Arun Kumar

Curriculum Vitae

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Education:

- **Introduction to Artificial Intelligence, Center for Continuing Education (CCE), Indian Institute of Science**
  - **Grade:** A
  - **Duration:** Jan 2017 - May 2017
  - **Project:** Self Driving Car using Pygame and Python
  - **Advisor:** Prof. H K Devi
- **B.E., Electronics and Telecommunication Engineering, University of Pune (SPPU)**
  - **Grade:** First Class with Distinction
  - **Duration:** Jul 2012 - May 2016
  - **Bachelor's Thesis**: Implementing Physical Web using nrf8001 (BLE)
  - **Advisor:** Prof. Surekha K S

Research Interests and Skills:

- **Machine Learning:** Tensorflow, Python
- **Reinforcement Learning:** OpenAI Gym
- **Robotics:** ROS, Gazebo, Pygame, C++
- **Others:** IOT & Embedded Systems

Experience:

- **Project Associate**, Robert Bosch Center for Cyber Physical Systems (Jul 2018 to present)
- **Project Assistant**, Indian Institute of Science (Jan 2017 to Jun 2018)
- **Software Engineer**, Cardiotrack, Bangalore (May 2016 to Dec 2016)
- **Software Engineering Intern**, GS Lab, Pune (Aug 2015 to Mar 2016)
- **Project Intern**, Bharat Forge, Pune (Nov 2014 to Mar 2015)
- **Summer Intern**, Texas Instruments (Jun 2014 to Jul 2014)

Awards & Achievements:

- **Winner**, Intel Ultimate Coder Challenge (2016)
- **Best Final Year Thesis Award**, Army Institute of Technology, University of Pune (2016)
- **Winner**, Eclipse Open IoT Challenge 2.0 (2015)
- **Second Runner Up**, Intel IoT Roadshow (2015)
- **Semi-finalist**, Texas Instruments Innovation Challenge India Design Contest, Pune (2014)
- **Second Runner Up**, SYNOPSIS, Inter-college project competition (2014)

Projects:

- **Learning manipulation Tasks using Meta-Learning (2018):** This is an ongoing project whose main goal is to teach manipulation tasks to the robot by observing humans perform the tasks. This observation is fed to the robot in the form of image sequences or a video.
- **Autonomous Navigation of Drones using Q-Learning (2017):** Built a simulation for navigation using ROS-Gazebo and applied Q-learning algorithm to train ARDrone for successfully navigating to the goal.
- **Bipedal Walking Robot using Reinforcement Learning (2017):** Built a walking robot using ROS-Gazebo and applied deep deterministic policy gradient algorithm to train it for achieving stable walking gait.
- **IoT Vaidya (2016):** A cognitive healthcare solution for rural areas.
- **Speech Controlled Robot (2016):** Turned a Line Tracer Robot into voice controlled robot using Raspberry Pi and Google Speech API.
- **IoT Aqua (2015):** Won 2nd runner up at Intel IoT Hackathon, Pune(2015) for making a prototype of smart aquarium using Intel Edison which maintains optimum level of oxygen,temperature and light intensity in the tank and sending these parameters to the owner on his mobile/computer or any other MQTT enabled device.
- **Galileo Link (2015):** A hobby project which is an IoT implementation. It connects my room to facebook . The updates from my room are posted on Facebook. This is Python and Facebook Graph API based project that runs on Intel Galileo Gen 2.
- **IBM Bluemix IoT Service with Python (2015):** Publishing and visualising CPU utilisation data on IBM Bluemix cloud service using MQTT.
- **Mail-Checker (2015):** An email notifier using Intel Galileo Gen2 Board running Python Script that used IMAPClient to check unread mails and turn ON the LED and turns it OFF when there are no unread emails.
- **Wearable Electronics (2014):** A glove that held a device made of MSP430 (low power uC) and a HC-05 bluetooth module that was used to send commands to a bluetooth interfaced music player which played .wav files stored on the microSD card .
- **Door Defender (2014):** Automatic visitor/intruder detection system using Beaglebone Black. The device clicks the photograph of the visitor and records the voice message and sends it to the house owner's Gmail account.The protocol used is SMTP.
- **E-Lamp (2014):** An electronic inauguration lamp based on low power MSP430 microcontroller that works just like a traditional inauguration lamp.
- **Voltage Regulator and Wireless Control (2013):** An arduino based voltage regulator that has been used to control the speed of a fan(230V/50Hz). The voltage control is done by triac, optocoupler and the arduino. This was further interfaced with RC remote and Mobile phone enabling wireless control of the device.