Pritom Gogoi

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Education

- **Assam Engineering College** — Guwahati, IN
  Bachelor of Engineering in Instrumentation; Percentage: 84.13 — *Aug. 2016 – July. 2020*
  - **Relevant Coursework**: Multivariate Calculus, Linear-Algebra, Probability and Statistics, Optimization, Digital System Design, Analog Electronics, Data structures and Algorithms, Signals and Systems, Embedded Systems Development, Digital Image Processing, Accounting for Engineers.
  - **Teaching Assistant - Programming Fundamentals and Engg. Mathematics**: I served as a TA under a program by Directorate of Technical Education, Assam (DTE) that focused at teaching students using digital technologies like interactive simulations and pedagogical aids. The course had more than 150 students enrolled.

Experience

- **IIT Guwahati** — Guwahati, IN
  Research Assistant — *Oct 2020 - Present*
  - **Overview**: I worked under Dr. Manas Kamal Bhuyan and Mr. H. Pallab Jyoti Dutta for developing open-source implementations of popular deep learning models for hand keypoints localization.
  - **Work Undertaken**: During the internship, I built open-source implementation of an Attention-based 2D Hand Pose Estimation model by Santavas et. al. and also the seminal Convolutional Pose Machines paper by Wei et. al. Both implementations were prepared using Tensorflow.
- **University of Warwick** — Coventry, UK
  Visiting Student — *Feb 2020 - Mar 2020*
  - **LabVIEW Testbench**: I received a scholarship under the Winter Overseas Fellowship program and was able to work under Dr. Layi Alatise and Dr. Jose Ortiz Gonzalez for developing a LabVIEW test setup for evaluation of the reliability of SiC Power MOSFETs.
- **IIIT, Guwahati** — Mirza, IN
  Summer Intern — *July 2018 - Sept 2018*
  - **An Embedded Parking System**: I worked under the guidance of Dr. Rakesh Matam to develop an Intelligent Parking System that detects the presence of a vehicle using an array of sensors and a novel heuristic algorithm.
  - **Publication**: This work was presented at DIC, 2019 and we published a research paper on the same at INFOCOM 2020.

Publications

- **An UAV Assisted Multi-sensor based Smart Parking system**:
  IEEE International Conference on Computer Communications
  6-9 July 2020 — Ottawa, Canada
- **Object Detection and Tracking turret based on Cascade Classifiers and Single Shot Detectors**:
  2020 International Conference on Computational Performance Evaluation
  NEHU, Shillong, India

Projects

- **Image Processing Based Object Tracking Turret (Bachelor Thesis)**: Built a servo turret prototype controlled by the Raspberry Pi 4 board that can detect and track COCO objects using a MobileNet model. The motion of the tracking turret was controlled using PID controller calculations.
- **Analog Circuit-Block for designing ANNs**: Designed a Gilbert's Multiplier circuit (using CMOS logic) for multiplying weights and neuron inputs of perceptron networks. It is based on the multiplier circuit proposed by Barrie Gilbert. See project page.
- **16-bit General Purpose Computer**: Designed a simple 16-bit CPU with a custom instruction set based on the self-taught course curriculum of `nand2tetris`. I also wrote a `python` assembler for its instruction set.
- **Open Source Implementations of Research Papers**: Implemented various papers from the domain of Computer Vision and Deep Learning viz. CGAN, Neural Style Transfer, Convolutional Pose Machines, etc. They can be found on github.

- **Timer-Controlled Automatic Charger**: Designed an automatic charger using the ESP8266 microcontroller which was capable of controlling phone charger or any AC appliance via WiFi webserver or manual device controls.
- **BitOverflow - Open Source Contribution Event**: Founded and organized this event which is similar to Kharagpur Winter of Code or GirlScript Summer of Code where participants work on the project of their choice and make valuable contributions to open source projects.

Honors and Achievements

- **Winter Overseas Scholarship 2020**: Received a fully funded scholarship from the Government of Assam, India to carry out a research internship at an international university.
- **AEC Merit Scholarship 2019**: Received a merit scholarship at my college for obtaining the highest marks at the semester examinations

Competitions

- **Plant Pathology 2021 - FGVC8 — Kaggle**:
  - The main objective of the competition was to develop machine learning-based models to accurately classify a given leaf image from the test dataset to a particular disease category, and to identify an individual disease from multiple disease symptoms on a single leaf image.
  - We completed at 62nd position (Top 10%) among 626 participating teams

Interests and Technical Skills

- **Interests**: Computer Vision, Reinforcement Learning, Competitive Data Science, Embedded Systems
- **Languages**: Python, C, C++, awk, Bash **Technologies**: Tensorflow, Pytorch, Linux, fastapi, Flask
- **Familiar Embedded Platforms**: AVR, STM32, Raspberry Pi ARM

Volunteer Experience

- **AEC Club Activities**: Past member of AEC Coding Club (served as a mentor for guiding students in their projects and hosted weekly programming sessions), Member of Indian Society for Technical Education (ISTE), AEC Chapter. Technical Lead (and organizer) for Techxom 2019, an annual technical convection hosted at AEC.