

Megha Maheshwari



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Santa Clara, CA



PROFILE

An experienced Software Engineer passionate about developing cutting-edge technologies in consumer robotics and autonomous vehicles.

With expertise in C#, C++, ROS, Mapping, Behavior trees, computer vision and deep learning, I've had the privilege of contributing to groundbreaking projects like Amazon's 'Astro' and autonomous driving systems at Volvo.

My career spans over a decade, with achievements such as optimizing performance for automotive HMI tools, securing patents in robotics and autonomous technology, and advancing machine learning applications.

I thrive at the intersection of innovation and reliability, delivering high-performance solutions that push the boundaries of what's possible. As member of Women in Robotics (a worldwide platform for women in the field of robotics) I work actively to uplift and promote women in the field of robotics.



PROFESSIONAL EXPERIENCE

2019 Nov – present
Sunnyvale, USA

Amazon Lab 126, Software Engineer, Consumer Robotics

Work on Mobility software stack For Amazon 'Astro'.

Single Threaded Owner for :

- Recovery : Autonomous Recovery of 'Astro' after it is stuck stuck in consumer homes to prevent robot from Dying out of Charger and eliminate the need for user intervention.
- Exploration : Driving the device around for 2D Map Generation for Out of box Experience 'Astro' in Consumer and Business Environments.
- Global planner : Implementing a Global planner using trail graphs and A* star.
- 3D Map generation using Nvblox with Nvidia suite.
- Implementing tools to debug customer issues in the field.
- Led a cross functional team to develop tools to debug failures of Astro in the field.
- Built robotics SDK around ROS2.

Achievements:

- Significantly improving the 'Astro Wake Word' performance, which led to successful launch of 'Astro'.
- Improved Astros response to recovery by 1.5 seconds.
- Single handedly root caused issues faced by customers in the field that caused Device to Die Out of Charger and designed a strategy to address the issue and reduce chances of device Dying out of charger by 40%. Additionally designed a framework that helps quick analysis of customer issues in the field.
- Patents pending.

2017 Jun – 2019 Nov
Mountain View, USA

Volvo Car Group Silicon Valley R & D Tech Center, Autonomous Driving Engineer

- Work on proof of concepts for Lane Detection using computer vision and deep learning.
- Sensor and Tool Evaluation with startup. Projecting point cloud data onto 2D images and evaluating sensor quality.
- Depth estimation on monocular images using deep learning.
- Data annotation tools for autonomous cars / Smart Data filtering for deep learning using super pixel segmentation.

Achievements:

- **2 patents granted** in the autonomous space (US Patent 11,787,334 & US Patent 11,062,455)
- Pitched a product as part of Volvo Hackathon

Continental Automotive

2014 Jan – 2017 Jan
Singapore / Germany

Senior Software Engineer/ Technical Expert

Develop C++ widgets and animations

- Develop animations for warning, content change and list for cluster and Head Up Displays using layer opacity and frame concepts.
- Develop code to run both on simulation and hardware using Canoe simulation and Multi IDE debugger.

Software System Designer responsible for a team of 6 people for tool development for HMI environment.

- Provide leadership and mentoring to a team of engineers.
- Support new tool development and tool adaption for multiple projects and platforms as a tool chain architect.
- Point of contact between Singapore and Germany and collaborate efficient work and communication between the team in Singapore and Babenhausen, Germany.
- Involve in concept discussions and design ideas for ongoing and new projects.
- Frequent business trips to Germany to collaborate and discuss new requirements and concepts.

Achievements:

- Performance Optimization: Tool runtime **down from 8 hours to 7 minutes.**
- Memory Optimization: Tool **Peak memory down from 7 MB to 1 MB.**
- Awarded “**Technical Expert**” HMI Toolchain.

2011 Jan – 2013 Dec
Singapore, Singapore

Software Engineer

Single Point of Contact (SPoC) and the Lead Trainer in Singapore.

Responsible for tool chain development, troubleshooting and maintenance of tools using .NET framework that translates customer requirement model into a model suitable for running on the HMI framework.

Achievements:

- Design and Develop tool in C# with XML and XSLT interfaces. This tool called the Cross-Compiler is responsible for translating customer requirement model into the HMI framework model, image processing including bitmap cutting, bitmaps and true type font processing using .NET classes, creating patchwork for bitmap fonts to be easily handled by the graphics subsystem, facilitate optimization and re usage of widgets on the target system for multiple brands and themes.
- Design and develop a tool in C# using .NET framework 4 Visual Studio 2010 to provide an optimum memory configuration for animations to run on the target software.
- Design and develop a tool in C# using .NET framework 4 Visual Studio 2010, to assist the Quality team with QA analysis reports.

2010 May – 2010 Sep
Singapore

A* Star (Institute for Infocomm Research), Research Intern

Fixed point implementation issues of adaptive filters and efficient pipelined hardware implementation of adaptive filters using modified delayed LMS algorithm using Matlab and Verilog.

2007 Aug – 2008 Aug
India

Aricent Technologies India Pvt. Ltd., Software Engineer

- Software engineer involved in the development of embedded software of Filter for NokiaNode-B.
- Developed the code for QSPI drivers, ADC, DAC and IO Expander as part of first release alongwith guidance from senior members.
- Independently handled the VSWR and LNA module and develop the code for the same in Clanguage using Code Warrior IDE as part of second release.

Achievements:

- Won **SNAP Award** for outstanding performance in the project.
- Won the first runners up for Quality project on “**Remote Installer**” during the OasisTraining in Aricent Technologies Holdings Limited.
- Won the best presentation award for presentation on “**Orthogonal Frequency Division Multiplexing**” during Oasis Training in Aricent Technologies Holdings Limited.

PATENTS

- 2023
USA **Driver assistance system and method for vehicle flank safety** 
- 2021
USA **Data filtering of image stacks and video streams** 

PUBLICATIONS

- 2015 **.NET memory usage – 7 tips for better performance**, www.red-gate.com 
- 2011 **A High-Speed FIR Adaptive Filter Architecture using a modified delayed LMS algorithm**, *IEEE, ISCAS*
- 2007 **Improvement in the performance of OFDM using Neural Networks**,
National Conference, India.

EDUCATION

- 2017
USA **Nanodegree, Self Driving Cars**, *Udacity*
Computer Vision, machine learning, deep learning, ROS files
- 2009 – 2011
Singapore **Master of Science, Embedded Systems**, *Nanyang Technological University*
Courses : Embedded Software Programming, Advanced Computer Architecture, Embedded OS
GPA: 4.7/5.0
- 2023 – 2007
Assam, India **Bachelor of Technology, Electronics and Telecommunication Engineering**,
National Institute of Technology (N.I.T)
GPA: 9.38/10

SKILLS

- Programming Languages:** C#, C++, Python **Frameworks:** ROS, TensorFlow, GTest
- Machine Learning:** Computer Vision, Deep Learning **Design Patterns:** TDD, Design Patterns
- Other:** Prompt Engineering, Performance Optimization

LANGUAGES

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|---------|------------------------|----------|------------------------|
| English | <div><div></div></div> | Hindi | <div><div></div></div> |
| German | <div><div></div></div> | Assamese | <div><div></div></div> |