CURRICULUM VITAE – ROHAN R PALEJA

PERSONAL
INFORMATION

Rohan Paleja
Robotics Ph.D. Student in CORE Robotics Lab
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PROFESSIONAL
OBJECTIVE

Improve the ability for machines to understand humans and humans to understand machines. I focus on developing new techniques and computational methods to support robot learning and human-robot collaboration in the diverse and unstructured environments that will be encountered in the real world.

EDUCATION

Ph.D. Georgia Institute of Technology, Atlanta GA. in Robotics. 2018 – Present.
Research Title : *Interpretable Artificial Intelligence for Personalized Human-Robot Collaboration.*
More details at `www.rohanpaleja.com`
M.Sc. Rutgers University, New Brunswick NJ. in Mechanical Engineering. 2017 – 2018.
Thesis title : *Viability and Performance of Indoor Mapping Using the Velodyne VLP-16 LiDAR.*
B.Sc. Rutgers University, New Brunswick NJ. in Mechanical Engineering. 2014 – 2017.
Magna Cum Laude.

PUBLICATIONS

Conference Proceedings -
— Lee*, K., Krishna*, A, Zaidi, Z., Paleja, R., Chen, L., Hedlund, E., Schrum, S., and Gombolay, M. (2023) "The Effect of Robot Skill Level and Communication in Rapid, Proximate Human-Robot Collaboration." In Proceedings of the Conference of Human-Robot Interaction (HRI). [**25.2% Acceptance Rate**]
— Chen*, L., Jayanthi*, S., Paleja, R., Martin, D., Zakharov, V., and Gombolay, M. (2022) "Fast Lifelong Adaptive Inverse Reinforcement Learning from Crowdsourced Demonstrations" In Proceedings of Conference on Robot Learning (CoRL). [**39% Acceptance Rate**]
— Paleja*, R., Niu*, Y., Silva, A., Ritchie, C., Choi, S., and Gombolay, M. (2022) "Learning Interpretable, High-Performing Policies for Autonomous Driving" In Proceedings of the Robotics : Science and Systems Conference (RSS). [**32% Acceptance Rate**]
— Seraj*, E., Wang*, Z., Paleja*, R., Martin, D., Sklar, M., Patel, A., and Gombolay, M. (2022) "Learning Efficient Diverse Communication for Cooperative Heterogeneous Teaming" In Proceedings of the Conference on Autonomous Agents and Multiagent Systems (AAMAS). [**26% Acceptance Rate**]
— Paleja, R., Ghuy, M., Ranawaka, N., and Gombolay, M. (2021) "The Utility of Explainable AI in Ad Hoc Human-Machine Teaming" In Proceedings of the Conference on Neural Information Processing Systems (NeurIPS). [**26% Acceptance Rate**]
— Dias, D., Zenati, M., Srey, R., Arney, D., Chen, L., Paleja, R., Kennedy-Metz, L., and Gombolay, M.. (2021) "Using Machine Learning to Predict Perfusionists' Critical Decision-Making during Cardiac Surgery." In Computer Methods in Biomechanics and Biomedical Engineering.
— Paleja, R., Silva, A., Chen, L., and Gombolay, M. (2020) "Interpretable and Personalized Apprenticeship Scheduling : Learning Interpretable Scheduling Policies from Heterogeneous User Demonstrations." In Proceedings of the Conference on Neural Information Processing Systems (NeurIPS). [**20% Acceptance Rate**]
— *Niu, Y., *Paleja, R., and Gombolay, M. (2021) "Multi-Agent Reinforcement Learning with Graph-Attention Communication." In Proceedings of the International Conference on Autonomous Agents and Multiagent Systems (AAMAS). [**25% Acceptance Rate**]
— Chen, L., Paleja, R., Ghuy, L., and Gombolay, M. (2020) "Joint Goal and Strategy Inference across Heterogeneous Demonstrators via Reward Network Distillation." In Proceedings of the Conference of Human-Robot Interaction (HRI). [**24% Acceptance Rate**]
— Chen, L., Paleja, R., and Gombolay, M.. (2020) "Learning from Suboptimal Demonstration via Self-Supervised Reward Regression." In Proceedings of the Conference on Robot Learning (CoRL).[**Best Paper Finalist**] [**Plenary Talk**][**34% Acceptance Rate**]

— Schrum, M., Neville, G., Johnson, M., Moorman, N., Paleja, R., Feigh, K., and Gombolay, M. (2020) "Effects of Social Factors and Team Dynamics on Adoption of Collaborative Robot Autonomy." In Proceedings of the Conference of Human-Robot Interaction (HRI).

Journal Papers -
— Zaidi, Z., Martin, D., Belles, N., Zakharov, V., Krishna, A., Lee, K.M., Wagstaff, P., Naik, S., Sklar, M., Choi, S., Kakehi, Y., Patil, R., Mallemadugula, D., Pesce, F., Wilson, P., Hom, W., Diamond, M., Zhao, B., Moorman, N., Paleja, R.R., Chen, L., Seraj, E., and Gombolay, M. (2022). "Athletic Mobile Manipulator System for Robotic Wheelchair Tennis." **In Review**.

Workshop Papers and Doctoral Consortia -
— Pimentel, L.*, Paleja, R.*, Wang, Z., Seraj, E., Pagan, J., and Gombolay, M. (2022). "Scaling Multi-Agent Reinforcement Learning via State Upsampling." In Proceedings of the Robotics Science and Systems Workshop on Scaling Robot Learning (RSS22-SRL).
— Paleja, R., and Gombolay, M. (2022). "Mutual Understanding in Human-Machine Teaming." In Proceedings of the Association for the Advancement of Artificial Intelligence Conference (AAAI) Doctoral Consortium.
— *Niu, Y., *Paleja, R., and Gombolay, M. (2021) "Multi-Agent Graph-Attention Communication and Teaming." In Proceedings of the ICCV 2021 Workshop on Multi-Agent Interaction and Relational Reasoning. **[Spotlight Talk] [Best Paper Award]**
— Chen, L., Paleja, R., and Gombolay, M.. (2021) "Towards Sample-efficient Apprenticeship Learning from Suboptimal Demonstration." In Proceedings of Artificial Intelligence for Human-Robot Interaction (AI-HRI), AAAI Fall Symposium Series.
— Paleja, R., Silva, A., Chen, L., and Gombolay, M. (2021) "Interpretable and Personalized Apprenticeship Scheduling : Learning Interpretable Scheduling Policies from Heterogeneous User Demonstrations." In Proceedings of the AAMAS Autonomous Robots and Multirobot Systems (ARMS) Workshop.
— Paleja, R., and Gombolay, M. (2020) "Heterogeneous Learning from Demonstration." In Proceedings of the Conference of Human-Robot Interaction (HRI) Pioneers Workshop. **[32% Acceptance Rate]**

Thesis -
— Paleja, R., and Diez, J. (2020) "Viability and Performance of Indoor Mapping using the Velodyne VLP-16 LiDAR." *M.Sc. Thesis*, Rutgers University.

RESEARCH EXPERIENCE

Research Assistant in the Cognitive Optimization and Relational (CORE) Robotics Lab
— Explainable AI
  — Created a novel interpretable reinforcement learning architecture that allows for direct optimization over sparse decision-tree-like representations
  — Conducted two novel human-subject experiments quantifying the benefits of deploying xAI techniques within a human-machine teaming scenario.
— Interactive Robot Learning from Suboptimal and Heterogeneous Demonstrators
  — Modeled reward functions across demonstrators, teasing out strategy-specific criteria to produce a new state-of-the-art in heterogeneous inverse reinforcement learning.
  — Inferred an idealized reward function from suboptimal demonstrations by characterizing the relationship between a policy's performance and the amount of injected noise.
— Multi-Agent Coordination
  — Developed Multi-agent Graph Attention Communication (MAGIC) and Heterogeneous Policy Networks (HetNet), two Multi-Agent Reinforcement Learning (MARL) architectures that can be used to learn high-performance team coordination strategies among decentralized agents within partially observable settings.

Research Assistant in the Applied Fluids Laboratory
— UAV Simultaneous Localization and Mapping (SLAM) for Indoor Environments using a Velodyne VLP-16 LiDAR, GPS, and IMU

Undergraduate Capstone Project
— Autonomous Lawncare Vehicle that uses 3D Vision and Machine Learning for Object Detection and Weed Extermination

Teaching Assistantship
— Robot Intelligence : Planning (CS 7469-A) – Graduate Section, School of Interactive Computing (IC), Georgia Institute of Technology (Fall 2020) | Supervisor : Prof. Matthew C. Gombolay
— Robot Intelligence : Planning (CS 4649-A) – Undergraduate Section, School of Interactive Computing (IC), Georgia Institute of Technology (Fall 2020) | Supervisor : Prof. Matthew C. Gombolay
— Dynamics of Rigid Bodies (ME 2202), School of Mechanical Engineering (ME), Georgia Institute of Technology (Summer 2020) | Supervisor : Prof. Nader Sadegh
— Alternative Energy Systems (ME 474), School of Mechanical Engineering (ME), Rutgers University (Fall 2017) | Supervisor : Prof. Sara Moghtadernejad
— Aerospace Propulsion (ME 459), School of Mechanical Engineering (ME), Rutgers University (Spring 2018) | Supervisor : Prof. Doyle Knight

Advising & Mentorship
— **Arjun Krishna**, M.Sc. Student, Georgia Tech. May 2022-Present
  — **Co-First Author Paper :** [Krishna et al. ; In Review'22]
— **Kin Man Lee**, M.Sc. Student, Georgia Tech. May 2022-Present
  — **Co-First Author Paper :** [Krishna et al. ; In Review'22]
— **Daniel Martin**, M.Sc. Student, Georgia Tech. August 2021-May 2022
  — **Co-Author on Two Papers :** [Seraj et al. ; AAMAS'22, Zaidi et al. ; In Review'22]
— **Matthew Sklar**, M.Sc. Student, Georgia Tech. May 2021-December 2021
  — **Co-Author on Two Papers :** [Seraj et al. ; AAMAS'22, Zaidi et al. ; In Review'22]
— **Luis Pimentel**, M.Sc. Student, Georgia Tech. January 2022, Present
  — **First Author Workshop Paper :** [Pimentel et al. ; RSS22-SRL]
— **Michael Munje**, M.Sc. Student, Georgia Tech. September 2022-Present
— **John Zhang**, M.Sc. Student, Georgia Tech. January 2022-August 2022
— **Yaru Niu**, M.Sc. Student, Georgia Tech. August 2020-May 2022
  — **First Author Paper :** [Niu et al. ; AAMAS'21]
— **Chace Ritchie**, Undergraduate Student, University of Kentucky. *Under the NSF SURE Robotics Program.* May 2021-August 2021
  — **Co-Author Paper :** [Paleja et al. ; RSS'22]
— **Ruturaj Patil**, Undergraduate Student, Georgia Tech. May 2021-August 2021
  — **Co-Author on Paper :** [Zaidi et al. ; In Review'22]
— **Sugju Choi**, Undergraduate Researcher, Georgia Tech. May 2021-August 2021
  — **Co-Author on Paper :** [Paleja et al. ; RSS'22]
— **Nadun Ranawaka Arachchige**, Undergraduate Student, Georgia Tech. Date-Date
  — **Co-Author on Paper :** [Paleja et al. ; NeurIPS'21]
— **William Silva**, Undergraduate Student, Georgia Tech. May 2021-August 2021
— **Erik Scarlatescu**, Undergraduate Student, Georgia Tech. Fall 2022-Present
— **Lokranjan Laksmikanthan**, Undergraduate Student, Georgia Tech. May 2022-Present
— **Sergey Savelyev**, Undergraduate Research, Georgia Tech.
  — **Undergraduate Thesis** : Mastering Reconnaissance Blind Chess with Reinforcement Learning

Summer Research Intern. Advanced Concepts and Technologies Group, MIT Lincoln Laboratory Summer 2022.
Summer Research Intern. Advanced Concepts and Technologies Group, MIT Lincoln Laboratory Summer 2019.

Operating Systems : Windows, Unix and Linux.
Programming Languages : Python, C++, LaTeX, Java, Html.
Noted Libraries : PyTorch, TensorFlow, DGL, Pygame
Scientific Softwares Maple, Matlab, Simulink, Mathematica, LabVIEW, Unreal Engine, ROS.
Languages : English, Spanish.

Attendance Scholarship, Autonomous Agents and Multiagent Systems (AAMAS), 2022
Interactive Computing Graduate Teaching Assistant of the Year, Georgia Institute of Technology (CoRL), 2021
Best Workshop Paper Award, International Conference on Computer Vision (ICCV) Workshop on Multi-Agent Interaction and Relational Reasoning (MAIR2), 2021
Best Paper Finalist Award, Conference of Robot Learning (CoRL), 2020

Technology Ventures Award, Rutgers University, 2016
James J. Slade Research Scholar Award, Rutgers University, 2016
General Engineering Scholarship, Rutgers University, 2015

PROFESSIONAL
CERTIFICATIONS

Udacity Robotics Nanodegree, 2017-2018. [Credential URL.](#)

LEADERSHIP &
ACADEMIC
SERVICE

Public Relations Vice President, Exectuive Board of the Robotics Graduate Student Organization, Georgia Institute of Technology.
Sponsorship Chair, Human-Robot Interaction (HRI) 2020 Pioneers Workshop, Cambridge United Kingdom.
Technical Manuscript Reviewer for,
  — International Conference on Human-Robot Interaction (HRI)
  — International Conference on Robot & Human Interactive Communication (ROMAN)
  — International Conference on Neural Information Processing Systems (NeurIPS)
  — Association for the Advancement of Artificial Intelligence Conference (AAAI)
  — Autonomous Agents and Multiagent Systems (AAMAS)
  — International Conference on Robotics and Automation (ICRA)
  — Robotics : Science and Systems Conference (RSS)
  — International Journal of Human-Computer Interaction (IJHCI)

MEMBERSHIPS

IEEE Student Member
RoboGrads, Robotics Graduate Student Organization
Pi Tau, Mechanical Engineering Honor Society
American Society of Mechanical Engineers

SELECTED PRESS
COVERAGE

Georgia Tech College of Computing (US) [Video](#) | [Blog](#)

REFERENCES

References can be provided upon request