Sarah A. Kusumastuti, Ph.D

Cognition, Data, and Education (CoDE) Section
Department of Learning, Data-Analytics, Technology (LDT)
Faculty of Faculty of Behavioural, Management and Social Sciences (BMS)
University of Twente

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EDUCATION

University of Southern California, Los Angeles, CA

PhD in Quantitative Psychology *August 2021*
Advisor: Dr. Richard S John
  Dissertation: *"The Cost of Not Identifying Objectives in Multiattribute Decision Modeling"*
Master of Arts (MA) in Quantitative Psychology *August 2016*
Advisor: Dr. Richard S John
  Thesis: *"Trade-offs among attributes of Authentication"*

Purdue University, West Lafayette, IN

Bachelor of Science (BSc) in Mathematical Statistics *May 2014*
Minors in Psychology and Philosophy

RESEARCH INTERESTS

Judgment and decision making, human factors, human-in-the-loop simulations, experiment design, decision analysis, multiattribute value/utility analysis, computational social science, transportation research, behavioural game theory, behavioural cybersecurity, risk perception

EMPLOYMENT

University of Twente - Enschede, The Netherlands
Assistant Professor - Human-AI Interaction and Data Science 2025 - present
- Cognition, Data analytics, and Education (CoDE) Section, Department of Learning, Data Analytics and Technology (LDT), Faculty of Behavioural Management and Social Sciences (BMS)

University of Twente - Enschede, The Netherlands
Postdoctoral Researcher 2023 - 2025
- Cognition, Data analytics, and Education (CoDE) Section, Department of Learning, Data Analytics and Technology (LDT), Faculty of Behavioural Management and Social Sciences (BMS) in collaboration with **ProRail B.V.** for **Europe's Rail Joint Undertaking (ERJU)**

University of Groningen - Groningen, The Netherlands
Postdoctoral Researcher 2022 - 2023

- Department of Innovation Management & Strategy, Faculty of Economics and Business

DEVCOM Army Research Lab (ARL) West - Los Angeles, California, USA
Journeyman Fellow 2020-2021

USC Institute of Creative Technologies (USC-ICT) - Marina del Rey, California, USA
Summer Research Intern 2020
- In collaboration with **DEVCOM Army Research Lab (ARL) West** (Los Angeles, California, USA)

Center for Risk Analysis of Terrorism Events (CREATE) - Los Angeles, California, USA
Research Assistant 2014 - 2021

Traveloka - Jakarta, Indonesia
Design Research Intern 2018

USC Information Sciences Institute (USC-ISI) - Marina del Rey, California, USA
Research Assistant 2015-2016
- In collaboration with **Sandia Research Corporation** (Mesa, Arizona, USA)

PEER REVIEWED PUBLICATIONS

1. Kusumastuti, S. A., Kolkman, T. H., Lo, J. C., & Borsci, S. (2025). Charting the landscape of rail human factors and automation: A systematic scoping review. *Transportation Research Interdisciplinary Perspectives*, *30*, 101350. https://doi.org/10.1016/j.trip.2025.101350

2. Kusumastuti, S. A., & John, R. S. (2024). A simulation approach to investigate factors influencing the cost of omitted objectives in multiattribute models. *Journal of Multi‑Criteria Decision Analysis*, *31*(1-2), e1826. https://doi.org/10.1002/mcda.1826

3. Kusumastuti, S.A., Pollard, K.A., Oiknine, A.H., Dalangin, B., Raber, T.R., & Files, B.T. (2022). Practice improves performance of a 2D uncertainty integration task within and across visualizations. *IEEE Transactions on Visualization and Computer Graphics.* https://doi.org/10.1109/TVCG.2022.3173889

4. Kusumastuti, S.A., Blythe, J., Rosoff, H. & John, R.S. (2020). Behavioral determinants of target shifting and deterrence in an analog cyber-attack game. *Risk Analysis.* https://doi.org/10.1111/risa.13402

5. Kusumastuti, S., Rosoff, H., & John, R.S. (2019). Characterizing conflicting user values for cyber authentication using a virtual public values forum. *Decision Analysis.* https://doi.org/10.1287/deca.2018.0383

BOOK CHAPTERS

1. Kusumastuti, S.A., John, R.S. (2024). Consequences of Missing Objectives in Applications of Multiattribute Utility Analysis. In: Federspiel, F.M., Montibeller, G., Seifert, M. (eds) *Behavioral*

Decision Analysis. International Series in Operations Research & Management Science, vol 350. Springer, Cham. https://doi.org/10.1007/978-3-031-44424-1_9

AWARDS AND HONORS

- Associate Fellow - Department of Innovation & Organization (I&O), Faculty of Economics and Business Research Institute (FEBRI), University of Groningen (2022)
- Journeyman Fellowship - CCDC Army Research Laboratory (ARL) (Fall 2020 - Summer 2021)
- Summer Research Grant - Department of Psychology, University of Southern California (Summer 2016 & Summer 2017)
- Semester Honors - College of Science, Purdue University (Fall 2011 - Spring 2014)
- First Place - Chevron Pacific Indonesia Scholastic Awards (November 2010)
  - $42,000/year scholarship for pursuing bachelor's degree, covering college tuition and living expenses for 4.5 years

CONFERENCE CONTRIBUTIONS

Papers Presented

1. Kusumastuti, S., Cui, T., Tambe, A., & John, R.S. (2015, March). *A behavioral game modeling cyber attackers, defenders, and users*. AAAI Spring Symposium 2015 on Applied Computational Game Theory.

Oral Presentations

1. Kusumastuti, S. A., Kolkman, T. H., Lo, J. C., & Borsci, S. (2025, February 18-19). *Development of human factors toolkit to inform behavioural research in the railway domain* [Conference session]. 6th German Conference on Rail Human Factors, Berlin, Germany. https://rhf2025.bbi-berlin.com/program.html

2. Kusumastuti, S., Lo, J. & Borsci, S. (2023, November 23). *The future of rail operators in the advent of Automated Train Operations (ATO)* [Conference session]. Human Factors NL Jaarcongres 2023, Enschede, Netherlands.

3. Kusumastuti, S. (2022, June 22-24). *The Cost of Missing Objectives in Multiattribute Decision Modeling* [Conference session]. 2022 Advances in Decision Analysis Conference, Rosslyn, Virginia, USA.

4. Kusumastuti, S. (2019, December 8-12). *Measuring the consequences of incomplete objective sets using a Monte Carlo approach in selected applications of multiattribute models and simulated datasets* [Conference session]. Society for Risk Analysis Annual Meeting 2019, Arlington, Virginia, USA.

5. Kusumastuti, S. (2019, October 20-23). *A Simulation Approach to Compare Decision Quality of Multiattribute Models With Incomplete Attribute Sets* [Conference session]. INFORMS Annual Meeting 2019, Seattle, Washington, USA.

6. Kusumastuti, S., & John, R.S. (2018, December 2-6). *An Empirical Behavioral Study of*

Deterrence: An Analog Cyber Attack Simulation Game [Conference session]. Society for Risk Analysis Annual Meeting 2018, New Orleans, Louisiana, USA.

7. John, R. S., Kusumastuti, S., Rosoff, H., & Blythe, J. (2018, November 4-7). *Concentrated vs. Distributed Defense as a Deterrent to Cyber Attackers: A Behavioral Analog Simulation Game* [Conference session]. INFORMS Annual Meeting 2018, Phoenix, Arizona, USA.

8. Kusumastuti, S., Rosoff, H., & John, R.S. (2016, December 11-15). *An Interactive Real-time Behavioral Game For Cyber Security* [Conference session]. Society Risk Analysis Annual Meeting 2016, San Diego, California, USA.

9. Rosoff, H., Blythe, J., Kusumastuti, S., & John, R.S. (2016, December 11-15). *Behavioral Experimentation Of Cyber Attacker Deterrence With DETER Testbed* [Conference session]. Society for Risk Analysis Annual Meeting 2016, San Diego, California, USA.

10. Kusumastuti, S., Rosoff, H., & John, R.S. (2015, December 6-10).*Tradeoff Value Assessment for Features of Password as a Security Measure and Method of Authentication* [Conference session]. Society for Risk Analysis Annual Meeting 2015, Arlington, Virginia, USA.

Poster Presentations

1. Kusumastuti, S. A., Kolkman, T. H., Lo, J. C., & Borsci, S. (2025, September 18-19). *Introducing a human factors toolkit to inform research utilising Human-in-the-Loop (HITL) simulation in the railway domain.* [Poster session]. International Human Factors Rail Conference 2025, London, United Kingdom.

2. Kusumastuti, S., Blythe, J., Rosoff, H., & John, R.S. (2019, August 2-5). *Deterrence as target shifting in layered cyber defense: A behavioral analog game* [Poster session]. The Second Conference on Risk Analysis, Decision Analysis and Security. Buffalo/Niagara Falls, New York, USA

3. Kusumastuti, S., Rosoff, H., & John, R.S. (2015, November 20-23). *The Effects of Risk-Related Perception on Password Preferences and Behavior* [Poster session]. Society of Judgment and Decision Making, Chicago, Illinois, USA.

4. Kusumastuti, S., Guney, S., & John, R.S. (2014, December). *A behavioral game modeling cyber attackers, defenders, and users* [Poster session]. The 4th Annual Review of ARO Game Theory MURI, University of Southern California, Los Angeles, California, USA.

DEPARTMENTAL TALKS

1. Kusumastuti, S. (2015, March). *Designing factorial experiments.* Lecture given at the Graduate Consultation and Computer Center, University of Southern California, Los Angeles, California, USA.

STUDENT SUPERVISION

University of Twente

MSc. students
- Leonie Döhrmann (2025) (co-supervision w/Simone Borsci)
- Nikola Markiewicz (2025) (co-supervision w/Simone Borsci)

BSc. students
- Sytse Vos (2025) (co-supervision w/Simone Borsci)

TEACHING EXPERIENCE

University of Twente

Tutorial Assistant
- Data Analysis
- Research Methodology and Descriptive Statistics
- Technology, Organisation, and People

Guest Lecture
- Smart Mobility - Human-AI teaming in mobility

University of Southern California (Graduate Teaching Assistant)
- PSYC339: Origins of the Mind
- PSYC316: Non Experimental Research Methods
- PSYC274: Statistics

Purdue University (Undergraduate Teaching Assistant)
- MA137: Mathematics for Elementary Teachers I
- MA138: Mathematics for Elementary Teachers II
- STAT417: Statistical Theory

SERVICE

Reviewer for:
- *Risk Analysis*
- *Decision Analysis*
- *IEEE Access*
- *Terrorism and Political Violence*

SKILLS

Programming: R, Python, SAS, MATLAB, Java, Javascript, parallel and high performance computing (HPC)

Languages: English (fluent), Indonesian (native), Dutch (A1~2), German (A1), Japanese (N4)

Multimedia: Adobe PremierePro, Adobe Photoshop, GIMP, Blender 3D