Yagnesh Revar

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OBJECTIVE

To conduct fundamental and applied research in Computer Vision, and Machine Learning.

EDUCATION

- Online Master of Science in Computer Science, Dec 2017 (Expected)
  Georgia Institute of Technology, Atlanta, GA
- Bachelor of Engineering in Electronics & Communications, Mar 2008
  Saurashtra University, Rajkot, Gujarat, India
  GPA: 3.98/4

COURSEWORK

Grad and Undergrad	**Independent Coursework**
CS6476: Computer Vision	CS231n Convolutional Neural Networks for Visual Recognition
CS6601: Artificial Intelligence	Robotics: Perception
Digital Image and Speech Processing	Robotics: Estimation and Learning
Digital Signal Processing	Artificial Intelligence For Robotics, CS373
RADAR and Navigation Aids	Autonomous Navigation for Flying Robots
Embedded Systems	Machine Learning
	ML Specialization: Foundations, Regression, Classification, Clustering & Retrieval
	Computational Thinking and Data Science
	Intro to Descriptive Statistics

SKILLS

Languages: Python, C, C++, Bash, Javascript, Java, UML, Html, Qml, AT89C51/52
Tools: OpenCV, Theano, Numpy, Scipy, Pandas, Matplotlib, Graphlab Dato, Scikit-learn, Keras, Caffe, AWS, MATLAB, NVIDIA VisionWorks, Octave, Android, Qt, Gstreamer
OS: Linux, Android, FreeRTOS, OS X
Hardware: NVIDIA Tegra-K1, Freescale I.Mx 53/6q, Ikanos Fusiv Vx180, Infineon INCA-IP, Analog Devices AD6833, AVR UC3C, Atmel ATmega8/32 & AT89C51/52
Spoken Languages: English (fluent), Hindi (fluent), Gujarati (fluent), Bengali (familiar)

WORK EXPERIENCE

- **Autonomous Driving, NVIDIA, Santa Clara, CA, USA**
  Developer Technology Engineer (Dec 2013 - Apr 2015)

Design and Development of Computer Vision (CV) and Advanced Driver Assistance System (ADAS) Prototypes (e.g., Car and Pedestrian Detection, Camera integration) for NVIDIA's GPU Jetson TK1. Contributed to design, integration and testing of NVIDIA's Vision APIs. Optimized CV video pipeline for performance using Gstreamer, and GPU hardware accelerators. Integrated Gaze tracking device, RGB Cameras, PrimeSense Stereo Sensors, and Automotive Cluster.

Independently researched on Deep Learning techniques, built and tested prototypes on Jetson TK1 (e.g. Object Recognition, Digit Recognition using Caffe Model-Zoo Models AlexNet, VGG-16)

- **General Motors - Automotive R&D, KPIT Technologies, MI, USA**
  Technical Leader (Jan 2013 - Dec 2013)

Prototype development of Android based Docking System for Cadillac; Board bring up and Development of low level drivers using FreeRTOS and Atmel Software Framework on Atmel UC3C Microcontroller; Developed Android services and Human Machine Interface (HMI) to interact with the dock using Android Open Accessory Protocol and USB-HID. Architecture design for Model Driven Development for HMI and Test Automation Tools.

- **Automotive R&D GoA (Go Automotive), KPIT Technologies, Pune, India**
  Technical Leader (Nov 2011 - Jan 2013)

Architected and developed Linux based Automotive Infotainment Applications and Middleware components (e.g., Phone, Multimedia, Persistence Manager, Radio). Developed HMI prototypes on KPIT In-Vehicle Infotainment (KIVI). Performed optimization, profiling and graphics acceleration of Qt Quick Widgets.

- **R&D Unit, Matrix Comsec, Vadodara, India**
  Software Engineer - II (Aug 2008 - Oct 2011)

Design and Productization of Embedded Linux Voice Over Internet Protocol (VoIP) Gateways, Analog Terminals and VoIP Phones. Optimized and refactored code to reuse it among all variants. Developed new product called ATA1S and ATA211G; integrated GSM module, Keyboard, and DSP. Prototyped graphical LCD and touch screen based IP Phone. Implemented features related to Networking (e.g., VoIP/SIP, Auto-configuration, Auto-upgradation), UI, Call, and Media. Designed Qt-Quick based HMI and VoIP Application framework, and innovative GUI controls. Developed robust and scalable Master-Slave protocol for PBX.

PROJECTS

- **CS231n: Convolutional Neural Network Assignments**: Implementation of state of the art ConvNet layers, Saliency Maps, Fooling Images, Feature Inversion, Image Captioning using LSTM, and Tiny DeepDream
- **Getting started with Keras Neural Network Library (source)**: Experimentation with Keras library. Used pre-trained VGG-16 model for image classification. Added live camera feed. Modified VGG-16 to get fully convolutional neural network for image segmentation and multi-label classification.

- **Kaggle Challenges**
  - **Yelp Restaurant Photo Classification (source)**, Rank 289/355: Designed a deep learning model to perform Multi-Label Multi-Instance Classification for Yelp restaurant classification challenge.
  - **Facebook Checkins Data Exploration (visualization)**, Rank 430/1212: Designed kaggle kernels for Data Visualization. Performed feature engineering, and trained sklearn-XGBoost classifier for making predictions.
  - **Digit Recognizer (59/1292)**: Implemented a LeNet 5 like convolutional network using lasagne (theano wrapper), and used dropouts to improve the performance.
- **Particle Filter Localization Visualization(source)**: To solidify understanding, wrote a simple ipython script to visualize particle filters in action.
- **White Line Follower**: Developed a white line follower robot based on ATmega32 controller at Nex Robotics, IIT Mumbai.

CURRICULUM PROJECTS

- **Visual Pattern Recognition in Robotics**: A real-time intelligent robot detecting and classifying signs to navigate autonomously. Extensively used skills in image processing, camera interfacing, controller programming, circuit design, robot mechanical and operational design.
- **Predefined Path Follower Robot**: C graphics based software interface for path planning, Microcontroller based board to read path coordinates and to control the motion of the robot.
- **Miscellaneous**: Newton's Folly, Wireless control of a robot using DTMFs, Home Security System, Infrared Tracking Robot, Water Level Indicator, Smoke Detector, C Graphics based games.

AWARDS

- Real-time Visual Pattern recognition in Robotics: Ranked No. 1 at Spurgeon 2008, Surendranagar, India
- Ranked No. 4 in Maze Solving Competition held at Footprints 2007, MSU Baroda, India
- Received 3 awards for excelling at work from KPIT Technologies
- SetuATA211G won Internet Telephony Product of the Year 2011 award from TMC; I wrote the code that booted, initialized, and operated this device.

REFERENCES Available on request