Ryan Hare

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Education

- **Rowan University, Glassboro, New Jersey**
  - Ph.D. in Electrical and Computer Engineering (Sept. 2021 – Ongoing) - GPA: 3.98
  - M.S. in Electrical and Computer Engineering (Sept. 2019 – Aug. 2021)
  - B.S. in Electrical and Computer Engineering (Sept. 2015 – May 2019) - GPA: 3.63
- **High School East, Cherry Hill, New Jersey;** (Sept. 2011 – May 2015)

Research Interests

- Machine Learning and Artificial Intelligence, Reinforcement Learning, Intelligent Tutoring Systems, Serious Games, Automated Educational Systems, Gamification

Skills

- Well experienced in artificial intelligence development, including machine learning approaches to classification and regression, neural networks using the Tensorflow and PyTorch libraries, and reinforcement learning agents and methodology.
- Experienced in software development using the Unity 3D engine.
- Proficient in programming languages including C, C++, C#, Python, and Verilog, including development in both Windows and Linux environments.
- Familiar with the use of Git for version control and team cooperation.
- Experienced in electrical engineering techniques such as circuit analysis and design, PCB design, 3D printing, control system analysis and design, image processing, and digital signal analysis.

Experience

Undergraduate Clinic Supervision – Team Project Leadership; Jan. 2022 – Ongoing

Guided multidisciplinary groups of undergraduate students to successfully develop numerous semester-long clinic projects including the development of multiple educational games and app development. Assisted with student training and familiarization with the projects as well as leading weekly meetings and task lists to keep students on track and ensure rapid development.

AI-based Learning Personalization System – Independent Research; Sept. 2021 – Ongoing

Research and development of a reinforcement learning system to personalize student learning by learning the best assistance from a selection to provide to students. Responsibilities included research of similar systems, use of the PyTorch library for neural networks, programming in Python and C#, and simulation, testing, and development of the final system.

Educational Game Development – Independent Development; Sept. 2019 – Ongoing

Worked independently to develop multiple educational game systems for use in relevant courses to augment and improve student education. Main responsibilities included the use of the Unity 3D development environment, programming in the C# language, and 3D modelling.

Teaching Assistant – Rowan University

Served as a teaching assistant for several courses at Rowan University. Responsibilities included grading tests and lab assignments, supervising undergraduate students in labs, and providing out-of-class help to students at their request. Assisted in the following courses:

- Introduction to Embedded Systems; Sept. – Dec. 2021 and 2022
- Introduction to Digital Systems; Jan. – May 2021, 2022, and 2023

Research Assistant – Rowan University; Sept. 2019 – Ongoing

As a research assistant, provided aid and consulting on various research projects including website design, data collection, programming, scientific writing/editing, data visualization, and dissemination of research results through conferences and journals.

Journal Publications

- Hare, R., Ferguson, S., & Tang, Y. (2024). Enhancing student experience and learning with iterative design in an intelligent educational game. British Journal of Educational Technology, 00, 1–18. https://doi.org/10.1111/bjet.13526
- R. Hare, Y. Tang, and S. Ferguson, 'An Intelligent Serious Game for Digital Logic Education to Enhance Student Learning', IEEE Transactions on Education, vol. 67, no. 3, pp. 387-394, Feb. 2024, doi: 10.1109/TE.2024.3359001
- J. Wang, Y. Tang, R. Hare, and F.-Y. Wang, "Parallel intelligent education with ChatGPT," in Frontiers of Information Technology & Electronic Engineering, vol. 25, pp. 12-18, Jun. 2023, doi: 10.1631/fitee.2300166.
- R. Hare and Y. Tang, "Hierarchical Deep Reinforcement Learning With Experience Sharing for Metaverse in Education," in IEEE Transactions on Systems, Man, and Cybernetics: Systems, vol. 53, no. 4, pp. 2047-2055, April 2023, doi: 10.1109/TSMC.2022.3227919.
- R. Hare and Y. Tang, "Player Modeling and Adaptation Methods Within Adaptive Serious Games," in IEEE Transactions on Computational Social Systems, vol. 10, no. 4, pp. 1939-1950, Aug. 2023, doi: 10.1109/TCSS.2022.3203926.
- L. Cui, C. Zhu, R. Hare, and Y. Tang, 'MetaEdu: a new framework for future education', Discover Artificial Intelligence, vol. 3, 2023, doi: 10.1007/s44163-023-00053-9.
- J. Liang, Y. Tang, R. Hare, B. Wu and F. -Y. Wang, "A Learning-Embedded Attributed Petri Net to Optimize Student Learning in a Serious Game," in IEEE Transactions on Computational Social Systems, vol. 10, no. 3, pp. 869-877, June 2023, doi: 10.1109/TCSS.2021.3132355.
- J. Liang et al., "Student Modeling and Analysis in Adaptive Instructional Systems," in IEEE Access, vol. 10, pp. 59359-59372, 2022, doi: 10.1109/ACCESS.2022.3178744.
- Y. Tang, J. Liang, R. Hare and F. -Y. Wang, "A Personalized Learning System for Parallel Intelligent Education," in IEEE Transactions on Computational Social Systems, vol. 7, no. 2, pp. 352-361, April 2020, doi: 10.1109/TCSS.2020.2965198.

Conference Publications

- R. Hare and Y. Tang, "Ontology-driven Reinforcement Learning for Personalized Student Support," 2024 IEEE International Conference on Systems, Man, and Cybernetics (SMC), In Press, 2024.
- R. Hare and Y. Tang, "Reinforcement Learning with Experience Sharing for Intelligent Educational Systems," 2023 IEEE International Conference on Systems, Man, and Cybernetics (SMC), Honolulu, Oahu, HI, USA, 2023, pp. 1431-1436, doi: 10.1109/SMC53992.2023.10394095.
- R. Hare, Y. Tang and C. Zhu, "Combining Gamification and Intelligent Tutoring Systems for Engineering Education," 2023 IEEE Frontiers in Education Conference (FIE), College Station, TX, USA, 2023, pp. 1-5, doi: 10.1109/FIE58773.2023.10343378.
- L. Cui, W. Cai, R. Hare, C. Huang, Y. Tang and C. Zhu, "Creative Geotechnical Engineering Education Module Based on an Educational Game Using Multiphysics Enriched Mixed Reality," 2023 IEEE Frontiers in Education Conference (FIE), College Station, TX, USA, 2023, pp. 1-4, doi: 10.1109/FIE58773.2023.10343396.
- C. Zhu, J. E. Ahn, L. Cui, R. Hare and Y. Tang, "Engineering Human Body for Systematic and Computational Thinking," 2023 IEEE Frontiers in Education Conference (FIE), College Station, TX, USA, 2023, pp. 1-5, doi: 10.1109/FIE58773.2023.10342946.
- L. Cui, et al, "Gamified and IoT-integrated Approach for Water Industry Education and Outreach," in 2023 Fall Mid Atlantic Conference: Meeting our students where they are and getting them where they need to be, 2023.
- P. Patel, R. Hare, Y. Tang and N. Patel, "3D Multi-Angle Point Cloud Stitching Using Iterative Closest-point Stitching and K-Nearest-Neighbors," 2022 International Conference on Cyber-Physical Social Intelligence (ICCSI), Nanjing, China, 2022, pp. 625-630, doi: 10.1109/ICCSI55536.2022.9970689.
- R. Hare and Y. Tang, "Petri Nets and Hierarchical Reinforcement Learning for Personalized Student Assistance in Serious Games," 2022 International Conference on Cyber-Physical Social Intelligence (ICCSI), Nanjing, China, 2022, pp. 733-737, doi: 10.1109/ICCSI55536.2022.9970680.
- R. Hare, N. Patel, Y. Tang and P. Patel, "A Graph-based Approach for Adaptive Serious Games," 2022 IEEE Intl Conf on Dependable, Autonomic and Secure Computing, Intl Conf on Pervasive Intelligence and Computing, Intl Conf on Cloud and Big Data Computing, Intl Conf on Cyber Science and Technology Congress (DASC/PiCom/CBDCom/CyberSciTech), Falerna, Italy, 2022, pp. 1-6, doi: 10.1109/DASC/PiCom/CBDCom/Cy55231.2022.9928013.
- Y. Tang, R. Hare and S. Ferguson, "Classroom Evaluation of a Gamified Adaptive Tutoring System," 2022 IEEE Frontiers in Education Conference (FIE), Uppsala, Sweden, 2022, pp. 1-5, doi: 10.1109/FIE56618.2022.9962718.
- Y. Tang., et al, "Mixed Reality Game for Active Geotechnical Engineering Learning," in 2022 Spring ASEE Middle Atlantic Section Conference, 2022.

- Y. Tang, R. Hare, "Evaluation of an AI-assisted Adaptive Educational Game System," in 2022 Spring ASEE Middle Atlantic Section Conference, 2022.
- R. Hare and Y. Tang, "Player Modelling and Adaptation Methods within Adaptive Serious Games," 2021 International Conference on Cyber-Physical Social Intelligence (ICCSI), Beijing, China, 2021, pp. 1-6, doi: 10.1109/ICCSI53130.2021.9736213.
- Y. Tang, R. Hare, "Evaluation of a Game-Based Personalized Learning System," in 2021 ASEE Virtual Annual Conference Content Access, 2021.
- R. Hare, Y. Tang, W. Cui and J. Liang, "Optimize Student Learning via Random Forest-Based Adaptive Narrative Game," 2020 IEEE 16th International Conference on Automation Science and Engineering (CASE), Hong Kong, China, 2020, pp. 792-797, doi: 10.1109/CASE48305.2020.9217020.
- Y. Tang, R. Hare, "A Random Forest Model for Personalized Learning in a Narrative Game," in 2020 ASEE Virtual Annual Conference Content Access, 2020.
- Y. Tang and R. Hare, "Adaptive Narrative Game for Personalized Learning," 2019 IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI), Zhengzhou, China, 2019, pp. 175-180, doi: 10.1109/SOLI48380.2019.8955069.

Awards

- Runner up for **Best Student Paper**, International Conference on Cyber-physical Social Systems, 2021
- **Best Student Paper**, International Conference on Cyber-physical Social Systems, 2022

Professional Activities

- IEEE student member since 2021
- Served as a reviewer for the following conferences:
    - American Society for Engineering Education (ASEE) Annual Conference; 2021, 2022, 2023, and 2024
    - International Conference on Cyber-physical Social Intelligence (ICCSI); 2021, 2022, and 2024
    - Frontiers in Education (FIE) Annual Conference; 2023 and 2024
- Served as a reviewer for the following journals:
    - IEEE Transactions on Computational Social Systems (TCSS); 2023 and 2024
    - IEEE Transactions on Systems, Man, and Cybernetics: Systems (TSMC); 2022, 2023, and 2024
    - IEEE Transactions on Games (ToG); 2023
    - IEEE Transactions on Education (ToE); 2023 and 2024
    - Journal of Cyber-Physical Social Intelligence (ICPSI); 2023
    - Springer Nature Artificial Intelligence; 2024
- Assisted with handling user registration, payments, and support feedback for the 2021 International Conference on Cyber-physical Social Systems
- Served as finance chair for the 2022 International Conference on Cyber-physical Social Systems
- Technical committee member for the 2024 International Conference on Cyber-physical Social Systems