Armin Sadeghi

SKILLS

RESEARCH
Optimization • Multi-robot Systems • Mobility-on-demand Systems • Reinforcement Learning

SOFTWARE ENGINEERING
Programming C/C++ • Python • Rust • Pytorch • CPLEX • Gurobi • PostgreSQL
Simulation Gazebo • CARLA • Unreal Engine • Unity • MuJoCo
Software Development Git/Gerrit • Jira • Jenkins • Confluence

EXPERIENCE

RIDECO | Software Engineer, Algorithms and Optimization
Aug 2023 - Present | Waterloo, CA

- Co-lead a team of engineers across product design and sprint planning, collaborating with product managers to assess opportunities and shape the technical development roadmap.
- Prototyped, and productized a new distributed algorithm to minimize the number of non-serviced rides which enables the system to handle clients with larger fleets, collaborating closely with internal stakeholders including project managers, software engineers, and product owners.
- Initiated and prototyped a series of algorithmic improvements to minimize the solution time of the vehicle routing solver, reducing user wait time before being presented with options.
- Proposed improvements to reduce operational cloud computing costs by 10% once fully productized.

ZESTY MARKET | Roboticist, Consultant
Mar 2023 – Aug 2023 | Toronto, CA

- Led the design of a telepresence robot, responsible for designing and building a functional prototype. Developed the entire software stack, including video streaming using **Unity**, **GStreamer/WebRTC**, and **ROS**, enabling remote operation via a **VR** headset.

HUMANITAS SOLUTIONS | Software Engineer
Mar 2023 – Aug 2023 | Montreal, QC

- Developed an in-house, high-fidelity simulation platform using **Unreal Engine/C++**, designed to be compatible with various controllers for Hardware-in-the-Loop applications, including **PX4** for drone simulation and control.

UNIVERSITY OF WATERLOO | Postdoctoral Researcher
Oct 2020– Dec 2022 | Waterloo, CA

- **Occlusion Aware Motion Planning for Autonomous Vehicles**: Developed and patented a novel **real-time** trajectory planning algorithm that enables autonomous vehicles to safely navigate complex environments with occlusions. RAL 2024, ICRA 2022.
- **Error-Bounded Approximation of Pareto Fronts in Robot Planning Problems**: Developed a fast and near-optimal algorithm for sampling the Pareto front of the weighted sum of multi-objective problems. IEEE TRO 2024, WAFR 2022.
- **Learning Motion Policies for Repeatedly Navigating in Uncertain Environments**: Developed and implemented a learning algorithm for mobile robots navigating in environments repeatedly. The algorithm designed for this work is implemented on real-world robots. IEEE TRO 2021.
- **Graduate Student Supervision**: Co-supervised a PhD and a Master's student through their studies and held weekly meetings to monitor their progress and guide them in their research projects.

UBISOFT | Research Scientist
Apr 2019 - Apr 2020 | Toronto, CA

- **Multiplayer games**: Developed and implemented a motion prediction model using **PyTorch** to predict player states and detect collisions in multiplayer games, effectively handling missing updates due to network connectivity issues. Integrated the trained models into the game engine of a commercialized game. IEEE Transactions on Games 2023

EDUCATION

UNIVERSITY OF WATERLOO | PhD in Electrical Engineering
2016 - 2020 | GPA: 4.0 | Waterloo, CA
Thesis: Multi-robot Coverage and Redeployment Algorithms
Advisor: Stephen L. Smith

UNIVERSITY OF WATERLOO | MSc in Electrical Engineering
2014 - 2016 | GPA: 4.0 | Waterloo, CA
Thesis: Distributed Task Allocation and Task Sequencing for Robots with Motion Constraints
Advisor: Stephen L. Smith

SHARIF UNIVERSITY OF TECHNOLOGY | Dual BSc in Mechanical and Aerospace Engineering
2008 - 2014 | GPA: 3.7 | Tehran, Iran

PUBLICATIONS

For an up-to-date list of my publications, please refer to my Google Scholar page.