Reza Etemadi Idgahi

Contact Information

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Education

- **Master of Science in Computer Science** *2019 – 2021*
  The University of Texas at Arlington, USA *GPA: 4.0*
  - Thesis: Learning Hierarchical Traversability Representation for Efficient Multi-Resolution Path Planning; Supervisor: Prof. Manfred Huber
- **Bachelor of Science in Computer Engineering** *2014 – 2018*
  Ferdowsi University of Mashhad, Iran *GPA: 3.5*

Work Experience

- **Senior Software Engineer | Azure Core, Microsoft** *Aug 2022 – May 2026*
  - Led architecture design and delivery of diagnostics platform for large-scale transition of Azure Storage to dynamic region-wide deployments with 1000× scale increase.
    - Drove cross-functional consensus on requirements and design options with 8+ stakeholder teams; selected and refined architecture balancing short-term compatibility and long-term extensibility.
    - Leveraged dependency injection and clean code principles backed by comprehensive test coverage, to support the new architecture model while keeping existing operational workflows functional with minimal changes.
    - Led 6-engineer v-team through implementation; created detailed development plan, assigned and tracked work, and provided ongoing technical guidance while contributing hands-on to keep the team on schedule with high-quality delivery.
  - Optimized distributed health and quorum check systems in Azure Storage, cutting resource use by 9× and scaling the fan-out from thousands of targets to millions.
    - Utilized sampling-based profiling (Windows Performance Toolkit) and extensive debugging (WinDbg) to analyze the code and find the bottlenecks and potential improvements with the highest impact.
    - Reduced page faults by reworking the memory allocation, improved cache use by redesigning the class structures, removed waste by inlining functions in the hot paths, and reordered operations for instruction-level parallelism and better use of execution ports on the CPU.
  - Built C++ libraries for disk configuration, using named events for synchronization and automated failover, along with telemetry-driven incidents using OpenTelemetry.
  - Led the effort for implementing OS-level network isolation and live firewall rules that update from IP mappings without service restarts.
  - Redesigned authentication across native C++ and managed backends, adding OAuth/JWT through shared abstractions and automatic failover.
  - Built python test framework for validating hundreds of APIs across client types, cutting sign-off time from 4–8 hours to minutes.
- **Software Engineer | Paycom** *Jan 2021 – Dec 2021*
  - Built and launched new features in the tax reporting platform using C#/.NET, taking requirements from concept through design, implementation, and production deployment.
  - Optimized the data processing module by analyzing algorithms and evaluating performance tradeoffs, achieving a 35% reduction in processing time for large datasets.
  - Developed a custom C# attribute and reflection-based library for deep comparison of complex tax form objects with ability to handle nested objects, complex types, and arrays, cutting development time for new tax forms by 40%.

- Drove a 20% decrease in client tickets by identifying and fixing recurring defects through systemic debugging, root-cause analysis, and rigorous code review practices.

- **Research Assistant | Learn Lab at UT Arlington** *Oct 2019 – May 2021*
  - Developed a novel path-planning method that reduced planning time on large maps by 60% by training a deep convolutional neural network (TensorFlow) to generate guiding heuristics for classical planners (A* and RRT) within a hierarchical framework.
  - Accelerated the training and testing pipeline by 80% through Python multi-processing and automated hyperparameter optimization.
- **Software Engineer | XPeng Motors** *Mar 2019 – Jul 2019*
  - Developed a new perception pipeline in C++ and Python that improved performance by 50% over the existing system while supporting deployment across different environments.
  - Improved inference efficiency of the AI model in collaboration with the ML team through systematic profiling and targeted optimizations of runtime and memory usage.
  - Developed auxiliary tools to monitor and debug the perception module and its inter-module communication, improving visibility and reducing troubleshooting time.
- **Research Assistant | Robotics Lab at Ferdowsi University** *Dec 2015 – Sep 2018*
  - Developed a robust omnidirectional walk engine for NAO humanoid robots, improving stability and maneuverability.
  - Improved robot performance by leveraging evolutionary algorithms for parameter optimization and behavior refinement.
  - Developed an Artificial Potential Field-based path planner for real-time robot navigation and obstacle avoidance.
  - Extended the 2D RoboCup soccer simulation server to create novel games and evaluation scenarios for multi-agent research.
- **Software Engineer | Menulit Inc.** *Oct 2016 – Sep 2018*
  - Designed and developed a full-stack menu management and online ordering system for restaurants and cafés (C# + Entity Framework + MySQL backend, Java Android customer app, AngularJS staff web portal).
  - Focused on building a robust customer experience through extensive testing and iterative refinement, addressing edge cases and real-world usage patterns to maximize reliability.
  - Worked closely with restaurant management and staff to translate operational requirements into the system, balancing customer-facing simplicity with the practical needs of order handling and restaurant workflows.
- **Teacher Assistant | Ferdowsi University** *Sep 2017 – Jun 2018*
  - Courses: Artificial Intelligence, Operating Systems, Compiler Design Concepts
- **Lecturer | Ferdowsi University** *Sep 2017 – Dec 2017*
  - Course: Introduction to Linux, C++, and RoboCup 2D soccer simulation
- **Intern | Security Lab at California State University of Long Beach** *Aug 2017*
  - Developed an ad-blocking system with an Android application and a RESTful JS backend.
  - Implemented traffic capturing on the Android client and statistical analysis on the server to identify and block advertisement requests.

Skills And Expertise

- **Programming Languages:** C, C++, Python, MATLAB, Linux Shell Script, C#, Java
- **Web Frontend & Backend Development:** JavaScript, Java EE, SQL
- **Frameworks and libraries:** TensorFlow, PyTorch, NumPy, pandas, Qt, Django
- **Professional Strengths:** Detail-oriented with precise communication; takes ownership to drive projects to completion; effective collaboration with partner teams and stakeholders; rapid learner of new technologies and domains.

Publications

- R. E. Idgahi and M. Huber, “Learning Hierarchical Traversability Representations for Efficient Multi-Resolution Path Planning,” in *2022 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 2022, pp. 2520–2526, doi: 10.1109/SMC53654.2022.9945075.
- P. Ganesh, R. E. Idgahi, C. B. Venkatesh, A. R. Babu, and M. Kyrarini, “Personalized system for human gym activity recognition using an RGB camera,” in *Proceedings of the 13th ACM International Conference on PErvasive Technologies Related to Assistive Environments*, ser. PETRA '20, Corfu, Greece: Association for Computing Machinery, 2020, doi: 10.1145/3389189.3392611.

Presentations and Workshops

- Linux Build Automation Tools: Configure, Make & Make Install,
  - *Linux fundamentals workshop at Ferdowsi University, 2017 and 2018*
- Understanding Android Manifest,
  - *Android programming workshop at Ferdowsi University, 2016*

Honors And Awards

- RoboCup 2D Soccer Simulation International Awards
  - 2nd place in Technical Challenge in RoboCup Asia-Pacific Championship, Iran, 2018
  - Participating in International RoboCup Championship, Japan, 2017
  - 3rd place in NasirCup Competition, Iran, 2017
  - 1st place in Portuguese Open Championship, Portuguese, 2017
  - 2nd place in Iran Open Championship, Iran, 2017
  - 1st place in Iran Open Championship, Iran, 2016
- RoboCup 3D Soccer Simulation International Awards
  - 3rd place in RoboCup Asia-Pacific Championship, Iran, 2018
  - 4th place in Iran Open Championship, Iran, 2018
  - Participating in International RoboCup Championship, Japan, 2017
  - 1st place in Technical Challenge in Iran Open Championship, Iran, 2017
- Recipient of exceptional talent fellowship from dean’s office, 2016
- 3rd place in Mashhad mobile programming marathon, 2016
- Member of “Students Scientific Association” in Ferdowsi University, 2016
- Participated in 5th ACM Ferdowsi Collegiate Programming Contest, 2016
- Participated in 4th ACM Ferdowsi Collegiate Programming Contest, 2015
- Participated in 2nd Sharif mobile programming marathon, 2015
- Participated in 1st Tosan mobile programming marathon, 2015
- 2nd place in Khwarizmi Youth Award, 2011