

# Richard Ross Gruetzemacher III

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## Work & Research Experience

- Assistant Professor of Business Analytics at Wichita State University August 2021 to present
- Visiting Assistant Professor of Business Information & Technology at the University of Memphis August 2020 – August 2021
- Visiting Researcher at the University of Cambridge July 2019 – September 2019
- Data Scientist at the University of Tennessee, Chattanooga July 2015 to July 2016
- Research Associate at the National Center for Computational Engineering January 2015 to July 2015

## Education

- PhD in Business (Management Information Systems), August 2020. Auburn University
  - Dissertation: *Forecasting Transformative AI*
- Master of Science in Computational Engineering, December 2014. The University of Tennessee, Chattanooga
  - Thesis: *Numerical Simulation of Human Breathing and Particle Transport through a CT-based Pulmonary Airway Geometry*
- Bachelor of Science in Mechanical Engineering, August 2011. The University of Tennessee, Chattanooga

## Honors and Awards

- 2020 Americas Conference on Information Systems (AMCIS) Advanced Doctoral Consortium selection. August 12<sup>th</sup>-13<sup>th</sup>, 2020
- Best Poster Award for High Impact. Winter Conference for Business Intelligence. Snowbird, Utah. March 3<sup>rd</sup>-5<sup>th</sup>, 2016

## Journal Papers

- R. Gruetzemacher, D. Paradise. *Deep Transfer Learning & Beyond: Future Directions for Transformer Language Models in Information Systems Research*. ACM Computing Surveys (impact factor of 10.2). Forthcoming
- R. Gruetzemacher, J. Whittlestone. *The Transformative Potential of AI*. Futures (impact factor of 3.1). January 2022
- R. Gruetzemacher, F. Dorner, N. Bernaola, C. Giattino, D. Manheim. *A Research Agenda for Forecasting AI Progress*. Accepted for publication in Technological Forecasting and Social Change (impact factor of 8.6). September 2021
- R. Gruetzemacher, D. Paradise, K.B. Lee. *Forecasting Extreme Labor Displacement: A Survey of AI Practitioners*. Technological Forecasting and Social Change (impact factor of 8.6). December 2020
- R. Gruetzemacher. *A Holistic Framework for Forecasting Transformative AI*. Big Data and Cognitive Computing. June 26<sup>th</sup>, 2019
- R. Gruetzemacher, A. Gupta, D. Paradise. *3D Deep Learning for Detecting Pulmonary Nodules in CT Scans*. Journal of the American Medical Informatics Association (impact factor of 4.5). October 1<sup>st</sup>, 2018

## Manuscripts Under Review

- R. Gruetzemacher. *AI is transforming how programmers work – what is next?* Revised for Harvard Business Review.

## Working Manuscripts

- R. Gruetzemacher, S. Abdinnour. *Twitter Complaint Classification with Deep Transfer Learning and Pretrained Language Models*. Target: Decision Support Systems.
- R. Gruetzemacher. *A Primer on Risks from Transformative AI*. Target: Nature Machine Intelligence.
- R. Gruetzemacher, Z. Munyikwa, H. Liang. *A Language User Interface AI Research Assistant*. Target: Management Science.
- R. Gruetzemacher. *Foundation Models: A Survey/Tutorial on an Emerging Paradigm*. Target: INFORMS Journal of Computing.
- D. Manheim, R. Gruetzemacher, A. Englander, J. Marble. *AI-risk Elicitations: Toward Understanding Differences in Definitions*. Target: AI and Society.
- L. Mani, S. Avin, R. Gruetzemacher, J. Fox. *Intelligence Rising: Evidence to support the use of role-playing games for forecasting possible AI futures*. Target: Simulation and Gaming.

## Works in Progress

- R. Gruetzemacher, S. Abdinnour. *Improving Social Media Customer Service*. Target: Journal of MIS.
- R. Gruetzemacher. *Scenario Mapping for Anticipating Transformative AI*. Target: Futures and Forecasting Science.
- R. Gruetzemacher, D. Medvedev, D. Paradise. *Mapping Paths of Future Technology Development*. Target: Futures and Forecasting Science.
- R. Gruetzemacher, D. Manheim, P. Tetlock. *Full-inference-cycle Forecasting via the Delphi and a Forecasting Tournament*. Target: Management Science.
- R. Gruetzemacher, S. Avin. *Do US Politics Exacerbate Existential Risk?* Target: PNAS.
- R. Gruetzemacher, D. Manheim, J. Marble. *Disentangling and Defining Elements of Preparadigmatic Research Domains*. Target: Organization Science.
- R. Gruetzemacher, L. Mani, S. Avin, J. Fox. *Using Wargames for Strategic Planning in Technology Management*. Target: Organization Science.

## Refereed Conference Papers

- S. Avin, R. Gruetzemacher, J. Fox. *Exploring AI Futures through Role Play*. February 7<sup>th</sup>-8<sup>th</sup>, 2020  
Conference paper presented at the 3<sup>rd</sup> AAAI/ACM Conference on AI for Ethics and Society (oral presentation).
- R. Gruetzemacher, D. Paradise. *Mapping the Paths to AGI*. August 6<sup>th</sup>-9<sup>th</sup> 2019  
Conference paper presented at the 12<sup>th</sup> Conference on Artificial General Intelligence. Shenzhen, China.
- R. Gruetzemacher. *Rethinking AI Strategy and Policy as Entangled Super Wicked Problems*. February 1<sup>st</sup>-3<sup>rd</sup>, 2018  
Conference paper presented at the 1<sup>st</sup> AAAI/ACM Conference on AI for Ethics, and Society. New Orleans, LA (oral presentation).
- R. Gruetzemacher, A. Gupta. *Using Deep Learning for Pulmonary Nodules Detection and Diagnosis*. August 11<sup>th</sup>-13<sup>th</sup>, 2016  
Conference paper presented at the 22<sup>nd</sup> Americas Conference on Information Systems. San Diego, CA. (oral presentation).
- R. Gruetzemacher, A. Gupta, G. Wilkerson. *Sports Injury Prevention Screen (SIPS): Design and Architecture of an Internet of Things (IoT) Based Analytics*. May 18<sup>th</sup>-20<sup>th</sup>, 2016

*Health App*. Conference paper at the 2016 International Conference on Information Resources Management. Cape Town, South Africa (oral presentation and invited for paper development workshop).

- R. Gruetzemacher, A. Arabshahi, R. Pankajakshan. *Effects of Inhalation Transience on Particle Transport Through a CT-Based Human Airway Geometry*. Conference paper presented at the 2015 International Mechanical Engineering Congress & Exposition. Houston, TX (oral presentation). November 13<sup>th</sup>-19<sup>th</sup>, 2015

## Invited Presentations

- R. Gruetzemacher, S. Abdinnour. Deep Transfer Learning for Classification of Social Media Customer Service Opportunities. 2021 Conference on AI, Machine Learning and Business Analytics. December 2<sup>nd</sup>-3<sup>rd</sup>, 2021
- R. Gruetzemacher. Deep Transfer Learning & Beyond: Applications of Transformer Language Models in Business Analytics. 2021 INFORMS Virtual Business Analytics Conference. April 12<sup>th</sup>-14<sup>th</sup>, 2021
- B. Devlin, N. Sears, M. Maas, E. Bartels, R. Gruetzemacher. Gaming as a Research Method for Foreign Policy and International Politics. A roundtable discussion, 2021 International Studies Association Conference. April 7<sup>th</sup>-10<sup>th</sup>, 2021
- R. Gruetzemacher, D. Paradice. *Deep Transfer Learning & Beyond: Future Directions for Transformer Language Models in Information Systems Research*. 2020 Conference on AI, Machine Learning and Business Analytics. December 10<sup>th</sup>, 2020
- R. Gruetzemacher. *Applications of Deep Transfer Learning & Pre-trained Language Models in Business*. AIAA Pre-ICIS workshop. Munich, Germany. December 15<sup>th</sup>, 2019
- R. Gruetzemacher. *Forecasting & Foresight for Transformative AI*. Invited seminar at the European Union Commission Joint Research Center. Seville, Spain. November 22<sup>nd</sup>, 2019
- R. Gruetzemacher. *Defining and Unpacking Transformative AI*. The 2019 Effective Altruism Global Conference, London. London, UK. October 20<sup>th</sup>, 2019
- R. Gruetzemacher. *Forecasting Transformative AI*. Invited presentation at Hughes Hall College Cambridge University. Cambridge, UK. September 24<sup>th</sup>, 2019
- R. Gruetzemacher. *A Holistic Framework for Forecasting Transformative AI*. Invited seminar at the Center for the Governance of AI at Oxford University. Oxford, UK. April 19<sup>th</sup>, 2019
- R. Gruetzemacher. *Tracking and Forecasting AI Progress*. Invited presentation at the Georgia Tech Enterprise Innovation Institute. Atlanta, Georgia. November 16<sup>th</sup>, 2017
- R. Gruetzemacher, A. Gupta. *Using Deep Learning for Detection of Pulmonary Nodules*. Winter Conference for Business Analytics. Snowbird, Utah. March 3<sup>rd</sup>-5<sup>th</sup>, 2016
- R. Gruetzemacher, A. Gupta, G. Wilkerson, J. Haynes. *Sports Injury Prevention & Screening (SIPS): A Demo of a Real Time Analytics System*. Pre-ICIS Business Analytics Congress 2015. Fort Worth, Texas (prototype demonstration runner up). December 13<sup>th</sup>, 2015

- R. Gruetzemacher. *Deep Learning for Detecting Lung Cancer*. The Center for Biomedical Informatics at the University of Tennessee Health Science Center. Memphis, Tennessee. October 14<sup>th</sup>, 2015
- R. Gruetzemacher, *et al.* *Numerical Simulation of Airflow in a CT-based Human Airway Model with Physiologically Appropriate Boundary Conditions*. 2014 Biomedical Engineering Society Conference. San Antonio, Texas. October 22<sup>nd</sup>-25<sup>th</sup>, 2014

## Professional Development

- Introduction to Bayesian Inference with Stan, New York, New York. November 14<sup>th</sup>-16<sup>th</sup>, 2018
- Superforecasting Workshop, Good Judgement Project, Washington, DC. September 28<sup>th</sup>, 2018

## Courses Taught

- Applied Machine Learning and Deep Learning Spring 2022
  - Introduces advanced machine learning and deep learning techniques
  - Utilizes Python notebooks with a focus on concepts and repurposing existing code from online to new datasets
- Perspectives on Business Analytics Fall 2021 – present
  - Introduction to business analytics; descriptive, predictive, & prescriptive
- Data Mining for Business Analytics Fall 2021
  - Introduction to data mining, text mining, big data analytics and machine learning
- Business Analytics for Managers Spring 2021
  - Created entirely new, required MBA course on advanced analytics
  - Covers fundamentals of business intelligence, big data, data science, machine learning and artificial intelligence
  - Utilizes cases studies in combination with hands-on experience
- Critical Thinking for Business Analytics Fall 2020
  - Introduction to advanced analytics techniques
  - Experience oriented with critical thinking focus
- Website Development Fall 2020
  - Introduction to website development and design
  - Students create a complete website over the course of the semester
- Enterprise Management for the Big Data Environment (formerly Big Data I) Fall 2016 – Fall 2018
  - Developed new curriculum for undergraduate sections
  - Taught fundamentals of business intelligence, databases, big data, data science and programming
- Technical Aspects of Big Data Management (formerly Big Data II) Spring 2017 – Spring 2019
  - Developed new curriculum for undergraduate sections
  - Taught fundamentals of machine learning and visual analytics for data science including use the of Amazon Web Services, SAS Enterprise Miner, Tableau, Hadoop/MapReduce and Spark

- Developed a Twitter analytics capstone project which required students to clean and analyze real Twitter data using Amazon Web Services, Hadoop, Jupyter notebooks and machine learning
- Led two student teams to national conferences

## Technical Skills

- Programming Experience
  - 11 years with Python
  - 6 years with Java
  - 5 years with Hadoop
  - 4 years with C/C++
  - 3 years with SQL
  - 2 years with JavaScript
  - 2 years of parallel programming (MPI & multithreading)
  - 1 year with Spark (Python interface)
- Linux and Unix-based Operating System Experience
  - 11 years as user (Ubuntu, 10 years; Mac OS 9 years; SUSE, 4 years; CentOS, 3 years).
  - 4 years as administrator (Ubuntu)
  - 9 years bash scripting
- Cloud Service Experience
  - 6 years with Amazon Web Services
  - 2 years with Google Cloud (including 1 year with TPUs)
- Hadoop/Deep Learning Compute Cluster Design
  - Designed Hadoop/Spark/GPU cluster for Systems and Technology Department Harbert College of Business (2017)
  - Designed deep learning cluster for medical imaging research (2017)