Akshay Tondak

+1(734)-450-2328 | akshayt@umich.edu | akshaytondak | tondakshay.github.io

Summary Statement

Software Developer with **3.5+ years of industry experience** in designing and maintaining C++/C and python based large scale software in **EDA** and **Autonomous Vehicles** industry. Currently looking for roles in **Software, Machine Learning and Autonomous systems**, leveraging my knowledge of state-of-the-art algorithms and experience in design-to-production life-cycle.

Education

University of Michigan, Ann Arbor — GPA: 3.74/4 August 2021 – Present

MS, in Computer Science and Electrical Engineering— Machine Learning (SIPML) *Michigan, US*

- Relevant Coursework: Computational Data Science and Machine Learning Lab(EECS-605), Analysis of Social Networks (EECS-544), CS Machine Learning (EECS-545), Matrix Methods in Data Analysis and ML (EECS-551), Mobile Robotics (EECS-568), Probability and Random Processes (EECS-501), Deep Learning with Computer Vision (EECS-598)
  Graduate Grader — Graded courses EECS-545 (Machine Learning), EECS-216 (Signals and Systems)

Netaji Subhas Institute of Technology, Delhi University — GPA: 8.1/10 June. 2014 – May 2018

Bachelor of Engineering in Electronics and Control Engineering *New Delhi, India*

- Relevant Coursework: Advanced Data Structures and Algorithms, Computer Networks, Artificial Intelligence, Control Systems

Experience

NVIDIA May. 2022 – Aug 2022

Software Intern, Computer Vision and 3D Perception - Autonomous Vehicles *Santa Clara, California*

- Owned the **tracker** based Parking space visualization using sensor synchronization (cameras, IMU and CAN) for Machine Learned Multi Camera Fusion (MLMCF) Sample App. Handled via estimating ego-motion using IMU and CAN inputs. Tech stack : **C++, Bazel**
- Developed the Parking Space 3D view and perspective views for camera streams within the debugging tool called Drive Debugger. Tech stack : **GoLang, Typescript/Javascript, foxglove**

Mentor Graphics, Siemens EDA July 2018 – July 2021

Senior Member Technical Staff, Analog Mixed Signals division (Team Symphony) *Noida, India*

- Successfully delivered more than 10 projects across multiple verticals of the tool and resolved more than 150 bugs. Journeyed growth of the tool from 20 to more than 100 customers in the chip verification industry.
- Holistically enhanced Symphony's data storage mechanism by implementing a **Hash based memory efficient database** for proprietary data pushed and queried by multiple clients. Libraries used: Boost with C++, **STL**, Spice Programming Interface (SPI)
- Wrote from scratch, the boundary element placement algorithm on hierarchical multi-child tree structures to assist analog and digital value transfers using Verilog Programming Interface APIs. Client base of the tool: **Silicon Labs, NXP Semiconductors, SONY**.
- Enabled tool's users to write out of module references (OOMRs) in their mixed signals designs by supporting hierarchically referenced variables in digital net-list. Owned the complete **architectural modeling and unit testing**.

Passosync Analytics Dec. 2017 – Feb 2018

Software Development Intern — A physical hardware product to study limb movements *New Delhi, India*

- Implemented serial communication between a 3-axis MEMS accelerometer sensors and ESP wifi communication units to establish a fast, real-time data trasnfer. Environment of implementation: **Arduino-IDE, Raspberry -pi, Linux**
- Built the data communication and visualization framework from scratch within ESPs using MQ Telemetry Transport(MQTT) data transfer protocol. Presented the visualization of live streamed data through mosquitto MQTT broker.

Projects

Deep Neural Network based Audio classification Winter 2022 - ongoing

- Created an end-to-end pipeline for audio classification. Achieved a total training accuracy of 75% using ResNet18 backbone and UrbanSounds8k dataset. Tech.: Heroku, AWS(Lambda, ECR), Pytorch, librosa, docker - live website: audioclassifier.herokuapp.com

Co-tuning for Transfer Learning Fall 2021

- Achieved an average accuracy of 62% in a lop-sided novel dataset of Trashcan (TACO) using a ResNet backbone and a probabilistic relationship modeler between source and target categories. Libraries used: Pytorch, Python, Pandas, Numpy — Link : co-tuning
- Chose the arcane area of transfer learning and implemented the state-of-the-art paper in **Computer Vision** You et al.

Multi-Agent visual inertial SLAM Winter 2022

- A local to global map fusion taking inputs from simultaneously flying agents and processing on a local node. Tech. : ROS, ORB SLAM

Technical Skills

- **Programming Languages**: C++/C, Python, Julia, Verilog, VHDL, Spice, Perl, C#, Matlab
- **Tools and Frameworks**: Linux/Unix, Git, Perforce, Bazel, Jenkins, AWS, ECR, boto3, GDB, Heroku, Docker, Pytorch
- **Softwares:** Unity, QuestaSim, Virtuose ADE, Robot Operating System (ROS), SLAM, Jupyter

Research Works

A Review of Modern Instance Segmentation Techniques, Bayesian Persuasion: A Game-Theoretic Overview