






# CURRICULUM VITAE – ROHAN R PALEJA

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## PERSONAL INFORMATION

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

I focus on developing novel machine-learning architectures and algorithms to support robot learning and human-robot collaboration in the diverse and unstructured environments that will be encountered by these agents in the real world.

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## EDUCATION

**Ph.D. Georgia Institute of Technology, Atlanta GA.** in Robotics. 2018 – Present. *Expected Graduation : August, 2023*  
Research Title : *Interpretable Artificial Intelligence for Personalized Human-Robot Collaboration.*  
More details at [www.rohanpaleja.com](http://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.*

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## PUBLICATIONS

### Conference Proceedings -

- Ye\*, S., Natarajan\*, M., Wu\*, Z., Paleja, R., Chen, L., and Gombolay, M. (2023). "Learning Models of Adversarial Agent Behavior under Partial Observability" In Proceedings of the International Conference on Intelligent Robots and Systems (IROS) [**43.3% Acceptance Rate**]
- Lee\*, K., Krishna\*, A., Zaidi, Z., Paleja, R., Chen, L., Hedlund-Botti, E., Schrum, M., 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\*, Paleja\*, R., Z., 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**]
- 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**]
- Paleja\*, R., Niu\*, Y., 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). [**23% Acceptance Rate**]

#### Journal Papers -

- Seraj\*, E., Paleja\*, R., Pimentel, L., Lee, K.M., Martin, D., Sklar, M., Zhang, J., Kakish, Z., and Gombolay, M. (2023). "Heterogeneous Policy Networks for Composite Robot Team Communication and Coordination." [**In Review**]
- Natarajan\*, M., Seraj\*, E., Altundas\*, B., Paleja\*, R., Ye\*, S., Chen\*, L., Jensen, R., Chang, K.C., and Gombolay, M. (2023). "Athletic Mobile Manipulator System for Robotic Wheelchair Tennis." In Current Robotics Reports, [**To Appear**].
- 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., Chen, L., Seraj, E., and Gombolay, M. (2022). "Athletic Mobile Manipulator System for Robotic Wheelchair Tennis." In IEEE Robotics and Automation Letters (RA-L), Volume 8, Issue 4, pages 2245-2252.
- 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. Imaging & Visualization, 10(3), 308-312.

#### 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 Workshop 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

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#### 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 Lawn-care Vehicle that uses 3D Vision and Machine Learning for Object Detection and Weed Extermination

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## TEACHING EXPERIENCE

### Teaching Assistantship

- Introduction to Robotics Research (CS 7785), School of Interactive Computing (IC), Georgia Institute of Technology (Spring 2022) | Supervisor : Dr. Sean Wilson
- 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. ; HRI'23]
- **Kin Man Lee**, M.Sc. Student, Georgia Tech. May 2022-Present
  - **Co-First Author Paper** : [Krishna et al. ; HRI'23]
- **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

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## INDUSTRY EXPERIENCE

**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.**

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**SKILLS**

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

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**AWARDS**

**Awarded Sponsorship for our ICRA 2023 Explainable Robotics Workshop**, Artificial Intelligence Journal, 2023  
**Attendance Scholarship**, Autonomous Agents and Multiagent Systems (AAMAS), 2022  
**Interactive Computing Graduate Teaching Assistant of the Year**, Georgia Institute of Technology, 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

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**PROFESSIONAL  
CERTIFICATIONS**

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

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**LEADERSHIP &  
ACADEMIC  
SERVICE**

**Public Relations Vice President**, Executive Board of the Robotics Graduate Student Organization, Georgia Institute of Technology.  
**Workshop Organizer**, ICRA 2023 Workshop on Explainable Robotics, London, United Kingdom.  
**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)
- IEEE Transactions on Pattern Analysis and Machine Intelligence

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**MEMBERSHIPS**

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

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**SELECTED PRESS  
COVERAGE**

*This tennis-playing robot could one day win Wimbledon* | [USA Today](#) | [IEEE Spectrum](#) | [Tyler Morning Paragraph](#) | [News on the Neck](#) | [The News Times](#) | [Talker News](#) | [Daily Mail](#) | [Metro UK](#) | [Independent Record](#) | [Kenosha News](#)  
**Georgia Tech College of Computing** (US) *Tennis Robot Could Pave Way for Advancement in Fast-Movement Robotics* [Video](#) | [Blog](#) | [Mashable](#) | [IOT World Today](#) | [Interesting Engineering](#) | [Watson](#)  
**Georgia Tech College of Computing** (US) *Georgia Tech Researchers Teach a Robot How to Improve at Ping Pong on Its Own* [Video](#) | [Blog](#)  
**Georgia Tech Daily Digest** (US) *Georgia Tech Researchers Use Table Tennis to Understand Human-Robot Dynamics* [Blog](#)

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REFERENCES

References can be provided upon request