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| CONTACT INFORMATION | Jesse.TN.Roberts@Gmail.com (865) 719-0163 752 Welch Ave Cookeville, TN 38501 |
| RESEARCH INTERESTS | Computational Linguistics and NLP, Machine Cognition, Robotics, Neural Architectures, Theory of Deep Learning, Game Theory |
| EDUCATION | <p>Vanderbilt University, Nashville, Tennessee</p> <p>Ph.D. Computer Science August 2024</p> <ul style="list-style-type: none"> • Dissertation Topic: “A Theoretical & Empirical Analysis of Language Model Behavior” • Advisor: Doug Fisher <p>Tennessee Technological University, Cookeville, Tennessee</p> <p>M.S. Electrical Engineering Spring 2017</p> <ul style="list-style-type: none"> • Thesis Topic: Machine Learning Improvement of Solar MPPT • Advisor: Indranil Bhattacharya <p>B.S. Electrical Engineering Spring 2014</p> |
| FACULTY EXPERIENCE | <p>Assistant Professor: Tennessee Technological University</p> <p>CSC 7970 - Special Topics Fall 2024</p> <ul style="list-style-type: none"> • Developed a course on LLMs. Surveys the important breakthroughs which have led to the emergence of large language models, their capabilities, and critical improvements. <p>Lecturer: Tennessee Technological University</p> <p>ECE 3270 - PLC Lecture & Lab Spring 2020 - Spring 2024</p> <ul style="list-style-type: none"> • Developed OER lab manuals for teaching beginner PLC programming, emphasizing good coding practices. <p>ECE 4961 & 4971 - Capstone Design I and II Fall 2021 - Spring 2024</p> <ul style="list-style-type: none"> • Complete redevelopment of curriculum to facilitate assessment and sustainability. <p>ECE 3540 - Physical Electronics Fall 2023 - Spring 2024</p> <p>Instructor: Vanderbilt University</p> <p>CS 1101 - Programming and Problem Solving (Java Based) Summer 2020</p> <ul style="list-style-type: none"> • 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.” |
| FACULTY SERVICE | <p><i>Tennessee Technological University</i></p> <ul style="list-style-type: none"> • Undergraduate Program Committee Fall 2021 - Current • 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 |

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| RESEARCH SERVICE | Communities: <i>Association of Computational Linguistics, IEEE, ASEE, CIS</i> |
| | <ul style="list-style-type: none"> • Reviewer for Behavioral Sciences Journal 2025 • Reviewer for EPF Data Science Journal 2024 • Reviewer for Natural Language Processing for the Digital Humanities (NLP4DH) 2024-2025 • Session Chair for World Congress on Computational Intelligence 2024 • Reviewer for Conference on Computational Natural Language Learning (CoNLL) 2024 • Reviewer for International Joint Conference on Neural Networks 2022-2025 • Reviewer for IEEE Conference on Games (AI & Game Theory) 2022-2024 • Reviewer for ASEE National Conference 2022-2023 |
| AWARDS, HONORS, AND GRANTS | <i>Vanderbilt University</i> |
| | <ul style="list-style-type: none"> • Received 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 Vanderbilt Award for Doctoral Discovery Summer 2024 |
| | <i>Tennessee Technological University</i> |
| | <ul style="list-style-type: none"> • 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 INDICATES EQUAL CONTRIBUTION * | <p>(Under Review at ACL) J. Roberts, Moore, & Fisher, D.(2024). "Do Large Language Models Learn Human-Like Strategic Preferences?"</p> <p>(Under Review at CogSci) 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.</p> <p>Hossain, S. M., Amani Altarawneh, and Jesse Roberts. "Leveraging Large Language Models and Machine Learning for Smart Contract Vulnerability Detection." IEEE Annual Computing and Communication Workshop and Conference (2025).</p> <p>Ray Umphrey*, Jesse Roberts*, and Lindsey Roberts. 2024. Investigating Expert-in-the-Loop LLM Discourse Patterns for Ancient Intertextual Analysis. In Proceedings of the 4th International Conference on Natural Language Processing for Digital Humanities, pages 31–40, Miami, USA.</p> <p>Roberts, Jesse, Lindsey Roberts, and Alice Reed. "Supporting the Digital Autonomy of Elders Through LLM Assistance." Proceedings of the AAAI Symposium Series. Vol. 4. No. 1. 2024.</p> <p>Jesse Roberts, Kyle Moore, et al. 2024. Large Language Model Recall Uncertainty is Modulated by the Fan Effect. In Proceedings of the 28th Conference on Computational Natural Language Learning, pages 303–313, Miami, FL, USA.</p> <p>Kyle Moore*, Jesse Roberts*, et al. 2024. The Base-Rate Effect on LLM Benchmark Performance: Disambiguating Test-Taking Strategies from Benchmark Performance. In Findings of the Association for Computational Linguistics: EMNLP 2024, pages 2283–2288, Miami, Florida, USA.</p> |

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| PUBLICATIONS CONT'D | (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 best paper | |
| | 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. | |
| PROFESSIONAL MEMBERSHIPS | 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. | |
| | <hr/> <div> <div>The Association for the Advancement of Artificial Intelligence (AAAI)</div> <div>2023 - Current</div> </div> <div> <div>Association of Computational Linguistics (ACL)</div> <div>2024 - Current</div> </div> <div> <div>Institute of Electrical and Electronics Engineers (IEEE)</div> <div>2021 - Current</div> </div> <div> <div>Computational Intelligence Society (IEEE CIS)</div> <div>2024 - Current</div> </div> <hr/> | |
| INDUSTRY EXPERIENCE | ATC Automation , Cookeville, Tennessee <i>Senior Controls Engineer</i> 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. | |
| | <i>Co-op Program Manager</i> 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. | |