep understanding of: **(a)** leading high-performance organizations; **(b)** federal, local, and industrial R&D portfolio; **(c)** how to build internal and external partnerships; **(d)** working with research centers; **(e)** the importance of "storytelling" and "messaging"; **(f)** accreditation; **(g)** curricula development; **(h)** increasing retention; **(i)** student-focused activities; **(j)** supporting entrepreneurship spirit; **(k)** alumni engagement; **(l)** fundraising; and **(m)** industrial engagement to name a few.

Before providing further details, I would like to share my **leadership philosophy**, which centers on empowerment through trust, transparency, and inclusion. I believe in fostering a collaborative environment where everyone works towards a common goal. This philosophy has led my team to achieve significant milestones, as detailed in my vitae.

Below are my thoughts on the key opportunities and challenges for the College of Engineering ADR.

Co-create a Strategic Vision and Champion a Forward-thinking Research Strategy: I will employ a three-pronged approach to collaboratively develop a strategic vision and champion a forward-thinking research strategy. **Firstly,** facilitated workshops, town hall meetings, and open microphone discussions will solicit input from key stakeholders and identify the college's strengths, weaknesses, opportunities, and threats – SWOT analysis. Data-driven decision-making is paramount for informed planning. I can monitor progress and make data-informed recommendations by benchmarking the college's performance against peer institutions and establishing key performance indicators. **Secondly,** stakeholder engagement and alignment are essential for ensuring widespread support and successful vision implementation. Regular communication and feedback mechanisms will be utilized to foster trust and transparency. Moreover, strategic partnerships and collaborations with industry, government, and academic institutions will be pursued to expand the college's research reach and resources. **Finally,** a culture of innovation and entrepreneurship will be cultivated to create a dynamic, forward-thinking research environment. By fostering creativity, risk-taking, and experimentation, I can support all stakeholders of the College of Engineering at WSU. Moreover, by adhering to these strategies, I (with collaboration from the departments and the Dean's Office) can effectively co-create a strategic vision and champion a forward-thinking research strategy that aligns with the college's mission and goals while simultaneously building capacity, providing support, and developing sustainable research infrastructure.

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Using these methodologies (specifically tailored to the organization's culture, history, and potential), I led the department to newer heights by increasing research expenditures from ~$10M/yr. (2010-2019) to $13.10M in 2020, $11.94M in 2021, $14.24M in 2022, and $14.69M in 2023 – this is ¼-th of the research expenditures of the entire Bagley College of Engineering that is composed of eight departments and two research centers. This resulted in the department producing half of the research artifacts for the entire Bagley College of Engineering. That is to say that I increased research output (journal and conference papers) from ~140 (=65+75)/yr. (2010-2019) to 215 (=131+84) in 2020; 229 (=129+100) in 2021; 265 (=154+111) in 2022; and 191 (=109+82) in 2023.

Build Capacity, Provide Support, and Develop Sustainable Research Infrastructure: I will employ a multifaceted approach to enhance capacity, provide support, and develop a sustainable research infrastructure. **Firstly,** with support and collaboration from all college stakeholders, I will need to prioritize research funding and proposal support. This includes organizing workshops to educate faculty on funding opportunities and providing dedicated staff to assist with proposal development and post-award management. **Secondly,** faculty development and mentoring are essential for nurturing a thriving research community. Mentorship programs, professional development workshops, and sabbatical support can help faculty to enhance their research skills and productivity. **Thirdly,** graduate student support is crucial for attracting and retaining top talent. Offering competitive fellowships and assistantships, providing professional development opportunities, and supporting dissertation research can enhance the graduate student experience. Sharing success through various media will assist in attracting and retaining high-quality graduate students, and bridge funding will be essential to ensure uninterrupted support during funding lapses in research projects. **Fourthly,** research infrastructure development is vital for supporting innovative research. With support from all stakeholders of the College, I will oversee the planning, acquisition, and maintenance of research facilities, equipment, and resources in collaboration with all relevant stakeholders. Sustaining the operations of the research infrastructure will be a priority to ensure the financial stability of the college's research enterprise. **Fifthly,** research assessment and evaluation are necessary to ensure the quality and impact of research activities. Key priorities will be developing metrics to assess research impact, implementing internal peer review processes for grant proposal submission, and promoting research integrity. **Finally,** collaboration and partnerships can enhance the impact of research. Encouraging interdisciplinary research, fostering industry partnerships, and collaborating with government agencies can create new opportunities for research and innovation. This is particularly important considering the Chips and Science Act of 2022, which presents significant funding opportunities for institutions like WSU. By implementing these strategies, I can effectively enhance capacity, provide support, and develop a sustainable research infrastructure that enables the college to produce high-quality scholarships and achieve its research goals.

Utilizing similar methodologies, I increased doctoral enrollment by 20%, making the department the first in the university to have 100 doctoral students. This effort was predominantly realized by focusing on a few priority areas and telling the story of our success to all the institution's internal and external stakeholders through various platforms.

Cultivate a Highly Collaborative and Interdisciplinary Community of Research: I will employ the following approach to cultivate a highly collaborative and interdisciplinary research community. **Firstly**, formalizing research centers, faculty clusters, and funding opportunities for interdisciplinary projects can foster a supportive environment. **Secondly,** fostering a culture of collaboration is essential. Organizing joint seminars, workshops, and mentorship programs can promote knowledge sharing, networking, and support for interdisciplinary research. **Thirdly,** leveraging existing interdisciplinary efforts can build upon

existing momentum. Identifying and supporting grassroots collaborations and providing resources to existing projects can strengthen these initiatives. **Fourthly,** facilitating interdisciplinary partnerships can expand the reach and impact of research. Collaborating with Industry and Defense Program (IDP) institutes (like NIAR and NIRDT), university-wide partners, and external organizations can create new opportunities for interdisciplinary research. **Finally,** effective communication and relationship building are crucial for fostering a collaborative community. Maintaining open lines of communication, actively listening to others, and effectively communicating the value of interdisciplinary research can help to build strong, trusting relationships. By implementing these strategies (with support and assistance from all stakeholders of the College), I can cultivate a highly collaborative and interdisciplinary research community that will enhance the college's research portfolio and drive innovation.

I successfully fostered a culture of interdisciplinary research as Department Head. By facilitating a healthy, collaborative, and respectful working environment, the department broke records (in terms of research produced, doctoral graduates, and research expenditures) every year. Notable achievements include: (1) NSF Grants: The faculty received 4 CAREER Awards, 1 Convergence Accelerator grant, 2 SWIFT-Large grants, 1 REU Site, 2 curricula development grants, 13 NSF core program grants, 4 CCRI grants, and an S-STEM grant, to name a few; (2) Industry and Government Partnerships: The faculty secured an $18.5M FAA grant and individual grants totaling $6.5M from the Army Engineering Research and Development Center (ERDC) and Tennessee Valley Authority (TVA); and (3) Faculty Searches: Established a policy requiring non-voting members from research centers to participate in faculty searches, leading to increased interest and competitive center supported startup packages.

Strengthen and Expand Relationships with External Partners in Pursuit of Increased Research and Applied Learning Opportunities: I will employ the following approach to strengthening and expanding relationships with external partners. **Firstly,** industry partnerships can provide valuable resources and collaborations. Establishing industry advisory boards per thematic research area, collaborating on joint research projects, facilitating technology transfer, and offering industry-sponsored fellowships can enhance the college's engagement with the industry. **Secondly,** government partnerships can provide funding and research opportunities that address societal challenges. Collaborating on grant proposals, conducting policy research, and facilitating government-industry partnerships can strengthen these relationships. **Thirdly,** foundation partnerships can provide financial support for research initiatives. Submitting grant proposals and building relationships with foundation representatives can help to secure funding. **Fourthly,** community partnerships can enhance the college's impact and relevance. Engaging with the community, conducting community-based research, and conducting public outreach can foster positive relationships and support for the college's research activities. **Fifthly,** international partnerships can expand the reach and impact of research. Developing exchange programs, collaborating on international research projects, and fostering cultural exchange can create new opportunities for collaboration and innovation. **Finally,** alumni engagement outreach and marketing are essential for building and maintaining relationships with external partners. Reaching out to alumni, using social media, and producing newsletters can help promote the college's research and connect with potential partners. By implementing these strategies, I can strengthen and expand relationships with external partners, leading to increased research opportunities, applied learning experiences, and resources for the college.

As a Department Head, I utilized the abovementioned strategies to (a) Secure upwards of $1.4M in contracts from the industries and secure support for 50% of our capstone design projects. (b) Secure congressional funding (e-ship) through Florida State University, several projects for the department from FAA, and one project for which I was the co-PI (but reallocated to four faculty members within my department) from the DHS. (c) Assisted with securing one project support from GE for a faculty and several

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equipment donations from industries. (d) Unparallel partnerships with local school districts and community colleges on upskilling and collaborative projects. (e) I initiated, drafted, and implemented three agreements for 100 doctoral students funneling into the graduate programs at my previous institute – the North Dakota State University (details also captured in my vitae). (f) Unprecedented engagement (see details in vitae) with alumni resulted in many positive things, notably raising $5M+ to support operations.

Build a Culture of Research Excellence and be an Advocate for Research in the College: I will utilize the following approach. **Firstly,** recognizing and rewarding excellence is crucial for fostering a high-achievement culture. Establishing awards, recognizing achievements in faculty promotions and tenure decisions, and highlighting research successes through public announcements can motivate faculty and students. **Secondly,** fostering a collaborative and supportive environment is essential for promoting research excellence. Mentorship programs, interdisciplinary collaborations, and research retreats can create a positive and productive atmosphere for research. **Thirdly,** encouraging continuous learning and development ensures faculty and students have the skills and knowledge to conduct high-quality research. Providing professional development opportunities, supporting sabbaticals, and ensuring compliance with research ethics can contribute to this goal. **Fourthly,** advocating for research at the university level is essential for securing resources and support for research initiatives. Serving on university-wide research committees, participating in fundraising efforts, and promoting the college's research achievements can help advance the college's research agenda. **Fifthly,** showcasing research impact is crucial for demonstrating the value of research to stakeholders. Highlighting research outcomes, developing case studies, and engaging with the public can help to raise awareness of the college's research and its societal benefits. **Finally,** fostering a culture of innovation and entrepreneurship can drive creativity and economic impact. Supporting entrepreneurship programs, facilitating technology transfer, and recognizing innovation can encourage faculty and students to pursue new and innovative research directions. By implementing these strategies and with the support of all stakeholders of the College of Engineering, I can build a culture of research excellence, advocate for research within the college, and position the college as a leader.

As Department Head, I utilized similar methodologies. For example, I used an aggressive award nomination strategy and initiated departmental awards at all levels (students, staff, and faculty). For example, a tailored mentoring plan for junior and senior faculty members resulted in several accolades. For example, I sent faculty and staff to workshops and funding agency proposer days and used personal contacts to introduce them to program directors. For instance, we started show-and-tell events that sparked interest across the university in our work, resulting in new collaboration, notoriety, and interest.

My enclosed curriculum vitae demonstrates my extensive experience as a department head and cluster lead at NSF, uniquely positioning me for the ADR role. I have thoroughly enjoyed my tenure as department head, and I am eager to take on new challenges. The opportunity to contribute to WSU's mission is exciting. I am confident in leveraging my skills and experiences to drive the college forward.

Respectfully submitted,

Samee U. Khan

SAMEE U. KHAN

Curriculum Vitae

Department of Electrical and Computer Engineering
Mississippi State University
Starkville, MS 39762
[redacted]

EDUCATION

Ph.D.	University of Texas, Arlington, TX, USA. *Computer Science*, (Jan. 2002 – Aug. 2007).
BS	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan. *Computer System Engineering*, (Aug. 1995 – May 1999).

PROFESSIONAL EXPERIENCE (reverse chronology; synopsis provided below; details are provided **pp. 2**–**7**)

Mississippi State University (details on **pp. 2**–**5** – covers accomplishments as department head)
Professor – Aug. 2024 to Present.
Department Head and James W. Bagley Chair Professor – Aug. 2020 to July 2024.
Department of Electrical and Computer Engineering

National Science Foundation (details on **p. 6**)
Computer Systems Research (CSR) Cluster Lead/Lead Program Director (CISE/CNS) – July 2016 – July 2020.
Division of Computer and Network Systems
Directorate for Computer and Information Science and Engineering

North Dakota State University (details on **p. 7** – also covers accomplishments as faculty at MSU)
Walter B. Booth Endowed Prof. – Aug. 2008 to July 2020 (on detail to NSF July 2016–July 2020).
Department of Electrical and Computer Engineering

Colorado State University
Postdoctoral Researcher – Aug. 2007 to July 2008.
Department of Electrical and Computer Engineering

University of Texas at Arlington
Teaching Assistant and Instructor – Jan. 2002 to Aug. 2007.
Department of Computer Science and Engineering

Ghulam Ishaq Khan Institute of Engineering Sciences and Technology – Topi, Pakistan
Systems Engineer – May 1999 to Dec. 2001.
Faculty of Computer Systems Engineering

Updated: August 30, 2024.

Mississippi State University *– Starkville, MS*

Department Head – Aug 2020 to July 2024.

Supervised department personnel, managing the budget, and overseeing departmental facilities, including the building. The Department of Electrical and Computer Engineering (ECE) at Mississippi State University (an R1 institution with annual research expenditures exceeding $300M) was formed in 1900 and offers two undergraduate ABET-accredited degrees in Electrical Engineering (EE) and Computer Engineering (CPE). At the graduate level, the Department offers a Master of Science (M.S.) degree and a Doctor of Philosophy (Ph.D.) degree in electrical and computer engineering. The Department also offers an accelerated M.S. degree (B.S. + M.S.). Since Fall 2022, the undergraduate EE degree has also been offered online. The department comprises 32 faculty members – 23 tenure/tenure-track (including eight endowed chairs/professors), three teaching-track, one clinical (professor of practice) track, and five research-track; these are supported by seven professional staff; and over 700 undergraduate and graduate students, with 100 pursuing Ph.D. studies. With consistent annual research expenditures exceeding $10M, the department boasts the largest high voltage facility in the United States, the Paul B. Jacob High Voltage Laboratory, and is the proud home of the NSF wireless testbed AERPAW.

Synopsis of accomplishments as Department Head:

- ***Research:***
  - Increased research expenditures from ~$10M/yr. (2010-2019) to
    - $13.10M in 2020; $11.94M in 2021; $14.24M in 2022; and $14.69M in 2023.
  - Increased research output (journal and conference papers) from ~140 (=65+75)/yr. (2010-2019) to
    - 215 (=131+84) in 2020; 229 (=129+100) in 2021; 265 (=154+111) in 2022; and 191 (=109+82) in 2023.
  - In 2021, an ECE faculty member (Robert Moorhead), as PI, was awarded a $86M NOAA grant.
- ***Faculty Mentoring:***
  - Junior faculty: 3 NSF CAREER awardees in 2021; and 1 NSF CAREER awardee in 2022.
  - Senior faculty: 1 NIST Senior Research Scientist (on detail from Fall 2021); and two NSF Program Directors (on detail from Spring 2022 and Fall 2022, respectively).
- ***Fundraising:***
  - Raised $5,030,973 in gifts and endowments; 88 different donors; largest gift of $1.4M.
- ***Industrial Engagement***
  - Secured and executed contracts (totaling $1,412,065) for testing and calibration of power systems apparatus at the High Voltage Laboratory from Howard Industries; Alumaform; Peak Demand; AZZ–Calvert; Entergy; General Dynamics; ABB–CS; TE Connectivity; Vesalift; Version; Reliagurad; Powergrid; Sentient Energy; ITEC; GE; Hitachi; Mitsubishi; and Slingco.
- ***Undergraduate and Graduate Curricula:***
  - Launched online BS in Electrical Engineering (EE) program – the first class admitted in Fall 2022.
    - The first department within the College to launch an undergraduate online degree program.
  - Launched (Fall 2022) “Power Engineering Systems” concentration for BS in EE.
  - Overhauled undergraduate EE and Computer Engineering (CPE) curricula to reflect the landscape of degree programs in the 2030s. Major courses impacted: circuits and digital systems sequences.
  - Restructured doctoral studies from “coursework then dissertation research” to “portfolio-based doctoral studies,” encouraging integrated tailored coursework and research.

- ***Enrollment, Graduation, and Student Success:***
  - Increased doctoral student enrollment from ~80/year (2010-2020) to [exactly] 100 (Fall 2021).
    - The first department (and still the only) at MSU to have 100 doctoral students enrolled.
    - Current graduate enrollment: MS (45) and PhD (95).
  - Increased undergraduate enrollment from ~475/year (2010-2020) to 630 (Fall 2024).
  - Increased retention rates for BS EE and BS CPE programs:
    - EE: ‘15: 56%; ‘16: 47%; ‘17: 58%; ‘18: 48%; ‘19: 49%; ‘20: 65%; ‘21: 76%; ‘22: 84%; and ‘23: 88%.
    - CPE: ‘15: 24%; ‘16: 36%; ‘17: 22%; ‘18: 30%; ‘19: 30%; ‘20: 39%; ‘21: 56%; ‘22: 89%; and ‘23: 73%.
  - Graduated the largest class ever in 2023: BS in EE (77) and BS in CPE (33).
  - Current undergraduate enrollment (630): BS in EE (437) and BS in CPE (193).
  - Created the “ECE Student Success Center,” a 1,500-sq.ft., central location for academic advising, prospective student information center, student ambassadors, student records, diversity activities, student outreach activity hub, toy adoption projects, etc.
  - Started research awards for graduate students with prize monies: (a) Best Doctoral Researcher ($1,000) and (b) Best Doctoral Distant Student ($1,000).
  - Started the annual ECE student research symposium with the best undergraduate research poster ($1,000) award and best graduate research poster ($1,000) award, determined by faculty votes.
  - Started the Best ECE TA Award with a cash prize of $1,000.
  - Started ECE 4.0 UG GPA Awards – F‘20: 17; S‘21: 71; F‘21: 82; S‘22: 86; F‘22: 125; S‘23: 76; F ‘24: 113 recipients were recognized.
  - To address high Ds, Fs, and withdrawal (DFW) rates in undergraduate courses, we replaced teaching assistants with peer mentors. Our initial focus was on the critical ECE first-year experience (EFX). EFX Mentors commit 10 hours weekly to instructional meetings, leading a 3-hour lab, and holding office hours. In introductory courses, labs focus on skills like soldering. Labs shift to project development as students progress, with mentors guiding teams through concept to prototype. This model has been successful, with data showing a 7.6% decrease in DFW rates. The program has expanded to include the ECE 3714 (digital devices) course.
  - Created the “Charles Hudnall ECE Makerspace,” the first departmental maker space within MSU. The facility was specially created for sophomores who rarely visit the department because of the science, math, and art courses they must take during that timeframe. The makerspace is strategically located with 24/7 card access to a room holding electronics benches, 3D printers, programable boards, etc. The space has Mon-Fri 9am-5pm access to the machine shop (a portion of the makerspace), where they can use equipment with supervision, such as laser cutters, welding, lathe, woodwork (saws, drills, presses, etc.), and larger 3D printers. The makerspace also has access to (with spacious windows overlooking) the senior (capstone) design room to assist in cross-pollinating ideas, comradeship, and peer mentoring.
  - Created the “SEL Power Systems Protection Laboratory” through the Schweitzer endowment. This is a unique setup in which relays and protection equipment theory meets practicum.
  - Initiated design competitions in required courses to increase retention, namely: Introduction to ECE Design (the first course that our majors take), Digital Design (the first course after fulfilling general course requirements), and Senior Design courses (the last course our majors take). The teams prepare 1-minute videos on their projects, which are voted on by the departmental constituents to determine the winners. Worked with an alum to name the senior design competition. The winning team receives a $1,000 Ed Blakeslee Outstanding ECE Capstone Project award.

- ***Departmental Governance and Budget Oversight:***
  - I oversaw a departmental budget of $5,270,308.
  - I also oversaw departmental endowments totaling $10,050,783.
  - Reduced the departmental budget deficit from $1.34M (beginning of FY 2021) to a net surplus of $840,677 (end of FY24).
  - Revised workload policy (first such revision after 10+ years) to incentivize productive research faculty to teach fewer classes and to incentivize faculty focused on quality instruction to teach core classes with support to bring teaching innovation to the classroom. Incentives:
    - Increased F&A distribution for the PI from 10% to 25%.
    - Increased course buyout options by banking buyout monies within three years.
    - Incentivized quality teaching by providing course releases for course development.
    - Shared 50% of the distance class revenue with the instructors (deposited in their designated funds). This allows them to supplement their salary and improve pedagogy.
  - Restarted departmental e-newsletter; started departmental social media outlets (Facebook | LinkedIn YouTube | Twitter); more engagement with students through "Chats with Dr. K"; and more engagement with faculty through "Watercooler Conversations." Regularly took staff members out to luncheon.
  - Started departmental distinguished lecturer series with speakers as NAE Members, IEEE/ACM Fellows, department chairs/heads, and program directors from AFRL/NIH.
  - Faculty, Staff, and Student Recognition (To appreciate efforts at all levels, an aggressive campaign was launched to nominate individuals for awards. Only winners are listed below.)
    - Student Awards
      - College Graduate Student Award: Dylan Boyd (2021) and Mehedi Farhad (2024)
      - College Undergraduate Award: Erin Parker (2021) and Nisha Adhikari (2024)
      - College Hall of Fame: Ryan Harper (2024); Timothy Sellers (2024); Shaylin Williams (2023); Zoe Fowler (2021); and Erin Parker (2021)
      - College Bridge Awards: Prajwal Basnet (2023); Jing Yang (2023); Ali Zakarian (2022); Himangi Srivastava (2021); Chiranjibi Shah (2021); Akansha Jain (2021); and Farhina Haque (2021)
      - MSU Graduate School Research Symposium
        - Poster Presentation in Engineering
          - 2024: Iffat Ara Ebu (First – MS category)
          - 2023: Cemre Omer Ayna (First – PhD category) and Sabyasachi Biswas (Third – PhD category)
          - 2023: Eli Riser (First – MS category) and Huston Rogers (Third – MS category)
          - 2022: Sabyasachi Biswas (First)
          - 2021: Tingjun Lei (First) and Chiranjibi Shah (Second)
        - Oral Presentation in Education, Arts and Sciences, and Business
          - 2024: Marcus Brumfield (Third)
        - Oral Presentation in Engineering
          - 2024: Ahmed Manavi Alam (First)
          - 2024: Mohammad Abdus Shahid Rafi (Third)
          - 2022: Jing Yang (First)
          - 2021: Akansha Jain (Third)

        - Oral Presentation in Agriculture and Life Sciences
            - 2022: Yehong Peng (First)
            - 2022: Tingjun Lei (Third)
        - Poster Presentation in Agriculture and Life Sciences
            - 2021: Timothy Sellars (First)
    - Staff Awards
        - MSU Irvin Atly Jefcoat Excellence in Advising Award: Kylie Crosland (2024)
        - MSU Wesley Ammon Outstanding Adviser Award: Alison Stamps (2024)
        - College Professional Administrative Staff Award: Josh Weaver (2023) and Ellen Harpole (2022)
        - Zacharias Distinguished Staff Award: Kylie Crosland (2021)
    - Faculty Awards
        - SEC Faculty Achievement Award: Qian (Jenny) Du (2023)
        - MSU Ralph E. Powe Research Excellence Award: Robert Moorhead (2022)
        - MSU Emerging Research Scholar Award: Bo Tang (2022)
        - MSU Outstanding Graduate Student Advisor Award: Chaomin Luo (2022)
        - MSU Zacharias Early Career Teaching Award: Ryan Green (2022) and David A. Wallace (2024)
        - MSU John Grisham Master Teacher Award: John Ball (2024)
        - College Faculty Research Award: Seungdeog Choi (2024)
        - College Academy of Distinguished Teachers Inductee: Umar Iqbal (2024)
        - College Teaching Award for Distance Learning: Jean Mohammadi-Aragh (2024)
        - College Career Award: Jenny Du (2021)
        - College Service Award: Jean Mohammadi-Aragh (2022)
        - MSU Alumni Association Graduate Teaching Excellence Award: John Ball (2021)
        - NSBE Outstanding Teaching Award: Ryan Green (2021) and Umar Iqbal (2021)
    - Started departmental faculty (research and teaching) and staff (service) excellence awards.

- ***Alumni Engagement:***
    - Created the “ECE Wall of Fame” to recognize the most notable ECE alumni: Frank Gallaher (Entergy, 2023); Van M. Wardlaw (Tennessee Valley Authority, 2022); James L. Flanagan (Rutgers University, 2022); Harold R. Moore (Westinghouse Electric Corporation, 2022); James W. Bagley (Lam Research, 2021); H. Ed. Blakeslee (Mississippi Power, 2021); Drayton D. Boozer (Sandia National Laboratories, 2021); Jack Bradley (Savannah Electric Generation, 2021); John. B. Noblin (Lockheed Martin, 2021); and Charles C. Wade (C&W Construction Company, 2021).
    - Started the ECE Distinguished Alumni Award to recognize their outstanding contributions: Abdul N. Mohamed (Engineer Research and Development Center (ERDC), 2024); Terry Kemp (Tennessee Valley Authority, 2023); Huey Ngo (Bomgar Corporation, 2023); Dimir Novosel (Quanta Services, 2023); Everette T. Beers (USDA, 2022); James B. Nail (MS State U., 2022); Jeanette H. Russ (Union University, 2022); Eric B. Welch (Christian Brothers U., 2022); Anthony L. Wilson (MS Power, 2022); David S. Akers (SmartSAT, 2021); William Ball (Southern Co., 2021); and Bruce Deer (Trilogy, 2021).
    - Initiated ECE Alumni gathering events: Huntsville, AL (Sep. 2021 ~ 40 alums attended and Oct. 2022 ~ alumni attended) and Starkville, MS (Oct. 2021 ~ 80 alums attended).

National Science Foundation *– Alexandria, VA*

Computer Systems Research (CSR) Cluster Lead/Lead Program Director (CISE/CNS) – July 2016 – July 2020.

Responsible for leading the Foundation's merit review process and finding new computer and network systems (CNS) funding opportunities. Successfully managed over a dozen programs, and as the CSR Cluster Lead, played a crucial role in shaping the research and development in CSR for our nation. In charge of managing cluster personnel, handling reports, and budgeting.

Synopsis of accomplishments as an NSF CSR Cluster Lead:

- Managed a yearly federal appropriation of $35M. Led the CSR team composed of four Program Directors, three administrative staff, and one AAAS Science and Technology Policy Fellow; as such, I managed the workload of the team, personnel assignments (to programs, projects, portfolio, solicitations, etc.), processes, reporting, budgeting, and interfaces with various other cross-cutting programs, such as CPS, PPoSS, BIGDATA, and FoMR. Under my leadership, the CSR team managed a portfolio of over: **(a)** 500 active projects, **(b)** 700 distinct investigators, and **(c)** $160M.
- Codeveloped and cowrote the NSF CNS Core solicitation, the first major rewrite since 2003. The central idea was to merge the two programs, namely Net Networking Technology and Systems (NeTS) and CSR, into a single program to have the community focus on holistic solutions that consider security, reliability, and user empowerment as first-class research artifacts. I also restructured the scope of CSR to focus on the fundamental building blocks of computer systems with empirical evidence: operating systems, programming languages, libraries, compilers, architecture, and middleware to develop secure, reliable, and optimized solutions scaling from embedded systems to Internet-scale systems.
- Codeveloped and cowrote the NSF solicitation for the S&AS, FMitF, and PPoSS programs.
- Co-led a nine-member CISE-wide Task Force charged with developing processes and policies for no-deadline proposal submissions for solicitations, including core, cross-division, cross-directorate, cross-agency, and industrial collaborative programs within CISE.
- Codeveloped a strong industrial relationship with VMware for the NSF/VMware SDI-CSCS solicitation and the NSF/VMware ECDI solicitation, which I co-wrote.
- Led the CSR program assessment, which was the first assessment of the program since its conception in 2003. The program assessment focused on external and internal modalities and outcomes.
- Constituted CSR Aspiring PI meetings to effectively assist new computer system faculty members in writing grant proposals. I hosted two during my tenure at NSF.
- Initiated PI-led research visioning workshops to engage the CSR community in a meaningful dialog of redefining/rescoping system research. Six such workshops were held during my tenure; several have been held since my departure.
- Constituted the need for reproducible research artifacts for all CNS Core projects; held special sessions during CSR PI meetings to lead the change in the system community.
- Instituted policies and guidelines to increase diversity in CSR-supported conferences and workshops.
- Developed a progressive outlook of the cluster by soliciting video testimonials from the CSR PIs to be part of all public program presentations. These videos are also featured on the CISE website. The testimonials ranged in scope from PI's projects to views on national needs.
- Constituted the need to understand the barriers surrounding women and minorities working in systems research. Codeveloped the concept of an all-female workshop (collocated with the CSR PI meeting) to provide a platform to voice opinions and offer long-term solutions to address the barriers.
- Initiated and maintained the bimonthly CSR e-newsletter, delivered to over 1,500 recipients.
- Initiated a predoctoral CSR Summer School to assist in maintaining a pipeline of quality system researchers. Cornell University jointly teaches this school, University of Maryland – College Park, and Max-Planck-Institut für Informatik – Saarbrücken, Germany. In 2022, it will be the fifth edition of the school, which has seen over 50 attendees enrolled in top US Universities.

North Dakota State University *– Fargo, ND*
Walter B. Booth Endowed Prof. (rose through the ranks of Assistant Professor/Associate Professor/Professor/Endowed Professor) – Aug. 2008 to July 2020 (on detail to NSF July 2016–July 2020).

This was an appointment with expectations of 40% research, 40% teaching, and 20% service time. The position is responsible for instruction in computer engineering topics within the Electrical and Computer Engineering Department of North Dakota State University (NDSU). Collaborative research examined fundamental issues related to computer systems (in optimization, robustness, and security).

Synopsis of accomplishments as a faculty (MSU and NDSU):

- Developed a funded research program with competitive support from federal agencies, international organizations, industries, and private foundations. The total funding received for the program is ~$13.1M. Most notable is the Center of Cloud Computing launch at NDSU, with a 192-node cloud platform.
- Research collaborations have resulted in over 475 publications. Three conference papers received the best paper awards, and three IEEE journal articles were selected as the spotlight. One conference poster received a Silver Medal. Works have received over 26,000 citations: h-index of 76 and i10-index of 272.
- Supervised 16 doctoral dissertations and 10 MS theses; two postdoctoral researchers were also mentored. One of the postgraduate students received the "College of Engineering Outstanding Student Researcher Award." (The Department nominated two other doctoral students for the award in 2015 and 2016.) I also mentored a student who received the prestigious Southern Regional Education Board (SREB) fellowship.
- Supervised over 40 undergraduate research students, with several projects leading to journal papers. All research students were supported by external funding.
- Developed GPL software simulators, such as GreenCloud and CloudNetSim++, which are among the research community's most widely used cloud and data center simulators.
- Elected "Fellow" of the Institution of Engineering and Technology (IET, formerly IEE, May 2013) and elected "Fellow" of the British Computer Society (BCS, Jan. 2013). I am a senior member of the IEEE and a distinguished member of the ACM.
- Received the IEEE Computer Society Outstanding Contributor Award, the IEEE TCSC Award for Excellence in Scalable Computing Research (Middle Career Researcher), the IEEE-USA Professional Achievement Award, the IEEE Golden Core Award, and the IEEE Computer Society Meritorious Service Certificate.
- Received several institutional awards, such as the College of Engineering and Architecture Researcher of the Year Award, Nortel Outstanding Doctoral Dissertation Award, John Steven Schuchman Memorial Outstanding Doctoral Student Award, Outstanding Faculty Mentor Award, Sudhir Mehta Memorial International Faculty Award, and Tapestry of Diverse Talents Award.
- Served on the editorial board of top-tier journals, such as the IEEE Transactions on Cloud Computing, Journal of Parallel and Distributed Computing, IEEE Transactions on Computers, IET Wireless Sensor Systems, IEEE Access, IEEE Communications Surveys and Tutorials, and IEEE IT Pro.
- Held leadership positions in IEEE Technical Area in Green Computing, IEEE Special Technical Community on Sustainable Computing, IEEE Technical Committee on Scalable Computing, and IEEE SMC Technical Committee on Cybernetics.
- An ACM Distinguished Speaker and an IEEE Distinguished Lecturer who has delivered ~50 invited lectures and ~20 keynote presentations.
- Developed more than ten undergraduate and graduate courses. All courses were successfully delivered, and some were immensely popular among the students. All undergraduate courses were assessed for ABET accreditation.
- Chaired the computer engineering curriculum committee that overhauled an aging curriculum. Stakeholders included: alums, industrial representatives, faculty, staff, students, and higher administration. The task was completed within six months from the start to the final approval.

OVERVIEW OF FACULTY ACTIVITIES

A brief overview of academic activities is provided below – details can be obtained from the appendices.

Supervised Graduate Research Students (see Appendix A (**p. 12–13**) for a complete listing)

Served as the principal advisor for over 30 electrical and computer engineering graduate students, both masters (11) and doctoral (16) students. Currently advising four doctoral students and three MS students.

Supervised Undergraduate Research Groups (see Appendix B (**p. 14**) for a complete listing)

Served as the supervisor for over 40 undergraduate research students who conducted research projects (some as summer and some as capstone/senior design). Almost all students were supported through external funding.

Grants and Contracts (see Appendix C (**pp. 15–17**) for a complete listing)

Have served as PI or co-PI on competitive grants totaling ~ $13.1M, with funding from agencies, such as NSF, DOE, DHS, US Department of State, FAA, industries, and private foundations.

Publications (see Appendix D (**pp. 18–46**) for a complete listing)

I have published over 475 research works in books, archived journals, conference proceedings, book chapters, and technical reports. My work has primarily focused on the optimization, robustness, and security of computer systems. My works have received over 26,000 citations (source Google Scholar), with an h-index of 76 and an i10-index of 272. Three conference papers and one IEEE journal article received best paper awards.

Presentations and Lectures (see Appendix E (**pp. 47–49**) for a complete listing)

I have delivered ~ 100 public presentations on my research, including 50 invited lectures and ~20 keynote presentations. To avoid duplication, presentations at conferences are not listed.

Appointments and Services (see Appendix F (**pp. 50–57**) for a complete listing)

I have served the scientific community as an editor for over 15 journals, such as IEEE Transactions on Computers, IEEE Transactions on Cloud Computing, Journal of Parallel and Distributed Computing, IEEE Cloud Computing, IEEE Access, IEEE IT Pro, and IEEE Communications Surveys and Tutorials.

I have served on more than 100 technical committees of IEEE and ACM-sponsored conferences. I have regularly been a reviewer for nearly (totaling more than 50) all premier IEEE and ACM transactions and journals. I have also been a panelist for funding agencies such as NSF, DoD, EU, and NSERC.

I have served on the community advisory board of the local Public Broadcasting Service (PBS) subsidy, the Prairie Public Television, which serves North Dakota, Minnesota, and Manitoba in Canada. I have also served on the AccessEngineering Leadership Team for the Disabilities, Opportunities, Internetworking, and Technology (DO-IT) Center at the University of Washington. The core philosophy of the DO-IT center is to make education accessible to all individuals regardless of their abilities and capabilities.

GPL Software Simulators

I have co-developed several software simulators for computer systems that my research team continually maintains. These simulators are some of the widely used artifacts by the research community, and some are used as teaching modules in modeling and simulation courses. A summary of the simulators and a URL providing access to the artifacts are also included.

xFogSim

This framework supports simulating and benchmarking multiple fog locations managed independently within a large-scale distributed system. The framework is highly customizable to include various resource allocation mechanisms that may tradeoff system parameters, such as response time, latency, bandwidth, and availability of resources. https://github.com/rtqayyum/ExFogSim.

FogNetSim++

This toolkit provides users detailed configuration options to simulate a large-scale fog network. Researchers can incorporate customized mobility models, fog node scheduling algorithms and manage handover mechanisms. This toolkit can benchmark scalability and effectiveness by measuring CPU and memory usage. https://github.com/rtqayyum/fognetsimpp.

CloudNetSim++

This toolkit facilitates the simulation of distributed data center architectures, energy models, and high-speed optical data center communication networks. CloudNetSim++ allows researchers to incorporate custom protocols and applications to analyze realistic data center architectures with network traffic patterns. http://cloudnetsim.seecs.edu.pk/.

GreenCloud

This is a sophisticated packet-level simulator for energy-aware cloud computing data centers focusing on cloud communications. It offers detailed, fine-grained modeling of the energy consumed by the data center IT equipment. GreenCloud can be used to develop solutions in monitoring, resource allocation, workload scheduling, and network infrastructures. http://greencloud.gforge.uni.lu/.

NutShell

The Nutshell is designed to diminish flaws and limitations of available cloud simulators by offering: **(a)** multiple data center networks architectures, like three-tier, fat-tree, and dcell, **(b)** fine-grained network details, **(c)** realistic cloud traffic patterns, **(d)** congestion control strategies and analysis, **(e)** energy consumption, **(f)** cost estimation, and **(g)** data center monitoring and analysis. https://github.com/stescacom/nutshell.

Teaching Experience (with course level)

I have approximately 15+ years of experience teaching various courses. The courses listed below were taught considering my teaching philosophy, which centers around *knowledge transference*. Several courses listed below were taught multiple times. I have received the highest student course evaluations for most courses.

- Introduction to Electrical and Computer Engineering – Freshman*
- Introduction to Computing – Freshman
- Theory of Computing – Sophomore
- Fundamentals of Software Engineering – Junior
- Computer Architecture – Senior and Graduate*
- Computer Systems – Graduate*
- Systems Programming – Graduate*
- Computer Organization – Junior
- Distributed Computing – Graduate*
- Advanced Computer Systems – Graduate*
- Capstone Design – Senior
- Cloud Computing – Graduate*
- Hardware and Software for Cloud Computing – Graduate*
- Big Data and Cloud Computing – Graduate*
- High-Performance Computing in the Cloud – Graduate*

*Newly developed courses.

Honors and Awards (reverse chronology)

- Best Paper Award (Systems Track), IEEE Cloud Summit, 2024.
- IEEE Region 3 Outstanding Engineer Award, 2024.
- ACM Distinguished Member, 2022.
- Inducted in IEEE Eta Kappa Nu (IEEE-HKN), the Honor Society of IEEE, 2022.
- IEEE Computer Society Distinguished Contributor Award, 2021. (Inducted in the inaugural class.)
- IEEE ComSoc Technical Committee on Big Data Best Journal Paper Award, 2019.
- IEEE-USA Professional Achievement Award, 2016.
- IEEE Golden Core Member Award, 2016.
- IEEE TCSC Award for Excellence in Scalable Computing Research (Middle Career Researcher), 2016.
- IEEE Distinguished Lecturer, 2016.
- IEEE Computer Society Meritorious Service Certificate, 2016.
- Tapestry of Diverse Talents Award, North Dakota State University (NDSU), ND, USA, 2016.
- ACM Distinguished Speaker, 2015.
- Exemplary Editor, IEEE Communications Surveys and Tutorials, IEEE Communications Society, 2014.
- Fellow of the Institution of Engineering and Technology (IET, formerly IEE), elected May 2013.
- Fellow of the British Computer Society (BCS), elected Jan. 2013.
- Outstanding Summer Undergraduate Research Faculty Mentor Award, NDSU, ND, USA, 2013.
- Best Paper Award, IEEE Intl. Conf. on Scalable Computing and Communications (ScalCom), 2012.
- Sudhir Mehta Memorial International Faculty Award, NDSU, ND, USA, 2012.
- Chinese Academy of Sciences Young International Scientist Fellowship, 2011.
- Researcher of the Year Award, College of Engineering, NDSU, Fargo, ND, USA, 2011.
- Best Paper Award, ACM/IEEE Intl. Conf. on Green Computing & Communications (GreenCom), 2010.
- Nortel Outstanding Doctoral Dissertation Award, University of Texas, Arlington, TX, USA, 2008.
- John S. Schuchman Outstanding Doctoral Student Award, University of Texas, Arlington, TX, USA, 2007.
- Inducted in Upsilon Pi Epsilon, the Computer Science Honors Society, 2007.

Graduate Education Leadership

Initiated, drafted, and negotiated a "Memorandum of Agreement" (MoA) between the North Dakota State University (NDSU) and: (i) the National University of Science and Technology (NUST), Islamabad, Pakistan; (ii) the University of Engineering and Technology (UET), Peshawar, Pakistan; and (iii) the COMSATS Institute of Information Technology (CIIT), Islamabad, Pakistan. The core philosophy behind the agreements is human capacity building for NUST, UET, and CIIT. NUST, UET, and CIIT will identify potential faculty members pursuing doctoral degrees at NDSU. The economic model of the agreement is: (i) NDSU provides tuition fee support, and (ii) NUST/CIIT provides monthly stipends to each of the students through funds from the Government of Pakistan that will cover living, boarding, and health insurance costs. The MoA between UET and NDSU was signed on June 08, 2015. The MoA between NDSU and NUST was signed on May 09, 2014. The MoA between CIIT and NDSU was signed on Nov. 09, 2010.

Professional Membership and Certifications

- Institute of Engineering and Technology (IET), Fellow.
- British Computer Society (BCS), Fellow.

- Institute of Electrical and Electronics Engineers (IEEE), Senior Member.
- Association of Computing Machinery (ACM), Distinguished Member.
- American Association for the Advancement of Science (AAAS), Member.
- American Society for Engineering Education (ASEE), Member.

Professional Development Activities and Training (reverse chronology)

- "The Chronicle's Strategic Leadership Program," sponsor: Mississippi State University, Starkville, MS, USA, Jan. 17 – 19, 2023.
- "ASEE Delta New Department Leaders Institute," sponsor: Mississippi State University, Starkville, MS, USA, Mar. 29 – Mar. 31, 2021.
- "Access Engineering – Building Capacity to Increase the Participation of People with Disabilities in Engineering," sponsors: National Science Foundation (NSF) and the University of Washington, Seattle, WA, USA, Apr. 08 – Apr. 10, 2015.
- "Leadership Workshop on Changing Academic Culture," sponsors: NSF FORWARD Program, North Dakota State University (NDSU) Office of the Provost, and NDSU Office of the Dean of Engineering, Fargo, ND, USA, Mar. 16, 2015.
- "Compact for Faculty Diversity Institute on Teaching and Mentoring for Scholars," sponsor: Southern Regional Education Board (SREB), Atlanta, GA, USA, Oct. 30 – Nov. 2, 2014.
- "Leadership in Academia Workshop," sponsors: NSF FORWARD Program, NDSU Office of the Provost, and NDSU Office of the Dean of Engineering, Fargo, ND, USA, Mar. 17, 2014.
- "NDSU Teaching and Learning Conference," sponsor: NDSU Office of the Provost, Fargo, ND, USA, Aug. 21, 2013, Aug. 20, 2014, and Aug. 19, 2015.

APPENDIX A

Supervised Graduate Research Students

Postdoctoral Researcher (reverse chronological)

- Jawad, Muhammad, June 2022 – Dec. 2022.
- Tziritas, Nikos, May 2011 – May 2013.

Doctoral Dissertations (reverse chronological)

- Al-Odat, Zeyad A.-H., "Analyses, Mitigation and Applications of Secure Hash Algorithms," Dec. 2019.
- Yusoff, Aziyati B., "Smart Retrieval Engine using Big Data Prescriptive Analytics for Flood Early Warning System," May 2018.
- Abbas, Assad, "Cloud-based Recommendation Services for Healthcare," May 2016.
- Mahmood, Zahid, "Enhanced Augmented Reality Framework for Sports Entertainment Applications," Dec. 2015.
- Fayyaz, Ahmad, "Energy-efficient Resource Scheduling Methodologies for Cluster and Cloud Computing," July 2015.
- Jawad, Muhammad, "Energy-efficient Data Centers for On-Demand Cloud Services," July 2015.
- Usman, Saeeda, "On Measuring the Robustness of Cloud Computing Systems," July 2015.
- Khan, Muhammad U. S., "Utilizing Recommender Systems as an Analysis Tool to Measure Network Dynamics," May 2015.
- Sahibzada, Muhammad A., "Power System Stability Enhancement through Data Center Ancillary Services," May 2015.
- Ali, Mazhar, "Towards Secure Cloud Storage Services," May 2015.
- Irfan, Rizwana, "Contextualization in Large-scale Social Networks," Dec. 2014.
- Pinel, Fredric, "Energy-Performance Optimization in the Cloud," Aug. 2014.
- Diaz, Cesar O., "Energy-efficient Scheduling in Grid Computing and Resource Allocation in Opportunistic Cloud Computing: Models and Algorithms," Aug. 2014.
- Bilal, Kashif, "Analysis and Characterization of Cloud Based Data Center Architectures for Performance, Robustness, Energy Efficiency, and Thermal Uniformity," May 2014.
    - The 2014 College of Engineering Graduate Student Researcher of the Year Awardee
- Khalid, Osman, "Efficient Message Dissemination Framework for Diverse Wireless Networks," May 2014.
- Malik, Saif ur Rehman, "Using Formal Methods to Validate the Usage, Protocols, and Feasibility in Large-scale Computing Systems," May 2014.

MS Thesis (reverse chronological)

- Beach, Mathew, "A Graphical User Interface Application for Querying the Unmanned Aerial System Integration Safety and Security Technology Ontology," Aug. 2024.
- Harris, Hunter, "Resource Description Framework Parsing Method on the UAS Integration, Safety, and Security Technology Ontology," May 2024.
- Greer, Jeffery, "Mitre Attack Framework Adaption in UAV Usage During Surveillance and Reconnaissance Missions," May 2024.
- Ellenberger, Mackenzie, "Quantum Task Mapping for Large-Scale Heterogeneous Computing Systems," May

2024.

- Shahid, Amna, “Resource Optimization of Edge Servers dealing with Priority-Based Workloads by utilizing Service Level Objective-Aware Virtual Rebalancing,” Aug. 2023.
- Garcia, Rebecca, “Unmanned Aerial Systems Integration Safety and Security Technology Ontology,” May 2023.
- Sadikaj, Ylli, “Personalized Health Insurance Services using Big Data,” May 2016.
    - USAID Transformational Leadership Scholarship Recipient
- Ghosh, Ankan, “Content Dissemination Schemes for Mobile Clouds: Modeling, Analysis, and Verification,” Dec. 2014.
- Dhamotharan, Revathi, “Secure Data Sharing in Clouds,” Dec. 2014.
- Valentini, Giorgio L., “Energy-efficient Resource Utilization in Cloud Computing,” May 2012.
    - Fulbright Scholar
- Saula, Oluwasijibomi, “Phasor Measurement Unit Placements for Complete Observability Using Linear-time, Quadratic-time, and Subquadratic-time Heuristics,” May 2010.

Current Graduate Students:

- El Yazizi, Abdelmoula (Ph.D.) – Quantum Machine Learning, start Jan. 2021.
- Ikram, Faiza (Ph.D.) – High-fidelity Schedulers, start Aug. 2022.
- Hudnall, Charles (Ph.D.) – Side-Channel Attacks, start Aug. 2022.
- Couch, Dylan (Ph.D.) – Quantum Machine Learning, start Aug. 2022.
- Salehi, Ramin (Ph.D.) – Quantum Machine Learning, start Aug. 2024.
- Sanchez, Luis (MS) – Quantum Machine Learning, start Aug. 2023.
- To, Minh (MS) – Ontologies for Counter UAS Strategies, start Aug. 2023.

APPENDIX B

Supervised Undergraduate Research Students

Completed Research Projects (reverse chronological)

- Bruton, Robert; and Keyes, Melika, "Reptile Tank Environmental Control," Dec. 2021.
- DeNomme, Nicholas M.; and Materi, Jonathan T., "Autonomous Multi-Purpose Cart," Dec. 2017.
- Brooks, Jacob; Mischel, Jacob; and Parks, Colton T., "Coaster with Alerts for Autistic Children," May 2017.
- Bossert, Kasey; Danzl, Joshua; Hennessy, Casey; and Moon, Jennifer, "Multipurpose Cart for Persons with Disabilities," Dec. 2016.
- Jelkin, Thomas; Miller, Scott; and Wanner, Austin, "Speech to Overhead Text Display," May 2016.
- Johnson, Scott and Skarphol, Jacob, "Crowd Sourced Public Transit Information System," May 2016.
- Birrenkott, Jordan; Fowley, William; and Leerssen, Jacob, "Custom Keyboard for Disabled Veterans," Dec. 2015.
- Bromenshenkel, Dale; Hoffmann, Bradley; and Massey, James, "Internet of Things Platform," Dec. 2015.
- Bosch, Lelan; Thorson, Kyle; and Simanovich, Igor, "Voice-Enabled Vending Machine for Disabled Veterans," May 2015.
- Bernhardt, Dylan; Schur, Gabriel; and Xiao, Xinhao, "Voice Activated Door Opener for Disabled Veterans," May 2015.
- Davis, Jawaan; Ghebreyohannes, Mehari; and Suleiman, Ahmed, "Personal Audio Amplifier for the Elderly with Impaired Hearing," Dec. 2014.
- Gao, Peng; Keller, Tyler; Reller, Jeremy; and Zou, Yili, "IR Environmental Control Device for the Elderly with Impaired Motor Skills," Dec. 2014.
- Larson, Joe; Roehrich, Chad; and Todd, Tyler, "Wireless Bluetooth Communication Devices," Dec. 2014.
- Jensen, Nathan R.; and Lassonde, Walter I., "Robust PMU Coverage," Dec. 2010.
- Adamek, Joshua; Brodsho, Brady A.; and Kropp, Garrett, "PMU Power Grid Coverage," Dec. 2009.
- Leingang, James J.; Lindberg, Peder; and Lysaker, Daniel, "Energy-aware Data Centers," Dec. 2009.

Summer Undergraduate Researchers (reverse chronological)

- Zheng , Andrew, Summer 2024.
- Guo-Yue, April, Summer 2024.
- Medved, Cooper, Summer 2024.
- Johnson, Khylan, Summer 2024.
- Love, Kaleb, Summer 2023.
- Gregory, Noah, Summer 2023, Spring 2024, and Summer 2024.
- Sanchez, Luis, Summer 2023.
- Miranda, Brit, Summer 2022.
- Vaughan, Leah, Summer 2022.
- Ojewole, Omolola, Summer 2015.
- Silva, Marcus, Summer 2014.
- Ashley, Jamin, Summer 2013 and Summer 2014.
- Okoroha, Chiamaka, Summer 2013.
- Lindberg, Peder, Summer 2009.

APPENDIX C

Grants and Contracts

A total of $13,133,057 ($12,959,413 (*external*) + $173,644 (*internal*)) has been secured as competitive grants to support various research and educational projects. I have received numerous travel grants, which are also listed separately and not counted toward the total dollar amount secured.

External Research and Educational Grants as PI/Co-PI (reverse chronology on the end date)

- Digital Twin Addressing Multi-Scale Operational Needs of IBR-rich Grids (**co-PI**, with Xin Fang), Funding source: Department of Energy (DOE), Subcontract from National Renewable Energy Laboratory (NREL), SETO FOA 3034 OPTIMA, $330,000, July 2024 – Jun 2027.
- REU Site: Intelligent Edge Computing Systems (**PI**, with M. Jean Mohammadi-Aragh), Funding source: National Science Foundation (NSF), CNS 2348711, $333,642, Feb. 2024 – Jan. 2027.
- CyberTraining: Pilot: ConstructionCI: Advance CI Training in Construction Management and Safety Curricula (**co-PI**, with Yu Luo and Rizwan Farooqui), Funding source: NSF, OAC 2417396, $299,877, Oct. 2024 – Sep. 2026.
- FET: Medium: A Quantum Computing Based Approach to Undirected Generative Machine Learning Models (**PI**, with J. Picone (Temple University)), Funding source: NSF, CCF 2211841, $937,247, Oct. 2022 – Sep. 2025.
- A11L.UAS.90: Evaluation of Unmanned Aircraft Systems (UAS) Integration Safety and Security Technologies in the National Airspace System (NAS) Program (**co-PI**, with S. McNutt, J. Ball, and Y. Luo), Funding source: Federal Aviation Authority (FAA) and Department of Homeland Security (DHS), $1,909,257, Jan. 2022 – Mar. 2025.
- Travel: NSF Student Travel Grant for 2022 IEEE Cloud Summit (**PI**), Funding source: NSF, CNS 2243579, $20,000, Dec. 2022 – Nov. 2024.
- Collaborative Research: CNS Core: Small: HARMONIA: New Methods for Colocating Multiple QoS-Sensitive Jobs (**PI**, with D. Tiwari (Northeastern University)), Funding source: NSF, CNS 2124908, $500,000, Oct. 2021 – Sep. 2024.
    - Research Experience for Undergraduates (Supplement), Funding source: NSF CNS 2413702, $16,000, June 2024 – Aug. 2024.
    - Research Experience for Undergraduates (Supplement), Funding source: NSF CNS 2315855, $16,000, June 2023 – Aug. 2023.
    - Enabling Quantum Computing Platform Access for National Science Foundation Researchers with Amazon Web Services, IBM, and Microsoft Quantum, Funding source: NSF, and Amazon Web Services (AWS), CNS 2233911, $49,870 (= $39,070 (NSF) + $10,800 (AWS)), Aug 2022 – Sep. 2024.
    - Research Experience for Undergraduates (Supplement), Funding source: NSF, CNS 2216570, $16,000, June 2022 – Aug. 2022.
- Joint Unmanned Systems Testing in Collaborative Environments (JUSTICE) NextGen – First Task Order (**co-PI**, with Shawn McNutt), Funding source: DHS, 70RSAT22D00000002-70RSAT22FR0000147, $3,998,629, Sep. 2022 – Sep. 2024.
- EAGER: From Theory to Practice of Elastic Interval Runtime Schedulers (**PI**), Funding source: NSF, CCF 2135439, $300,000, Oct. 2021 – Sep. 2024.
- Workshop on Quantum Computing, Information, Science, and Engineering (**PI**, with M. A. Novotny), Funding source: NSF, OIA 2202377, $99,680, July 2022 – June 2024.
- Collaborative Research: PPoSS: Planning: Software Stack for Scalable Heterogeneous NISQ Cluster (**PI**, with V. Chaudhary and S. Xu (Case Western Reserve University), Q. Guan (Kent State University), X. Li (University of Washington), and M. A. Novotny), Funding source: NSF, CCF 2216898, $244,284, July 2022 – June 2024.

- Intergovernmental Personnel Assignment (**PI**), Funding source: NSF, CNS 1650752, $886,870, July 2016 – July 2020.
- II-NEW: Probe Station to Characterize Body Area Network Sensor ICs for Cyber Physical Systems Applications (**Co-PI**, with D. Dawn, J. Wang, N. Gong, and S. C. Smith), Funding source: NSF, CNS 1628961, $362,865, Aug. 2016 – Aug. 2019.
- GARDE: Design Projects to Enable Veteran Reintegration in an Educational System (**PI**, with N. Gong, S. C. Smith, J. S. Glower, and B. Johnson-Messelt), Funding source: NSF, CBET 1401507, $124,296, July 2014 – June 2019.
- Software Support for Cloud and Big-data Computing (**PI**), Funding source: Oracle, $374,250, Apr. 2014 – Mar. 2016.
- Accessing Campus Readiness for Accessibility (**PI**), Funding source: NSF, EEC 1444961, Subcontract: University of Washington, $3,000 Sep. 2015 – Nov. 2015.
- MRI: Acquisition of Data-Intensive Cyberinfrastructure for Research and Education (DICRE) at North Dakota State University (**Co-PI**, with D. Katti, A. M. Denton, M. M. Ossowski, and W. Sun), Funding source: NSF, CNS 1229316, $571,429, Aug. 2012 – Sep. 2015.
- CSCC - Cogi, Inc - Grad Assistant (**PI**), Funding source: ND Centers of Excellence, Subcontract from NDSU Center of Excellence in Sensors, Communications, and Controls, $19,776, Mar. 2014 – June 2015.
- Robustness-aware Energy Efficient Data Center (**PI**), Funding source: Department of Energy (DOE), Subcontract from NDSU Center for Computationally Assisted Science and Technology, $27,942, Aug. 2013 – Aug. 2014.
- A Hybrid Solar Water Heating System using CO2 as Working Fluid (**Co-PI**, with S. Krishnan, N. Khan, and W. H. Bokhari), Pakistan-US Science and Technology Cooperation Program, Funding source: US Department of State (jointly administered by the National Academies and Higher Education Commission of Pakistan (HEC)), $296,043, Nov. 2010 – Sep. 2013.
- Young International Scientist Fellowship (**PI**), Funding source: Chinese Academy of Sciences, RMB265,000, May 2012 – May 2013.
- Energy-efficient Resource Allocation in Autonomic Cloud Computing (**Co-PI**, with P. Bouvry and T. Engel), Funding source: Fonds National de la Recherche Luxembourg (FNR), €432,000, Jan. 2010 – Dec. 2012.
- Trust-assurance for Critical Infrastructures in Multi-Agents Environments (**Co-PI**, with B. Gateau, D. Khadraoui, P. Bouvry, E. Niemela, and O. Boissier), Funding source: FNR, €482,000, Jan. 2009 – Dec. 2010.
- Development of Cloud Computing Thematic Research and Educational Program (**Co-PI**, with N. Min-Allah), Program for Collaborative Research, Funding source: HEC, PKR365,000, May 2010 – Aug. 2010.

Internal Research and Educational Grants as PI/Co-PI (reverse chronology on the end date)

- Board of Trustees Endowment, Funding source: North Dakota State University (NDSU) Development Foundation:
    - Increasing the Entrepreneurship Spirit by Active Interaction with Area Entrepreneurs (**PI**), $1,000, May 2015 – June 2016.
    - Development of a General-Purpose iPhone and Android Application to Assist NDSU Students with Disabilities (**PI**), $1,000, May 2012 – Dec. 2013.
- The Ozbun Economic Development Award, Funding source: NDSU Development Foundation:
    - Low-cost Road Condition Profiling and Analysis System for the State of North Dakota (**PI**, with Y. Huang), $25,000, June 2015 – June 2016.
    - Residential and Commercial Building Audit System for the State of North Dakota (**PI**, with J. Glower, R. Guggisberg, and D. Mahli), $20,000, May 2013 – Oct. 2014.
- Establishment of NDSU Cloud Computing Training Center (**PI**), SU Impact Fund, Funding source: NDSU

Development Foundation, $41,000, Oct. 2012 – Sep. 2015.

- Integrated Information System for the City of Fargo (**PI**, with D. Mahli), The Efficiency in Government Award, Funding source: NDSU Development Foundation, $20,000, May 2012 – July 2013.
- Plan to Recruit Pakistani Doctoral Students (**PI**), Funding source: Office of Equity, Diversity and Global Outreach, NDSU, $1,000, May 2012 – Dec. 2012.
- Diversity Initiatives Grant, Funding source: Office of Equity, Diversity and Global Outreach, NDSU:
    - Reintegration of Veterans in an Educational Setup (**PI**), $150, Aug. 2012 – Sep. 2012.
    - Native Americans: Pursuit of Higher Education (**PI**), $200, Mar. 2012 – May 2012.
- Energy-efficient Resource Allocation in Large-scale Systems (**PI**), Electrical and Computer Engineering Department Research Funds, Funding source: NDSU, $60,000, Sep. 2008 – Aug. 2010.
- PMU Placements in Large-scale Power Networks (**PI**), Electrical and Computer Engineering Department Research Funds, Funding source: NDSU, $4,294, Feb. 2010 – May 2010.

Travel Grants

Received more than $10,000 as travel grants from the NDSU (President, Provost, Dean of Engineering, NDSU Electrical and Computer Engineering Department); Mathematical Sciences Research Institute (MSRI); Society of Photo-Optical Instrumentation Engineers (SPIE); and Institute of Electrical and Electronics Engineers (IEEE).

APPENDIX D

Publications

Synopsis

- A total of **481** publications are listed in reverse chronological order.
- Books: **9**; journal articles: **200**; magazine articles: **9**; conference papers: **179**; conference posters: **14**; book chapters: **33**; journal editorials: **19**; edited proceedings: **6**; technical reports: **9**; and technical blogs: **3**
- Works with advisees (undergraduate, graduate, postdoctoral researchers, and short-term researchers) are indicated with their names being underlined.
- One IEEE Transaction paper received the Society Best Journal Paper Award.
- Three IEEE conference papers received the Best Paper Award.
- One conference poster received a Silver Medal for idea and presentation.
- Three IEEE journal articles were featured as spotlight papers.
- Total citations: **26,000+** (Google Scholar); h-index: **76**; and i10-index: **272**.

Books

- A. Abbas, **S. U. Khan**, and A. Y. Zomaya, *Fog Computing: Theory and Practice*, Wiley-IEEE Computer Society Press, New Jersey, USA, 2020, XXIX, 608 p., ISBN: 978–1–119–55169–0.
- M. U. S. Khan, **S. U. Khan**, and A. Y. Zomaya, *Big Data-Enabled Internet of Things*, IET Press, London, UK, 2019, XIII, 488 p., ISBN 978–1–78561–636–5.
- O. Khalid, **S. U. Khan**, and A. Y. Zomaya, *Big Data Recommender Systems: Algorithms, Architectures, Big Data, Security and Trust*, IET Press, London, UK, 2019, XV, 352 p., ISBN 978–1–785–61975–5.
- O. Khalid, **S. U. Khan**, and A. Y. Zomaya, *Big Data Recommender Systems: Application Paradigms*, IET Press, London, UK, 2019, XIX, 536 p., ISBN 978–1–785–61977–9.
- **S. U. Khan**, A. Y. Zomaya, and A. Abbas, *Handbook of Large-scale Distributed Computing in Smart Healthcare*, Springer-Verlag, New York, USA, 2017, XI, 635 p., ISBN 978–3–319–58279–5.
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Conference Posters

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- N. Gregory, K. Love, and **S. U. Khan**, "Quantum Task Mapping for Distributed Heterogeneous Computing Systems," in *Undergraduate Research Symposium & Showcase*, sponsor: Office of Undergraduate Research and Creative Discovery and Mississippi State University, Starkville, MS, USA, Aug. 2023.
- L. Vaughan and **S. U. Khan**, "The Development of a UAS Integration Safety and Security Data Ontology," in *Undergraduate Research Symposium & Showcase*, sponsor: Office of Undergraduate Research and Creative Discovery and Mississippi State University, Starkville, MS, USA, Aug. 2022.

- Z. Al-Odat and **S. U. Khan**, "Mitigation and Improving SHA-1 Hash Standard Using Collision Detection Approach" in *ND EPSCoR State Conference*, sponsor: North Dakota Experimental Program to Stimulate Competitive Research (EPSCoR), Grand Forks, ND, USA, Apr. 2018.
- A. Yusoff, S. Yusoff, N. M. Din, and **S. U. Khan**, "Smart Retrieval Engine for Prescriptive Big Data Analytics in DIKW Hierarchy Environment," in *Innovation and Design Competition*, sponsor: Universiti Tenaga Nasional, UNITEN, Kajang, Malaysia, Nov. 2016. **(Silver Medal in Category: Information and Communication Technology.)**
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APPENDIX E

Presentations and Lectures

Keynote Speeches (reverse chronology)

- "Large-scale Connected Systems," 6th International Conference on Contemporary Computing and Informatics (IC3I), sponsor: IEEE Uther Pradesh Section, Noida, India, Sep 2023.
- "Connected World: Past, Present, and Future," 15th International Wireless Internet Conference (WiCON), sponsor: European Alliance for Innovation, Dallas, TX, UA, Nov. 2022.
- "Perspectives on IoE," IEEE International Conference on Internet of Everything, Microwave Engineering, Communication and Networks (IEMECON), sponsor: IEEE Delhi Section, Jaipur, India, Dec. 2021.
- "Internet of "Just About" Everything," 18th IEEE International Conference on Frontiers of Information Technology (FIT), sponsor: IEEE Computer Society, Islamabad, Pakistan, Dec. 2021.
- "Internet of Hyperconnected Things," ACS/IEEE International Conference on Computer Systems and Applications (AICCSA), sponsor: IEEE Computer Society, Tangier, Morocco, Nov. 2021.
- "Some Thoughts on Securing Critical Infrastructures," ACM International Symposium on Blockchain and Secure Critical Infrastructure (BSCI), sponsor: ACM, Hong Kong, June 2021.
- "Machine Learning for Computer Systems and Computer Systems for Machine Learning," Global Forum on Innovations in Science & Technology (Glob-FIST), Lahore, Pakistan, May 2021.
- "Machine Learning and Computer Systems – An Absolute Necessity," International Conference on Computing and Machine Intelligence (ICMI), sponsor: Istanbul Sabahattin Zaim University, Istanbul, Turkey, Feb. 2021.
- "Some Revised Perspectives on Internet of Things," IEEE International Conference on Internet of Things: Systems, Management and Security (IOTSMS), sponsor: IEEE France Section, Paris, France, Dec. 2020.
- "Big Data, Internet of Things, and AI – Three Sides of the Same Coin?" IEEE/ACM International Conference on Utility and Cloud Computing (UCC), sponsor: IEEE Computer Society, Leicester, UK, Dec. 2020.
- "Systems – An NSF Perspective," IEEE Computer Society Annual Symposium on VLSI (IVLSI), sponsor: IEEE Computer Society, Miami, FL, USA, July 2019.
- "Revised Perspectives on IoT," 3rd International Conference on Internet of Things (ICIoT), sponsor: Services Conference Federation, San Diego, CA, USA, June 2019.
- "Perspectives on Autonomous Systems," 2nd Metro Detroit Workshop on Connected and Autonomous Driving (MetroCAD), sponsors: Wayne State University, Genius Pros, and NAAIEC, Detroit, MI, USA, Mar. 2019.
- "Internet, Things, and Smartness," IEEE Workshop on Smart Internet of Things (SmartIoT), sponsor: IEEE Computer Society, San Jose, CA, USA, Oct. 2017.
- "Cloud and Beyond," 4th IEEE International Conference on Cyber Security and Cloud Computing (CSCloud), sponsor: IEEE Computer Society, New York, NY, USA, June 2017.
- "Big Data Based Recommendation Approaches for Healthcare," 12th IEEE International Conference on High-Capacity Optical Networks and Enabling/Emerging Technologies (HONET), sponsor: IEEE Communications Society, Islamabad, Pakistan, Dec. 2015.
- "The Role of ICT in Universal Design in Learning," 13th IEEE International Conference on Frontiers of Information Technology (FIT), sponsor: IEEE Computer Society, Islamabad, Pakistan, Dec. 2015.
- "Big Data Cloud Computing," 12th IEEE International Conference on Frontiers of Information Technology (FIT), sponsor: IEEE Computer Society, Islamabad, Pakistan, Dec. 2014.
- "Data Centers: Modeling and Simulation," High Performance of Modeling and Simulation (HiPMoS) track of the 27th European Conference on Modeling and Simulation (ECMS), sponsor: European Council for Modeling and Simulation, Aalesund, Norway, May 2013.
- "The Greening of Data Center Networks: Trends, Challenges, and Opportunities," 10th IEEE International

Conference on Frontiers of Information Technology (FIT), sponsor: IEEE Computer Society, Islamabad, Pakistan, Dec. 2012.

Invited Talks (reverse chronology)

- "Recommendation Systems: Building Functional and High-Throughput Systems," University of Alabama – Tuscaloosa, AL, USA, Oct. 2022.
- "The Internet of the Connected World," 11th Southeast Symposium on Contemporary Engineering Topics (SSCET), Little Rock, AR, USA, Sep. 2022.
- "Internet of Everything," Texas A&M University – Texarkana, TX, USA, Mar. 2022.
- "Systems and Internet of Things," Temple University, Philadelphia, PA, USA, Apr. 2020.
- "Internet of Things – An NSF Perspective," Michigan State University, East Lansing, MI, USA, Nov. 2019.
- "The IoT World," Marquette University, Milwaukee, WI, USA, July 2019.
- "Big Data Based Recommendation Approaches for Healthcare," IEEE Computer Society Toronto Chapter, University of Toronto, Canada, May 2018.
- "Big Data in Healthcare," IEEE Computer Society Baltimore Chapter, National Electronics Museum, Linthicum Heights, MD, USA, April 2018.
- "Perspectives on IoT," Case Western Reserve University, Cleveland, OH, USA, May 2017.
- "Living on the Edge," 1st IEEE/ACM Symposium on Edge Computing (SEC), sponsor: IEEE Computer Society and ACM SIGMobile, Washington DC, USA, Oct. 2016.
- "Sustainable Computer Systems," Mississippi State University, Starkville, MS, USA, Mar. 2016.
- "Some Thoughts on Computer Systems Research," National Science Foundation, Washington DC, USA, Mar. 2016.
- "Big Data Recommendation Systems," Missouri University of Science and Technology, Rolla, MO, USA, Feb. 2016.
- "Data Center Networks: Trends, Opportunities, and Challenges," University of Texas, Arlington, TX, USA, Feb. 2016.
- "Cloud, Big Data, and Recommendation Systems: Making Health Care and Emergency Management Possible," United States Air Force Academy, Colorado Springs, CO, USA, Jan. 2016.
- "Understanding Cloud: Data Centers," Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan, Dec. 2015.
- "Big Data Recommendation Systems," University of Nevada, Reno, NV, USA, Dec. 2015.
- "Cybersecurity, Thoughts and Challenges" Old Dominion University, Norfolk, VA, USA, Nov. 2015.
- "Graduate Education: Securing the American Ingenuity," National Science Foundation, Washington DC, USA, Apr. 2015.
- "Using Design Projects to Serve Veterans with Disabilities," Access Engineering – Capacity Building Institute, University of Washington, Seattle, WA, USA, Apr. 2015.
- "Cloud and Big Data," Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan, Dec. 2014.
- "U.S. and Pakistani S&T Cooperative Projects: Programs and Potential," Science, Technology, and Engineering: From Innovation to Implementation Conference, Islamabad, Pakistan, May 2014.
- "Solar Water Heating System using CO2 as Working Fluid," Technology Transfer Symposium, sponsors: Pakistan-US Science and Technology Cooperation Program and the US Department of State, Islamabad, Pakistan, Jan. 2013.
- "What are Data Centers?" National University of Computer and Emerging Sciences, Islamabad, Pakistan, Jan.

2013.

- "Achieving Energy-Efficiency in Data Centers," Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan, Dec. 2012.
- "Data Centers and Clouds," Quaid-i-Azam University, Islamabad, Pakistan, Dec. 2012.
- "Data Centers and Cloud Computing," University of Engineering and Technology, Peshawar, Pakistan, Dec. 2012.
- "Data Centers: Challenges and Opportunities, National University of Sciences and Technology, Islamabad, Pakistan, Dec. 2012.
- "iPhone, iPad, iTravel: Traveling Abroad Safely with Mobile Devices," Information Technology Division and the Office of International Programs, North Dakota State University, Fargo, ND, USA, Oct. 2012.
- "The Greening of Data Center Networks: Trends, Challenges, and Opportunities," Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China, July 2012.
- "Trends in Sustainable Computing and Data-intensive HPC," North Dakota State University, Fargo, ND, USA, Feb. 2012.
- "iPakistan: invest in Pakistan," Office of International Programs, North Dakota State University, Fargo, ND, USA, Nov. 2011.
- "Energy, Power, and Thermal-aware Data Center Computations and Communications," University of Luxembourg, Luxembourg, June 2010.
- "Energy-efficient Computing," North Dakota State University, Fargo, ND, USA, Mar. 2009.
- "Optimizing the Energy Consumption and Performance of Computational Grids," North Dakota State University, Fargo, ND, USA, Apr. 2008.
- "On the Joint Energy and Performance Optimization of Large-scale Systems," Utah State University, Logan, UT, USA, Mar. 2008.
- "Optimizing the Energy Consumption and Performance of Computational Grids," University of Nevada, Reno, NV, USA, Feb. 2008.
- "Autonomous Data Replication in Large-scale Distributed Systems," Colorado State University, Fort Collins, CO, USA, Sep. 2008.
- "Multiobjective Optimization for Large-scale Distributed Systems," Wichita State University, Wichita, KN, USA, May 2007.
- "Resource Allocation in Large-scale Distributed Systems," Department of Computer Science, Indiana University, South Bend, IN, USA, May 2007.

Tutorials Presented (reverse chronology)

- "CloudNetSim++: A GUI Based Framework for Modeling and Simulation of Data Centers in OMNET++," 12th IEEE International Symposium on High Capacity Optical Networks and Enabling Technologies (HONET), sponsor: IEEE Communications Society, Islamabad, Pakistan, Dec. 2015 (a two-hour tutorial).
- "Modeling and Simulation of Data Centers using OMNET++," 13th IEEE International Conference on Frontiers of Information Technology (FIT), sponsor: IEEE Computer Society, Islamabad, Pakistan, Dec. 2015 (a one-hour tutorial).
- "Recommendation Systems for Big Data," The 2014 World Congress in Computer Science, Computer Engineering, and Applied Computing (WORLDCOMP), cosponsors: World Academy of Science and Computer Science Research, Education, and Applications (CSREA), Las Vegas, NV, July 2014.
- "Data Center Networks," The 2013 World Congress in Computer Science, Computer Engineering, and Applied Computing (WORLDCOMP), cosponsors: World Academy of Science and Computer Science Research, Education, and Applications (CSREA), Las Vegas, NV, July 2013 (a half-day tutorial).

APPENDIX F

Appointments and Service Activities

Editorship (reverse chronology on the end date)

- *Current Appointments*
  - IEEE Transactions on Cloud Computing (2020 – Present; Associate Editor).
  - Journal of Parallel and Distributed Computing (2018 – Present; Associate Editor).
- *Past Appointments*
  - ACM Computing Surveys (2018 – 2021; Associate Editor).
  - IEEE IT Pro (2015 – 2018; Associate Editor; 2018 – 2021; Associate Editor-in-Chief).
  - IEEE Access (2014 – 2019; Associate Editor).
  - IEEE Communications Surveys and Tutorials (2013 – 2019; Associate Editor).
  - IET Wireless Sensor Systems (2016 – 2019; Associate Editor).
  - IET Cyber-Physical Systems: Theory and Applications (2016 – 2019).
  - Scalable Computing and Communications, Springer (2012 – 2013; Associate Editor and 2016 – 2017; Associate Editor).
  - IEEE Cloud Computing (2014 – 2016; Associate Editor).
  - IEEE Transactions on Computers (2014 – 2015; Associate Editor).
  - Informatica, Slovene Informatika Society (2009 – 2015; Associate Editor).
  - Interdisciplinary Sciences, Springer (2009 – 2015; Associate Editor).
  - Cluster Computing, Springer (2010 – 2015; Associate Editor).
  - International Journal of Communication Systems, Wiley (2009 – 2015; Associate Editor).
  - Security and Communication Networks, Wiley (2009 – 2015; Associate Editor).
  - Journal of Communication Networks and Distributed Systems, Inderscience (2009 – 2015; Associate Editor).
  - International Journal of Distributed Systems and Technologies, IGI Global (2009 – 2015; Associate Editor).
  - International Journal of Grid and Utility Computing, Inderscience (2011 – 2015; Associate Editor).
  - Journal of Cloud Computing, Springer (2014 – 2015; Associate Editor).
  - Journal of Information Technology Research, IGI Global (2009 – 2015; Associate Editor).
  - Multiagent and Grid Systems, IOS press (2009 – 2015; Associate Editor).
  - International Journal of Green Computing, IGI Global (2009 – 2013; Associate Editor).
  - Information Systems, Elsevier (2009 – 2011; Associate Editor).

Standards Committees (listed as a top-down hierarchy)

- Member of the IEEE Computer Society Blockchain and Distributed Ledger Standards Committee (2021 – Present).

Expert Panelist for Professional Organizations, Conferences, and Agencies (listed as top-down hierarchy)

- Member of the Committee of Visitors (COV) for the National Science Foundation, Computer and Information Science, and Engineering, Division of Computer and Network Systems (2023).
- Chair of the Steering Committee of the IEEE Technical Area in Green Computing (2011 – Present).

- Vice Communication Chair of the IEEE Special Technical Community on Sustainable Computing (2015 – Present).
- Member of the Executive Committee of the IEEE Technical Committee on Scalable Computing (2011 – Present).
- Member of the IEEE Technical Committee on Cyber-Physical Cloud Systems (2010 – Present).
- Member of the IEEE SMC Technical Committee on Cybernetics (2017 – Present).
- Member of the Advisory Committee on the IET Big Data book series (2015 – Present).
- Proposal review panelist for the National Science Foundation (NSF), USA.
- Proposal review panelist for the Department of Defense (DoD), USA.
- Proposal review panelist for the US National Academy of Sciences (NAS), USA.
- Proposal review panelist for the European Research Council (ERC), European Union.
- Proposal review panelist for the Agence Nationale de la Recherche (ANR), France.
- Proposal review panelist for the Natural Sciences and Engineering Research Council (NSERC), Canada.
- Proposal review panelist for the Research Council (TRC), Sultanate of Oman.
- Proposal review panelist for the National Science Centre (NSC), Poland.
- Proposal review panelist for the Netherlands Science Foundations (NWO and STW), Netherlands.
- Proposal review panelist for the National Center of Science and Technology (NCST), Kazakistan.
- Member of the panel on "cloud computing" as part of the International Conference on Frontiers of Information Technology (FIT), 2012.
- Member of the panel on "green computing" as part of ACM/IEEE/IFIP International Conference on High Performance Computing and Simulation (HPCS), 2010.

Conference Organizational Committee Memberships (listed as top-down hierarchy)

- General Chair of IEEE Cloud Summit, 2021, 2022, 2023, 2024.
- General Chair of the International Conference on Emerging Trends and Applications in Artificial Intelligence (ICETAI), 2023.
- General Chair of the International Conference on Internet of Things (ICIOT), 2019.
- General Chair of the Services Conference Federation (SCF), 2020.
- General Co-Chair of Scalable Solutions for GreenIT (SCALSOL) as part of the IEEE International Conference on Scalable Computing and Communications (SCALCOM), 2011.
- General Co-Chair of the Workshop on Scalable Optimization in Intelligent Networking (SCOPIN) as part of the IEEE International Conference on Network-Based Information Systems (NBiS), 2011.
- General Co-Chair of the Workshop on Optimization Issues in Energy Efficient Distributed Systems (OPTIM) as part of the ACM/IEEE/IFIP International Conference on High Performance Computing and Simulation (HPCS), 2010.
- General Co-Chair of the Workshop on GreenIT Evolutionary Computation as part of the ACM Genetic and Evolutionary Computation Conference (GECCO), 2011, 2012.
- Co-Chair of the Track on Metaheuristics and Green Computing as part of the International Conference on Metaheuristics and Naturally Inspired Computing (META), 2010, 2011, 2012.
- Co-Chair of the Track on High-Performance Green Computing as part of the International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering (PARANG), 2011.
- Chair of the Advisory Committee of the IEEE International Conference on Pervasive Intelligence and Computing (PICom), 2018.

- Member of the Advisory Committee of the International Conference on Software Engineering and Computing (ICSEC), 2024.
- Member of the Steering Committee of the IEEE International Conference on Scalable Computing and Communications (ScalCom), 2014, 2015.
- Member of the Steering Committee of the IEEE/ACM International Conference on Green Computing and Communications (GreenCom), 2011, 2012, 2013.
- Member of the Steering Committee of the International Conference on Eco-Friendly Computing and Communication Systems (ICECCS), 2014, 2015.
- Member of the Steering Committee of the IEEE International Conference on Frontiers of Information Technology (FIT), 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024.
- Member of the Organizing Committee of the National Science Foundation, Computer Systems Principal Investigators Meeting, 2023.
- Member of the Organizing Committee of the International Conference on Computational and Systems Biology (ICCSB), 2010.
- Member of the Advisory Board of the European Conference on Modeling and Simulation (ECMS), 2011, 2012.
- Member of the International Advisory Committee of the International Conference on Advanced Computing and Communication Systems (ICACCS), 2013.
- Member of the International Advisory Committee of the International IT Summit Confluence, 2012.
- Technical Program Committee Chair of the IEEE Cloud Summit (CloudSummit), 2020.
- Technical Program Committee Co-Chair of the IEEE International Conference on Data Science and Data Intensive Systems (DSDIS), 2015.
- Technical Program Committee Co-Chair of the IEEE International Conference on Cloud Networking (CloudNet), 2014.
- Technical Program Committee Co-Chair of the ACM/IEEE International Conference on Frontiers of Information Technology (FIT), 2011, 2012, 2013, 2014, 2015.
- Technical Program Committee Vice-Chair of the IEEE/ACM International Conference on Green Computing and Communications (GreenCom), 2010.
- Technical Program Committee Co-Chair of the IEEE International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC), 2011.
- Technical Program Committee Co-Chair of the IEEE International Conference on Smart Grid and Home (SGH), 2011.
- Technical Program Committee Vice-Chair of the IEEE International Conference on Big Data and Cloud Computing (BDCloud), 2014.
- Technical Program Committee Vice-Chair of the IEEE International Conference on Contemporary Computing (IC3), 2016.
- Technical Program Committee Vice-Chair of the IEEE International Conference on Cloud Computing Technology and Science (CloudCom), 2012.
- Technical Program Committee Vice-Chair of the IEEE International Conference on Data Science and Systems (DASS), 2016.
- Technical Program Committee Vice-Chair of the IEEE International Conference on Sustainable Computing and Communications (SustainComm), 2015.
- Track Chair of the IEEE International Conference on Network-Based Information Systems (NBiS), 2011.
- Track Co-Chair of the International Conference on Intelligent Networking and Collaboration Systems (INCoS), 2017.
- Workshop Chair of the 19th IEEE Conference on High-Performance Computing and Communications (HPCC), 2017.

- Workshop Co-Chair of the IEEE International Conference on Scalable Computing and Communications (SCALCOM), 2011.
- Proceedings Chair of the IEEE/ACM International Conference on Utility and Cloud Computing (UCC), 2016.
- Industrial Co-Chair of the ACM/IEEE International Conference on Frontiers of Information Technology (FIT), 2010.
- Co-Chair of Local Arrangements of the IEEE International Symposium on High-Performance Computer Architecture (HPCA), 2019.

Conference Program Committee Memberships (listed alphabetically)

- ACM Cloud and Autonomic Computing Conference (CAC), 2013.
- ACM/IEEE Intl. Conference on Big Data Science, Engineering and Applications (BDSEA), 2016.
- ACM Workshop on Energy Efficient High-Performance Parallel and Distributed Computing (EEHPDC), 2013.
- ACS/IEEE Intl. Conference on Computer Systems and Applications (AICCSA), 2010.
- Asian Conference on Intelligent Information and Database Systems (ACIIDS), 2014.
- IEEE/ACM Intl. Conference on Cloud and Utility Computing (UCC), 2015, 2016.
- IEEE/ACM Intl. Conference on High-Performance Computing (HiPC), 2011.
- IEEE/ACM Intl. Symposium on Cluster, Cloud, and Grid Computing (CCGrid), 2012, 2020.
- IEEE Cloud Summit, 2020.
- IEEE Consumer Communication and Networking Conference (CCNC), 2009–2014.
- IEEE Global Communications Conference (GLOBECOM), 2009–2016.
- IEEE Intl. Conference on Advanced Cloud and Big Data (ICCD), 2013, 2014.
- IEEE Intl. Conference on Advances in Cloud Computing (ACC), 2012.
- IEEE Intl. Conference on Advances in Computing, Communications, and Informatics (ICACCI), 2014.
- IEEE Intl. Symposium on Big Data Security on Cloud (BigDataSecurity), 2015, 2016.
- IEEE Intl. Conference on Cloud and Service Computing (CSC), 2011–2013.
- IEEE Intl. Conference on Communication Systems and Network Technologies (CSNT), 2014.
- IEEE Intl. Conference on Communications (ICC), 2011–2017, 2021.
- IEEE Intl. Conference on Communications and Network Security (CNS), 2015.
- IEEE Intl. Conference on Computational Science and Engineering (CSE), 2019.
- IEEE Intl. Conference on Computer Communications (INFOCOM), 2012, 2018–2020.
- IEEE Intl. Conference on Computer Communications and Networks (ICCCN), 2014.
- IEEE Intl. Conference on Computer Science and its Applications (CIIA), 2013.
- IEEE Intl. Conference on Computers, Software, and Applications (COMPSAC), 2016, 2018.
- IEEE Intl. Conference on Contemporary Computing (IC3), 2012–2015.
- IEEE Intl. Conference on Cyber-enabled Distributed Computing and Knowledge Discovery (CyberC), 2015.
- IEEE Intl. Conference on Edge Computing and Scalable Cloud (EdgeCom), 2019.
- IEEE Intl. Conference on Future Information Technology (FutureTech), 2011.
- IEEE Intl. Conference on Intelligent Data and Security (IDS), 2016.
- IEEE Intl. Conference on Network Softwarization (NetSoft), 2015.
- IEEE Intl. Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC), 2012.
- IEEE Intl. Conference on Parallel and Distributed Systems (ICPADS), 2016.

- IEEE Intl. Conference on Parallel Processing (ICPP), 2015.
- IEEE Intl. Conference on Pervasive Computing and Communications (PerCom), 2018.
- IEEE Intl. Conference on Smart Cloud (SmartCloud), 2018.
- IEEE Intl. Conference on Systems, Man, and Cybernetics (SMC), 2013–2015, 2020.
- IEEE Intl. Conference on Wireless Communications, Networking and Information Security (WCNIS), 2010.
- IEEE Intl. Green and Sustainable Computing Conference (IGSC), 2016.
- IEEE Intl. Parallel and Distributed Processing Symposium (IPDPS), 2011–2016, 2020, 2021.
- IEEE Intl. Performance Computing and Communications Conference (IPCCC), 2012, 2013, 2014.
- IEEE Intl. Symposium on Computer Architecture and High-Performance Computing (SBAC-PAD), 2012.
- IEEE Intl. Symposium on High Performance and Smart Computing (HPSC), 2015, 2016.
- IEEE Intl. Symposium on Multimedia (ISM), 2007.
- IEEE Intl. Symposium on Network Computing and Application (NCA), 2018, 2020, 2022.
- IEEE Intl. Symposium on Parallel and Distributed Computing (ISPDC), 2014–2016.
- IEEE Intl. Symposium on Programming and Systems (ISPS), 2011, 2013.
- IEEE Intl. Symposium on Signal Processing and Information Technology (ISSPIT), 2014.
- IEEE Intl. Workshop on Data Center Performance (DCPerf), 2012–2017.
- IEEE Intl. Workshop on Digital Computing Infrastructure and Applications (DCIA), 2010–2012.
- IEEE Intl. Workshop on Internet of Things and Internet of Services: Cyber-Physical Systems (IoT-IoS), 2010.
- IEEE Intl. Workshop on IT Converged Services and Applications (ITCSA), 2011.
- IEEE Intl. Workshop on Security in e-Science and e-Research (ISSR), 2011–2014.
- IEEE Intl. Workshop on Wireless and Internet Services (WISe), 2010, 2012.
- IEEE Intl. Workshop Towards Smart Communications and Network technologies applied on Autonomous Systems (SaCoNAS), 2010.
- IEEE Wireless Communications and Networking Conference (WCNC), 2013.
- IEEE Vehicle Power and Propulsion Conference (VPPC), 2015.
- IFIP Intl. Conference on Network and Parallel Computing (NPC), 2013.
- IFIP Intl. Conference on New Technologies, Mobility and Security (NTMS), 2011.
- Intl. Conference on Advances in Information Technology (IAIT), 2015.
- Intl. Conference on Applied Informatics (ICAI), 2018.
- Intl. Conference on Cloud Computing Technologies and Applications (CLOUDTECH), 2015, 2020.
- Intl. Conference on Cloud and Green Computing (CGC), 2013.
- Intl. Conference on Communication Technology (ICCT), 2006.
- Intl. Conference on Complex Distributed Systems (CODS), 2010, 2011.
- Intl. Conference on Computational Intelligence (ICCI), 2005.
- Intl. Conference on Computing, Networking, and Communications (ICNC), 2012, 2013.
- Intl. Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN), 2013, 2014.
- Intl. Conference on ICTs for Disaster Management (ICT-DM), 2014.
- Intl. Conference on ICT as Key Technology for the Fight against Global Warming (ICT-GLOW), 2011, 2012.
- Intl. Conference on Innovative Mobile and Internet Services in Ubiquitous Computing (IMIS), 2013.
- Intl. Conference on Internet Engineering (ICIE), 2006.
- Intl. Conference on Model and Data Engineering (MEDI), 2014.

- Intl. Conference on Multimedia and Ubiquitous Engineering (MUE), 2008, 2009.
- Intl. Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA), 2006–2010.
- Intl. Conference on Parallel and Distributed Systems (PDS), 2005.
- Intl. Computer Science and Engineering conference (ICSEC), 2024.
- Intl. Symposium on Security and Multimodality in Pervasive Environments (SMPE), 2010.
- Intl. Symposium on u- and e-Service, Science, and Technology (UNESST), 2008.
- Intl. Workshop on Trust, Security, and Privacy for Big Data (TrustData), 2013.
- Workshop on Collaboration in Virtual Environments (CoVE), 2012.

Refereeing (listed alphabetically)

- ACM Journal on Emerging Technologies in Computing Systems.
- ACM Transactions on Storage.
- ACM Transactions on Modeling and Computer Simulation.
- Advances in Information Sciences and Service Sciences.
- AIP/IEEE Computing in Science and Engineering.
- Computer Networks.
- Computers and Mathematics.
- Concurrency and Computation: Practice and Experience.
- CRC Press Book Series.
- Elsevier Book Series.
- Future Generation Computer Systems.
- IEEE Computer.
- IEEE Communications Letters.
- IEEE Distributed Systems Online.
- IEEE Systems Journal.
- IEEE Sensors Journal.
- IEEE Transactions on Circuits and Systems for Video Technology.
- IEEE Transactions on Cloud Computing.
- IEEE Transactions on Communications.
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems.
- IEEE Transactions on Dependable and Secure Computing.
- IEEE Transactions on Emerging Topics in Computing.
- IEEE/ACM Transactions on Networking.
- IEEE Transactions on Parallel and Distributed Systems.
- IEEE Transactions on Pattern Analysis and Machine Intelligence.
- IET Book Series.
- International Journal of Computers and their Applications.
- International Journal of Grid and High-Performance Computing
- International Journal of Parallel Programming.
- Journal of Heuristics.

- Journal of Internet Services and Applications.
- Journal of Network and Computer Applications.
- Journal of Signal Processing Systems.
- Journal of Supercomputing.
- Nature.
- Pervasive and Mobile Computing.
- Optical Engineering.
- Recent Patents in Computer Science.
- Sensors.
- Software: Practice and Experience.
- Sustainable Computing.
- Telematics and Informatics.
- Wiley Book Series.
- Wireless Communications and Mobile Computing.

University/College/Department Service (reverse chronology on the end date)

- *Mississippi State University*
  - ASE Department Head Search Committee, Chair, 2021 – 2022.
  - Quantum Computing Task Force (QuTF), Co-chair, 2021.
  - BCOE Research Engagement Task Force, Member, 2021.
- *North Dakota State University*
  - North Dakota University System Task Force on Cybersecurity, Member, 2015 – 2016.
  - NDSU Advisor Board for Student Affairs, Member, 2015 – 2016.
  - NDSU Organization of Pakistani Students, Faculty Advisor, 2014 – 2016.
    - Recipient of the 2014/2015 Student Organization of the Year Award
    - Recipient of the 2014/2015 Best Cultural/Diversity Program of the Year Award
    - The Organization President, S. O. Ahmed, was the 2014/2015 Student Leader of the Year awardee
  - NDSU Graduate Affiliated Status Committee, Member, 2015 – 2016.
  - NDSU Graduate Council, Member, 2014 – 2016.
  - NDSU Graduate School Appeal Committee, Member, 2015.
  - NDSU Director of the Office of Institutional Research Search Committee, Member, 2015.
  - Program Review Committee, Member, 2014 – 2015.
  - CoE Grant Coordinator Search Committee, Member, 2014.
  - NDSU Provost Search Committee, Member, 2013 – 2014.
  - ECE Computer Engineering Curriculum Committee, Chair, 2013 – 2014.
  - ECE Research Web Portal, Maintainer, 2009 – 2013.
  - ECE Chair Search Committee, Member, 2010 – 2013.
  - ECE Faculty Search Committee, Member, 2011 – 2012.

Community Service

- International Advisory Board, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Member, 2022 – Present.
- Rotary, Starkville MS, Member, 2021 – Present.
- AccessEngineering Leadership Team, Disabilities, Opportunities, Internetworking, and Technology (DO-IT), University of Washington, Member, 2015 – 2016.
- Community Advisory Board of Prairie Public, (Public Broadcasting Service (PBS)), Member, 2013 – 2016.