VISHNU PURUSHOTHAMAN SREENIVASAN

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Science — Philadelphia, PA

Candidate for Master of Science in Engineering, Robotics, GPA : **3.77/4.00** — May 2015

Relevant coursework: Machine Learning, Vision, Machine Learning in Robotics, AI, Database, Software Engineering.

National Institute of Technology, Tiruchirappalli (NITT) — Tiruchirappalli, India

Bachelor of Technology in Mechanical Engineering, GPA : **9.08/10.0** — June 2013

SKILLS

- Languages: MATLAB, Python, Python-OpenCV, C/C++, Java(exposure), SQL, HTML(exposure)
- Software/Development Tools: Visual C++, Photoshop, LaTeX, Git
- Hardware: CVAVR, MPLAB X, Arduino
- OS: Windows, Linux flavors

WORK EXPERIENCE

Software Intern, KeyMe Inc., New York, NY — May – August 2014

- Estimated calibration parameter for key cutting in key making kiosks using Python-OpenCV.
- Detected depth of cuts on keys for validation using computer vision.

Research Intern, Technische Universität München, Munich, Germany — May – July 2012

Awarded scholarship by Deutscher Akademischer Austausch Dienst (DAAD)

- Implemented "Shift by Wire" functionality in a tele-operated vehicle using PIC32MX microcontroller via CAN communication system. Incorporated failure detection and handling techniques.

Research Intern, Indian Institute of Technology, Chennai, India — July & December 2011

- Programmed a Lego robot to find the region of minimum brightness in an arena floor. Approximated the functional variation by collecting data near the robot and traversed to the minimum with Steepest Descent and Newton's algorithm.

Teaching Assistant, Machine Learning, University of Pennsylvania, Philadelphia, PA — September 2014 – Present

- Developing assignments in Python, building auto-grader scripts and framing exam questions.

ACADEMIC PROJECTS

Machine Learning, University of Pennsylvania, Philadelphia, PA — September 2013 – June 2014

- Analyzed sentiments of reviews in yelp website. Performed feature selection using correlation analysis, dimensionality reduction using PCA, and classification using Naïve Bayes and Logistic Regression.
- Implemented GraphSLAM for merging sub-maps built by multiple robots, using MATLAB.
- Built a panorama from images taken by a camera, whose 3D orientation was tracked using Unscented Kalman Filter.
- Developed a system for gesture recognition from phone IMU data, by implementing Hidden Markov Models.
- Performed simultaneous localization and mapping (SLAM) with Particle Filters, using encoder, LIDAR and IMU data.
- Implemented an algorithm for emulating human and vehicular path planning, using imitation learning.
- Modeled colors for object detection using Gaussians. Extracted shape features to identify the depth of the object.
- Implemented ML techniques like decision trees, adaboost, perceptrons, SVM and Logistic Regression in MATLAB.

Computer Vision, University of Pennsylvania, Philadelphia, PA — September– December 2013

- Detected edges in an image, by implementing Canny edge detection.
- Morphed images with Delaunay triangulation and Thin-Plate Spline model.
- Used Harris corner detection and RANSAC for panorama image stitching.
- Replaced objects in images by extracting image features through SIFT and matching them using RANSAC.

Senior Design Project , NITT, Tiruchirappalli, India — January – May 2013

- Designed a system to replace the functionality of a PLC in a single axis AC servo motor, with an Arduino. Programmed the Arduino to establish position, velocity and torque control of the motor.

PUBLICATION

Vishnu Purushothaman Sreenivasan., *Online Multi-Task Gradient Temporal-Difference Learning*. In Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI-14), July 2014. [Student Abstract]