Jesse Roberts **October, 2024**

CONTACT INFORMATION
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752 Welch Ave
Cookeville, TN 38501

RESEARCH INTERESTS
Computational Linguistics and NLP, Machine Cognition, Neural Architectures, Theory of Deep Learning, Game Theory

EDUCATION

Vanderbilt University, Nashville, Tennessee

Ph.D. Computer Science — August 2024
- Dissertation Topic: "A Theoretical & Empirical Analysis of Language Model Behavior"
- Advisor: Doug Fisher

Tennessee Technological University, Cookeville, Tennessee

M.S. Electrical Engineering — Spring 2017
- Thesis Topic: Machine Learning Improvement of Solar MPPT
- Advisor: Indranil Bhattacharya

B.S. Electrical Engineering — Spring 2014

FACULTY EXPERIENCE

Vanderbilt University, Nashville, Tennessee

CS 1101 - Programming and Problem Solving (Java Based) — Summer 2020
- Quote from student evaluation: "Prof Roberts has probably been the best teacher I've had at Vandy. He always answers any questions before students even realize they have them."

Tennessee Technological University, Cookeville, Tennessee

ECE 3270 - PLC Lecture & Lab — Spring 2020 - Present
- Developed OER lab manuals for teaching beginner PLC programming, emphasizing good coding practices.

ECE 4961 & 4971 - Capstone Design I and II — Fall 2021 - Present
- Complete redevelopment of curriculum to facilitate assessment and sustainability.

ECE 3540 - Physical Electronics — Fall 2023 - Spring 2024

SERVICE EXPERIENCE

University Service

Tennessee Technological University
- ACME Building Design College Committee — Spring 2022 - Current
- ABET Assessment Departmental Committee — Fall 2021 - Current
- Founding Advisor to the Rock Climbing Club — Fall 2022 - Current
- IEEE Robotics Team Coach — Fall 2021 - Current

Research Service

Communities: *ACL, IEEE, ASEE, CIS*
- Session Chair for WCCI — 2024
- Reviewer for CoNLL — 2024
- Reviewer for IEEE Conference on Games (AI & Game Theory) — 2022-2024
- Reviewer for ASEE National Conference — 2022-2023

Awards, Honors, and Grants

Vanderbilt University

- Reived the American Bureau of Shipping merit Scholarship — Fall 2021
- Nominated for the Graduate Leadership Anchor Award — Spring 2021
- Nominated for the CF Chen best paper award — Spring 2024
- Received the Vanderilt Award for Doctoral Discovery — Summer 2024

Tennessee Technological University

- Awarded a Carnegie Fellowship — Fall 2018
- Awarded OER Development Grant — Fall 2023
- Awarded IEEE AESS Grant for the DARPA Triage Challenge — Spring 2024
- Nominated for the KEEN Foundation Rising Star Award — Spring 2024

Publications

(Under Review at NAACL) J. Roberts, Moore, & Fisher, D.(2024). "Do Large Language Models Learn Human-Like Strategic Preferences?".

(Phase 1 Accepted, Under Phase 2 Review at AAAI) Moore, K., Roberts, J., Pham, T., & Fisher, D. (2024). Reasoning Beyond Bias: A Study on Counterfactual Prompting and Chain of Thought Reasoning. arXiv preprint arXiv:2408.08651.

(Accepted at NLP4DH) R. Umphrey, J. Roberts, and L. Roberts. "Investigating Expert-in-the-Loop LLM Discourse Patterns for Ancient Intertextual Analysis." arXiv preprint arXiv:2409.01882 (2024).

(Accepted at AAAI Fall Symposium) Roberts, Jesse, Lindsey Roberts, and Alice Reed. "Supporting the Digital Autonomy of Elders Through LLM Assistance." arXiv preprint arXiv:2407.15695 (2024).

(Accepted at CoNLL) Roberts, Jesse, et al. "Large Language Model Recall Uncertainty is Modulated by the Fan Effect." arXiv preprint arXiv:2407.06349 (2024).

(Accepted at EMNLP) Moore, Kyle, et al. "The Base-Rate Effect on LLM Benchmark Performance: Disambiguating Test-Taking Strategies from Benchmark Performance." arXiv preprint arXiv:2406.11634 (2024).

(Invited Contribution) D. Fisher, K. Moore, J. Roberts, "Theory of Formal Languages, Automata, and Computation", (2024) `https://en.wikibooks.org/wiki/Theory_of_Formal_Languages,_Automata,_and_Computation`

J. Roberts, (2024). "How Powerful are Decoder-Only Transformer Neural Models?". 2024 International Joint Conference on Neural Networks (IJCNN)

Roberts, Jesse. "Do Large Language Models Learn to Human-Like Learn?." Proceedings of the AAAI Symposium Series. Vol. 3. No. 1. 2024.

Roberts, J., Moore, K., Wilenzick, D., & Fisher, D. (2024, March). Using Artificial Populations to Study Psychological Phenomena in Neural Models. In Proceedings of the AAAI Conference on Artificial Intelligence (Vol. 38, No. 17, pp. 18906-18914).

J. Roberts, "Finding an Equilibrium in the Traveler's Dilemma with Fuzzy Weak Domination," IEEE International Conference on Games 2021. **Nominated for best paper.**

Publications cont'd

J. Roberts and D. Fisher, "pReview: The Artificially Intelligent Conference Reviewer," IEEE International Conference on Machine Learning Applications 2020.

J. Roberts and D. Fisher, "Extending the Philosophy of Computational Criticism," International Conference on Computational Creativity 2020.

J. Roberts and D. Talbert, "Biologically Extending the Gen 2 ANN Model." The Thirty-Second International Flairs Conference. 2019.

J. Roberts and I. Bhattacharya, "Improving Any Arbitrary MPPT Hill Climber with ANN Estimations," 2017 IEEE 44th Photovoltaic Specialist Conference (PVSC), Washington, DC, 2017, pp. 3083-3087.

J. Roberts and I. Bhattacharya, "MNFIS and other soft computing based MPPT techniques: A comparative analysis," 2016 IEEE 43rd Photovoltaic Specialists Conference (PVSC), Portland, OR, 2016, pp. 3247-3251.

J. Roberts, "MNFIS+; or, a Better Hybrid Heuristic Maximum Power Point Tracker," Thesis. Tennessee Technological University, 2017.

Professional Memberships

The Association for the Advancement of Artificial Intelligence (AAAI)	2023 - Current
Association of Computational Linguistics (ACL)	2024 - Current
Institute of Electrical and Electronics Engineers (IEEE)	2021 - Current
Computational Intelligence Society (IEEE CIS)	2024 - Current

Industry Experience

ATC Automation, Cookeville, Tennessee

Senior Controls Engineer **May, 2014 - January, 2021**

Designed, oversaw build, and programmed automation equipment to meet customer requirements and exceed expectations while maintaining profitability. Total value of projects oversaw in excess of 20 million dollars.

Co-op Program Manager **July, 2018 - December, 2020**

Developed a co-op program to improve recruitment. Oversaw hiring, training, and management of co-op employees. Acted as the liaison for the building and maintenance of industrial/academic relations. Obtained a $100K industry lab grant.

Research Assistant Experience

Vanderbilt University

- Researched computational sustainability funded by NSF Grant No. 1521672. — Summer 2021

Teaching Assistant Experience

Vanderbilt University

- Project in Artificial Intelligence — Spring 2021
- Programming and Problem Solving (Java Based) — Fall 2020
- Compiler Construction — Spring 2020
- Database Management Systems (Managing TA) — Fall 2019