# Aashish Sheshadri

aashish.me

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## EDUCATION

**The University of Texas at Austin**, Austin, TX — September 2012 – May 2014

**Master of Science in Computer Science**

- Concentration in Statistical Machine Learning and Human Computation; GPA 3.9/4.0

**PES Institute of Technology**, Bangalore, India — September 2007 – July 2011

**Bachelor of Technology in Electronics and Communication**

- Concentration in Neural Networks, Embedded Systems and Control Systems; GPA 8.40/10
- Distinction honors; Awarded to top 15%, GPA>7.75

## WORK AND RESEARCH EXPERIENCE

**PayPal,** San Jose, CA

Software Engineer 3 at PayPal Labs — 8th June 2014 - present

- Designed and implemented an entropy-miner to enable reliability from encryption libraries; Exposed and reinforced symmetric and asymmetric encryption toolset from Crypto++ as Node.js addons.
- Implemented and designed a protocol mimicking and improving on HTTP to serve secure JSON over TCP intended to securely serve applications. Project lead by Douglas Crockford in an effort to get the web right.
- Designed and built an adaptive, intelligent and space cognizant layout manager in Javascript using Cassowary.

**The University of Texas at Austin,** Austin, TX

Graduate Research Assistant at UT CS advised by Prof. Matthew Lease — 16th January 2013 – 31st May 2014

- Investigated and designed Statistical Machine Learning techniques to enable automatic verification of crowd-sourced data.
- Investigated and implemented benefits of crowdsourcing to large-scale IR evaluation.

Teaching Assistant at the Dept. of Computer Science — 5th September 2012 – 15th January 2012

- Programming Languages - Upper division undergraduate course.

**The Robotics Institute, Carnegie Mellon University,** Pittsburgh, PA

Research Associate advised by Prof. William L. "Red" Whittaker — 15th September 2011 – 16th March 2012

- Developed a novel method to enable global localization by terrain registration to Hi-Resolution Satellite Imagery.
- Investigated techniques and methods to estimate rover pose using visual odometry on planetary terrain.
- Implemented a method enabling automatic calibration of a multi sensor configuration (Camera-LIDAR).

Summer Scholar advised by Prof. William L. "Red" Whittaker — 1st June 2010 – 5th September 2010

- Implemented a Robotic System to Enhance Situational Awareness in Mine Rescue.
- Designed a user interface to enable sensor data visualization, robot communication and robot tele-operation.

**Hi-Tech Robotics Systemz,** Gurgaon, India — 21st Jan 2011 – 7th May 2011

Research Intern

- Developed an Autonomous Mobile Robotic System for Mapping and Surveillance.
- Designed a sensor configuration specific to implementation, solution included a LIDAR, GPS and a Camera.
- Designed and implemented circuitry for the system to enable system expansion and effective power regulation.
- Developed a calibration method to enable odometry error minimization on a tracked mobile robot, method used the UMB benchmark to estimate systematic error which was minimized by learning correction coefficients using the least mean squares algorithm.
- Evaluated mapping performance of two open SLAM algorithms - GMapping and Karto SLAM.
- Implemented obstacle avoidance and local navigation using VFH+.

**Indian Institute of Science,** Bangalore, India

Research Intern at Center for Electronic Design and Technology — 15th November 2009 – 15th January 2011

- Designed and Implemented a GPS tracking system with GSM capabilities as an Embedded System using Atmega32 microcontroller, implementation primarily included interfacing GPS and GSM modems along with a Real Time Clock, 16x2 LCD and 16x16 Keyboard.
- Programmed the system to enable multiple inputs for each key to mimic keypads on mobile phones.
- Enabled CG RAM access for the LCD to display and store custom characters.

Research Intern at Center for Electronic Design and Technology 1st June 2009 – 31st July 2009

- Designed and Implemented an Embedded System to take user input and voice feedback.
- Implemented using Atmega32 microcontroller, implementation included interfacing APR9600 voice chip with a 16x16 Keyboard and 16x2 LCD.

## PROJECTS

- Implemented N-Gram and HMM models to enable authorship attribution of sheet music, specifically studied pieces by Haydn and Mozart; work was accepted for publication at the 14th International Society for Music Information Retrieval (ISMIR), 2013. Implemented using Python and Java.
- Implemented a person re-identification system in a static camera network by learning part specific attributes such as 'has Shirt', 'has Shoes', 'is Male'. Implemented using OpenCV.
- Implemented an interactive image segmentation framework using graph cuts and mixture models, by learning color distribution models and finding similarity in high dimensional descriptive spaces of image features.
- Lead a team to design an IPOD like MP3 player using the Atmega32 microcontroller; implemented a common communication protocol and interfaced a digital signal processor. Implemented using Embedded C.
- Designed and implemented a Sound Source Localization device using an array of three omni-directional microphones. System was implemented using an Atmega32 microcontroller interfaced with microphones. A Matlab program enabled localization of the sound source by processing audio signals from the microcontroller.

## PUBLICATIONS

**1. A Collaborative Approach to IR Evaluation**
Masters thesis supervised by Kristen Grauman and Matthew Lease

**2. SQUARE: A Benchmark for Research on Computing Crowd Consensus**
Aashish Sheshadri and Matthew Lease
1st AAAI Conference on Human Computation (HCOMP), 2013

**3. SQUARE: Benchmarking Crowd Consensus at MediaEval**
Aashish Sheshadri and Matthew Lease
MediaEval: Crowdsourcing in Multimedia Task, 2013

**4. Position Estimation by Registration to Planetary Terrain**
Aashish Sheshadri, Kevin Peterson, Heather Jones and Red Whittaker
IEEE International Conference on Multisensor Fusion and Information Integration (MFI), 2012

**5. Complementary Flyover and Rover Sensing for Modeling Planetary Terrain Features**
Heather Jones, Uland Wong, Kevin Peterson, Jason Koenig, Aashish Sheshadri and Red Whittaker
8th International Conference on Field and Service Robotics (FSR), 2012

## TECHNICAL SKILLS

**Languages:** Proficient in C++, NodeJs, JavaScript, Matlab, Java, QML, Embedded C, C, UNIX Shell scripting
Exposure to Python, Haskell, x86 Assembly, x51 Assembly, VHDL, SQL