**Nitish Gupta**

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**EDUCATION**

**1. University of Central Florida Orlando, FL**

* M.Sc. in Computer Engineering (GPA: 3.82) Aug. 2016 - August 2018
* **Thesis**: Real-time SIL Emulation Architecture for Cooperative Automated Vehicles
* **Research**: Wireless Vehicular Networks, Vehicle Safety, ADAS, Intelligent Transportation Systems

**2. University of Mumbai, India**

* B.Eng. in Electronics Engineering (GPA: 3.90) Aug. 2010 {May 2014}
* Ranked 1st amongst 120 students in the Electronics dept.
* Second year representative and Head of creative team at Annual college festival

**WORK EXPERIENCE**

**1. Networked Systems Laboratory at UCF Orlando, FL**

Graduate Research Assistant Feb. 2017 - Present

Advisor: Yaser Pourmohammadi Fallah

* Real-Time SIL Emulator for ADAS Testing and Validation {Sponsor: Ford Motor Company}

Designed and Developed a unique and easily configurable emulation/simulation architecture to allow Software-In-Loop testing and validation of connected vehicle applications

* Small-scale Connected Autonomous Vehicle {Sponsor: NSL}

Mentoring a team of 5 undergraduate students to build a fleet of vision sensors equipped small-scale autonomous vehicles to navigate using advanced planning algorithms and thus provide a test-bed for V2X safety applications

* Vehicle Safety Communications Applications {Sponsor: CAMP}

Research and development in DSRC based V2V Safety Networks, Model-based Information Networking for situation awareness in Automated vehicles

**2. Giant Health Events London, UK**

Machine Learning Intern May 2017 - June 2017

* Built models based on SVM and Regression techniques to predict potential event attendees from the scrapped social network data and thus reduce human efforts and increase business

**3. Tata Consultancy Services Ltd. Mumbai, India**

Business Intelligence Developer Sept. 2014 - July 2016

* Migrated 95 high-complexity reports into production (Business Objects and Crystal reports to Microstrategy) in a team of four members (Agile) within a period of 3 months
* Developed Interactive reports in Microstrategy to calculate and analyze financial tax for ABN-AMRO bank

**TECHNICAL SKILLS**

* Languages: C, C++, Python, MATLAB, Embedded C, Java, Assembly, Verilog, UNIX, SQL, LATEX
* Hardware: LiDAR, Stereo Camera, Nvidia Jetson TX2, Arduino, Raspberry Pi, ARM, TI-MSP, FPGA
* Libraries: TensorFlow, Keras, TFLearn, Scikit-learn, SciPy, OpenCV, PCL
* Tools: ROS, NS3, SUMO simulator, Xilinx, Git, Linux, Visual Studio, Microstrategy, Business Objects

**PROJECTS**

**1. Vehicle Detection and Tracking Oct. 2017 Nov. 2017**

* Trained an SVM classier to distinguish between car and non-car images with 98.56 % accuracy
* Accurately tracked vehicles using a stream of sliding bounding boxes of different scales
* Developed a heat-map of all positively detected vehicles to remove false positive based on a threshold

**2. Drivers Behavior Cloning Sep. 2017 Oct. 2017**

* Designed a CNN to predict steering wheel angles in a challenging simulated environment based on the human driving behavior (Validation Loss < 0.35%)

**3. Traffic Sign Classification using Camera Aug. 2017 Sep. 2017**

* Built and fine-tuned a CNN over a small dataset to classify traffic signs, using a mounted camera
* Attained 97% test accuracy on a German traffic sign dataset

**4. Autonomous Rescue Robot Feb. 2017 Apr. 2017**

* Built a 4-wheeled autonomous car for search and rescue operations in a disaster-affected area to explore and identify victims
* Programmed ROS (Robot Operating System) nodes for gathering the odometry data along with the scans from a Kinect sensor (to create 2D Occupancy maps) into a raspberry pi
* Implemented a Particle Filter for localization and a Path Planning algorithm for navigation to various goals using offline maps created during the training phase

**5. Path Planning and Q-Learning in a grid world Feb. 2017 Mar. 2017**

* Implemented A-star path planning algorithm with Manhattan and Euclidean distance choice in an interactive grid world GUI using pythons Tkinter library
* Designed a Reinforcement learning engine with deterministic and stochastic behavior in the grid world

**6. Concurrent Physics Engine Oct. 2016 Nov. 2016**

* Linearized a Physics Engine consisting of circles moving with random velocities around the screen and colliding with each other
* Implemented concurrent (Lock-free) version of SAP (Sweep and Prune) and Hash grid

**7. Surveillance based on Tracking and Targeting Oct. 2013 Mar. 2014**

* Built a MATLAB based security system to tackle the situations like 26/11 Mumbai terrorist attacks
* Led a team of three members to develop a real-time object detection and tracking algorithm, which controlled a camera-laser mounted robotic arm to continuously track and target the suspect

**PUBLICATIONS**

1. N. A. Gupta, Y. P. Fallah, S. D. Gupta, "Real-Time SIL Emulation For Connected Vehicle Application," 2018 IEEE 88th Vehicular Technology Conference (VTC-Fall), Chicago, USA, 2018. [Submitted]
2. N. A. Gupta, S. J. A. Raza, G. R. Sukthankar, N. Chitalaya, Real-World Modeling of Path Finding Agent Using Robot Operating System (ROS), FCRAR, vol.30, May 2017