

# ANIL HARISH

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Portfolio: [www.anilharish.com](http://www.anilharish.com)

## Education

**Colorado State University**, Fort Collins, CO

Aug 2016 – Dec 2018

*Master of Science, Electrical Engineering* – GPA (Program of Study): 3.5/4.0

*Coursework:* Robot Mechanics and Control, Robot Programming and Simulation, Biologically Inspired Robotics, Dynamics of Complex Engineering Systems, Embedded Systems Design, Engineering Risk Analysis, MEMS.

**Visvesvaraya Technological University**, Belgaum, Karnataka, India

Sep 2010 – June 2014

*Bachelor of Engineering, Electronics and Communication* – GPA: 3.4/4.0

*Coursework:* Artificial Neural Networks, Control Systems, Digital Image Processing, Information Theory & Coding.

## Technical Skills

**Programming:** C/C++, Git, Ladder Logic, PLC, 6 Axis Robots – ABB, FANUC and KUKA, Python (Basic).

**Packages:** ROS, RViz, Gazebo, Moveit!, OMPL, OpenCV, MATLAB, SIMULINK, PCL, TensorFlow (Basic).

**Design/Automation:** AutoCAD, SolidWorks, RSLogix 500, Allen Bradley MicroLogix, Siemens PLM RobotExpert.

**Algorithms:** *Path Planning* – Dijkstra, A\*, RRT, RRT\*; *SLAM* – RBPF, EKf; *Optimization* – ACO, PSO; *Object tracking* – KCF, TLD, MIL; *Object Detection* – RCNN, YOLO.

**Hardware:** Arduino, Raspberry Pi, MSP430, XBEE, Silicon Labs C8051F500, Jetson (Basic).

## Recent Projects

**Ant Colony Optimization and Formation Control of Swarm Robots**, *Graduate Research Project* Spring 2018

- Designed autonomous robots and omnidirectional IR transceiver to mimic swarm intelligence in ants.
- Optimized rapidly exploring random tree exploration algorithm to efficiently search food source by 1.7x using **ROS** and **OpenCV**. Simulated sensor noise, distortion, and environment dynamics in **Gazebo**.
- Performed SLAM by exploiting Rao-Blackwellized particle filter using ultrasonic rangefinders to lower cost.

**Task Level Controller for 6 Axis Robots**, *ECE 455 and MECH 564*, Colorado State University.

Fall 2017

- Developed nonlinear controller in **MATLAB** to linearize & decouple robot dynamics model in the task space.
- Increased tool centre point accuracy to 0.3mm using Damped Least Squares and Runge – Kutta 4<sup>th</sup> order method to calculate joint angles for trajectory generation and path planning validated in **SIMULINK**.
- Investigated multivariable control for monitoring tool process parameters to anticipate quality issues.

## Professional Experience and Certifications

**VOLVO Group**, Application Hosting Services .NET, *Infrastructure Engineer*

Aug 2014 – Jul 2016

- Optimized BMC Remedy algorithm for impact analysis of infrastructure changes, decreasing response time by 3 milliseconds per configuration item as **Change Advisory Board representative**.
- Solved 7 Major Incidents as OS and storage **Root Cause Analysis Engineer** in windows servers and clusters hosting revenue critical applications (Siemens PLM, IIS, SID etc).
- Developed PowerShell scripts for periodic upgrade of VMware host version and Symantec Endpoint Protection in 8500+ production servers resulting decrease in deployment failures by 40%.

**TATA POWER SED**, Research and Development, *Embedded Systems Intern*

Spring 2014

- Built Software Defined Network for radar centric defence system using erlang based OpenFlow controller.
- Developed drivers for C8051F500 Microcontroller and SPARTAN 6 FPGA to interface between the devices in the control plane and the data plane in red and black security.

**AXELOS Global Best Practice: ITIL®** Certified APMG International. Certificate No. 03107580-02-ZEKV

May 2015

**PLC Programming Level 1 and 2:** Udemy Inc. Certificate No. UC-LXX9FXO1, UC-MNJZ22K4

Oct 2018

## Leadership and Awards

**Performance Award**, **VOLVO**: Best engineer of 1<sup>st</sup> Quarter 2016, for client satisfaction (ASSA ABLOY) and most reliable deliveries, ITIL Standard Operating Environment implementation, and ticket resolution interval.

**Co-Founder and Secretary**, *IEEE Student Branch, Visvesvaraya Technological University*

- Organized Elements & Optimus IEEE technical fests hosting 12 institutions & 2000+ students promoting STEM.

**Team Leader**, *Fixed Wing UAV Workshop*, AeroTrix: Won 1<sup>st</sup> place for best design and fabrication among 16 teams for implementing winglets to reduce drag and improve battery efficiency by 10%.