Somesh Daga

Master of Applied Science (MASc.)
Expected Completion: Aug 2021

Software

C++/Python 7+ yrs

Robot Operating System (ROS) 5+ yrs

Amazon Web Services (AWS) 2+ yrs

Continuous Integration/Delivery (CI/CD) 2+ yrs

Computer Vision 2+ yrs

Reinforcement Learning 2+ yrs

PyTorch/Tensorflow 3+ yrs

Docker 3+ yrs

MongoDB 3+ yrs

Simulation

Gazebo 4+ yrs

MuJoCo/PyBullet 2+ yrs

Matlab 8+ yrs

Biography

A robotics enthusiast who loves tinkering with cutting-edge technologies and keeping up with the latest trends. Strong applied background in mobile robotics and manipulation for commercial applications from previous technical and leadership roles. Other areas of interest include machine learning for autonomous driving, healthcare applications and algorithmic trading. Seeking opportunities to contribute to the revolutionization of the robotics space, and the healthcare and financial sectors through emerging advances in Deep Reinforcement Learning.

Education

MASc Student **Sep 2019 - today**
University of Waterloo - Waterloo, ON
Mechanical and Mechatronics Engineering
Advanced Robotics Lab

Dean Entrance Award • President's Graduate Scholarship • Engineering Excellence Fellowship • NSERC CGS-M

(In Progress) Thesis: Reinforcement Learning for Sequential Robotic Tasks
Supervisors: Drs. Soo Jeon and William Melek

Research focus in sample efficient and explainable behaviour learning for robotic manipulation. Development of novel approach based on task-level decomposition and Hierarchical Reinforcement Learning

BASc Student **Sep 2012 - May 2017**
University of British Columbia - Vancouver, BC
Engineering Physics (Mechatronics Specialization)

APEG Achievement Award • Trek Excellence Awards 2013-2016 • Engineering Physics 50th Anniversary Scholarship • Jimmar Memorial Scholarship • Captain C Y Wu Scholarship • Chancellor's Scholar

Credits Earned: 198 • Cumulative Percentage Grade: 92.6%

Work Experience

Software Lead **Sep 2018 - Aug 2019**
A&K Robotics - Vancouver, BC

Led a team of software developers to develop and deploy the first fleet of autonomous floor cleaning industrial robots. Wide scope of responsibilities including technical development of core technologies, design and review of software/cloud architectures, DevOps, and project management. Contributed to development of autonomous platforms for indoor transportation of people with restricted mobility, and disinfecting robots.

Robotics Engineer **May 2017 - Aug 2018**
A&K Robotics - Vancouver, BC

Worked on a large number of robotic technologies, not limited to, navigation, SLAM, teleoperation systems, human-robot interfaces and cloud solutions. Examples of projects include obstacle avoidance and indoor localization algorithms, behaviour trees for designing robot behaviours, UI/UX development, automated backups for robot data and distributed system communications.

Skills

- Solidworks
- 3D Printing
- Hand/Machine Tools
- Laser/Waterjet Cutting
- Microcontroller Programming
- Analog and Digital Electronics

MASc Courses

- Autonomous Mobile Robotics
- Pattern Recognition
- Machine and Process Control
- Image Processing and Visual Communication
- Continuous Optimization (Audit)

Interests

- Piano
- Badminton
- Tennis
- Table-tennis
- Travel

Contact

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Localization and Navigation Developer (Co-op) — **Apr 2016 - Aug 2016**
A&K Robotics - Vancouver, BC

Implemented comprehensive software-in-the-loop simulations using the Gazebo simulator. Developed software for robot subsystems such as navigation and diagnostics using the ROS framework, and created GUI dashboards using the Qt framework.

Research Engineer (Co-op) — **Aug 2015 - Dec 2015**
International Collaboration On Repair Discoveries (ICORD) - Vancouver BC

Developed MATLAB scripts to analyze spinal cord injury mechanics, optimize controllers for linear actuators, validate apparatus calibrations and automate report generation for test results. Designed and fabricated a mechanical assembly to mimic force-displacement characteristics of rat vertebrae to validate controller performance.

Junior QA Test Developer (Co-op) — **May 2015- Aug 2015**
AppNeta - Vancouver, BC

Developed test suites and supporting infrastructure for a number of projects. Work included development of Dockerfiles for testing and verification of dependencies for web request tracking instrumentation (TraceView™) across supported languages and web servers, and automated provisioning of virtualized machines on AWS using Chef.

Systems Engineer (Co-op) — **Jan 2014 - Apr 2014**
Optigo Networks Inc. - Vancouver, BC

Developed extensive hardware-in-the-loop test systems for optical networking devices from the ground up. Completed research-focused tasks such as identifying bandwidth bottlenecks and overheads, and modelling device power consumption.

Project experience

UW Robotics Team — **Sep 2019 - Feb 2020**
University of Waterloo - Waterloo, ON

Created simulation model of custom arm and manipulator using ROS/Gazebo. Implemented simulated and hardware controllers using the ROS Control interface and developed CAN libraries for communication. Developed a cartesian controller for arm teleoperation using the MoveIt Motion Planning framework.

Self-Driving Car Nanodegree Program — **May 2017 - Aug 2017**
Udacity

A project-laden online course organized by Sebastian Thrun, offering Computer Vision and Deep Learning materials targeted for autonomous driving applications. Projects included traffic sign classification using Convolutional Neural Networks (CNNs), behaviour cloning for a car learning to drive around a simulated race track, detecting lanes on a road in a video stream under challenging lighting conditions and tracking vehicles in a video stream.

UBC Open Robotics — **Apr 2015 - Apr 2016**
University of British Columbia - Vancouver, BC

Generated command line interfaces for user friendly operation of servo-motors on a robotic arm. Developed firmware and software for teleoperation of a robotic arm using a 3D printed miniature replica.