Lilit Avetisyan

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SUMMARY STATEMENT

Research Scientist specialized in understanding, predicting, and influencing human behavior, with a background in information science and human factors. My expertise lies in uncovering the complex dynamics within human-computer interactions and crafting effective affective-cognitive designs for products. I am experienced in experimental studies, simulations, descriptive and inferential statistics, as well as computational behavioral modeling.

EDUCATION

University of Michigan, *Dearborn, MI, United States*   *Sep 2020 - June 2024*
Ph. D. in Industrial and Manufacturing Systems Engineering
Human Factors and Engineering Design, GPA: 3.88/4

National Polytechnic University of Armenia, *Yerevan, Armenia*   *Sep 2017 - May 2019*
Master of Information Security.
Graduated with distinction, GPA: 3.99/4

National Polytechnic University of Armenia, *Yerevan, Armenia*   *Sep 2013 - May 2017*
Bachelor of Information Security.
Graduated with distinction, GPA: 3.96/4

PROFESSIONAL EXPERIENCE

Researcher   *Sep 2024 – Present*
University of Michigan   *Ann Arbor, MI, US*

- Leading research on enhancing driver-autonomous vehicle interactions through Large Language Model (LLM) generated explanations, focusing on improving trust and user experience
- Investigating user behavior patterns in traffic information sharing, analyzing motivational factors for driver participation in crowdsourced navigation platforms such as Waze

Instructor   *Sep 2023 – June 2024*
University of Michigan- Dearborn   *Dearborn, MI, US*

- Instructed IMSE 255 / CIS 205 Computer Programming for Engineers course covering software components, arrays, structured data types, methods, files, and performance evaluation techniques
- Assisted in instructing HCED-370/ HCDE-520 Research Methods in Human-Centered Design and Engineering by supervising student projects

Graduate Research Assistant   *Sep 2020 - Aug 2023*
University of Michigan- Dearborn   *Dearborn, MI, US*
- Project: Developing Safe Strategies for Automated Vehicle Failures through Text Mining and Human Factors Methods
  - Developed a machine learning (ML) model applying Named Entity Recognition (NER) techniques to extract cause-and-effect relationships from customer reports concerning AV disengagements
  - Created a document labeling model with customized prompts using state-of-the-art Generative AI models, including GPT-3.5 Turbo and GPT-4
- Project: Investigate the Role of Affect in Fostering Trust in Automated Driving
  - Conducted experiments to explore the impact of emotions on trust across various levels of AV performance
  - Investigated the relationship between AV performance and risk perception using objective measures

- Project: Trending of Micro-mobility - Discovering Patterns and Issues with Natural Language Processing
  - Applied natural language processing (NLP) methods to interpret public attitudes toward micro-mobility by

conducting topic modeling and sentiment analysis of Twitter data
- · Identified trends and challenges within the micro-mobility domain across the US and the EU, highlighting key issues and safety concerns

Project**:** Building a Multi-directional Situation Awareness Framework for Communicating Among Road Users in Mixed Automated and Manual Traffic Environments
- · Developed high-fidelity driving environments in CarMaker, Unity VR and SimCreator to study drivers' behavior at different AV performance levels
- · Built a ML model to predict driver's situation awareness and trust in real-time

Dom-Daniel   *Jan 2016 - Sep 2020*
Senior Data Engineer   *Yerevan, Armenia*
- · Developed a distributed, near real-time event management and data-driven analytics platform using Azure Cloud services
- · Researched and modeled a multi-layered security architecture in distributed systems
- · Planned and executed storage services for streaming solutions leveraging Azure Storage technologies

SELECTED PUBLICATIONS

1. **Avetisyan, Lilit**, X. Jessie Yang, and Feng Zhou. "Towards Context-Aware Modeling of Situation Awareness in Conditionally Automated Driving." arXiv preprint arXiv:2405.07088 (2024). submitted *to International Journal of Human–Computer Interaction*
2. Ayoub, Jackie, **Lilit Avetisyan**, X. Jessie Yang, and Feng Zhou. "Real-Time Trust Prediction in Conditionally Automated Driving Using Physiological Measures." IEEE Transactions on Intelligent Transportation Systems (2023).
3. **Avetisyan, Lilit**, Jackie Ayoub, and Feng Zhou. "Anticipated emotions associated with trust in autonomous vehicles." In Proceedings of the Human Factors and Ergonomics Society Annual Meeting, vol. 66, no. 1, pp. 199-203. Sage CA: Los Angeles, CA: SAGE Publications, 2022.
4. **Avetisyan, Lilit**, Jackie Ayoub, and Feng Zhou. "Investigating explanations in conditional and highly automated driving: The effects of situation awareness and modality." Transportation research part F: traffic psychology and behaviour 89 (2022): 456-466.
5. Ayoub, Jackie, **Lilit Avetisyan**, Mustapha Makki, and Feng Zhou. 2022. An Investigation of Drivers' Dynamic Situational Trust in Conditionally Automated Driving. IEEE Transactions on Human-Machine Systems, vol. 52, no. 3, pp. 501-511, DOI: 10.1109/THMS.2021.3131676.
6. (In review) **Avetisyan, Lilit**, Aditya Deshmukh, X. Jessie Yang, and Feng Zhou. " Investigating HMIs to Foster Communications between Conventional Vehicles and Autonomous Vehicles in Intersections." arXiv preprint arXiv:2305.17769 (2023). submitted to *IEEE Transactions on Human-Machine Systems*.

SKILLS

Programming Languages: Python, C#, MATLAB, R, T-SQL, JavaScript
Technical Skills: Human-Computer Interaction, Data Science, Design of Experiments, Simulation, ML/AI, Natural Language Processing, Statistics, Quantitative User Experience Analysis, Programming, Software Engineering, LLM, Generative AI, Prompt Engineering, Surveys Data Engineering
Tools: Unity, Minitab, SPSS, Figma, Microsoft Azure, Git, Visual Studio, MSSQL Studio, Azure Machine Learning, Power BI, iMotions, Pupil Labs
Simulations: CarMaker, VR in Unity, PreScan
Soft Skills: Persistence, Communication and Management.
Languages: Fluent in English and Armenian, Professional in Russian, Basic in German

CERTIFICATIONS

- · **Microsoft Certified:** [Azure Data Scientist Associate](#), [Azure Data Engineer Associate](#), [DevOps Engineer Expert](#), [Azure Developer Associate](#)
- · **Coursera:** Neural Networks and Deep Learning

ACCOMPLISHMENTS AND AWARDS
- · CECS Doctoral Student Conference Travel Grant AY23-24
- · EXP+ Student Conference Presentation Grant 2023-24
- · Reviewer of IEEE Transactions on Human-Machine Systems journal