

Shweta Gupte

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Profile

- One year experience of working in embedded system design, microcontroller programming and low level interface
- Academic experience in embedded systems, RTOS, motion planning, computer architecture and computer vision
- Experience of working in startups, in research and development and as part of a core team

Skills

Programming: C, Embedded C, C++, JAVA, Python, Assembly language, MATLAB

Microcontrollers: Renesas RX62, Renesas QSK, Arduino, x86, Atmel 8051, PIC, dsPIC

Software: IDEs - MATLAB, Eclipse, Keil, Xcode(iOS Developer), MPLAB, IAR workbench etc.;
PCB/Circuit design - Proteus, ExpressPCB, Multisim, CadSoft Eagle;
Robot Operating System (ROS/Stage); development on Linux

Education

Master of Science - Electrical Engineering May 2013
University of North Carolina at Charlotte, North Carolina GPA: 3.5/4.0

Bachelor of Engineering - Electronics & Telecommunications May 2009
University of Pune, India Grade: First Class

Relevant Courses

Advanced Microprocessors, Computer Architecture, Computer Vision,	Advanced Embedded Systems, Research Tools and Techniques, Reconfigurable Computing,	Real time Operating Systems Intelligent Robotics Electronic Product Design
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Work Experience

Fennec Fox Technologies

Senior Engineer - R & D

Nov 2009 to Dec 2010

- Designed an embedded system for motor control, odometry calculations, sensor interface and serial communication using dsPIC microcontrollers
- Programmed and tested individual modules like motor control, sensor circuit and power distribution system using embedded C, assembly language and MATLAB
- Conducted workshops and mentored undergraduate engineering students for projects in microcontroller programming, robotics and embedded systems

Coroware Technologies

Intern

Nov 2012 to April 2013

- Designed a wireless sensor network using Zigbee protocol for accurate localization using IAR embedded workbench
- Designed the interface of a customized print head assembly to the company's standard robot to add functionality of floor marking
- Performed power calculations, electrical schematics and electronic assembly

Publications

- Gupte, S.; Mohandas, P.I.T.; Conrad, J.M.; "A Survey of Quadrotor Unmanned Aerial Vehicles", in proceedings of IEEE Southeastcon, pp 1 – 6, March 2012

Relevant Projects

Eskorta Robot - Control Design

Eskorta is a mobile robotic platform designed service industries. It features include autonomous indoor mapping, path planning and dynamic obstacle avoidance.

- Designed the layout and signal conditioning for controller board and interfaced front end sensors
- Programmed controller board for motor control, odometry and serial interface with ROS
- Performed power calculations and designed power distribution system

Remote System Monitoring and Data logging for Autonomous Vehicle

- Designed an embedded system that attaches to a vehicle's control system to sense causes of system failure such as IC overheating, irregular voltage fluctuations, sparking and faults in sealing
- Used RS-232 to Bluetooth protocol conversion and configured a wireless Bluetooth link with a remote computer
- Developed a remote data logging system and real-time interface for underwater applications

Controller for Obstacle Avoidance and Stability Maintenance of a Quadrotor

- Designed a system to maintain stable flight of a quadcopter (4 rotor aerial vehicle) using IMU data and online obstacle avoidance
- Interfaced IMU sensor with Arduino Mega microcontroller board for stability and IR sensor for obstacle avoidance
- Developed code for stable landing of quadrotor using height and orientation calculation

Complete Coverage Path Planner for Autonomous Robots

- Wrote an efficient algorithm to perform complete coverage path planning of a mobile robot using C
- Simulated the robot and environment using ROS/Stage on Linux
- Tested the algorithm on iRobot Create in a indoor environment with obstacle avoidance and analyzed results for area covered and efficiency of the algorithm

Visual Odometry using Stereo Vision

- Designed a stereo vision system with MATLAB using two webcams
- Implemented SIFT filtering for feature detection in a corridor
- Developed code for 3D visual odometry to aid an autonomous vehicle in determining its own position using SIFT filtering

Path Planner using Adaptive Evolutionary Planner/Navigator

- Implemented a path planning algorithm based on Adaptive Evolutionary Planner/Navigator using C++ for an autonomous vehicle
- Tested and simulated using ROS (Robot Operating System) and Stage on Linux