Akshay Tondak

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

Summary Statement

Machine Learning engineer/researcher-in-training with **3+ years of industry experience** in designing and maintaining C++/C and python based large scale software in the **EDA industry**. Currently looking for software roles in Machine Learning and Software Engineering, which leverage my knowledge of state-of-the art ML algorithms and experience in end-to-end product life-cycle.

Education

University of Michigan, Ann Arbor — GPA: 3.7/4 August 2021 – Present

MS, in Electrical Engineering and Computer Science— Image processing and Machine Learning *Michigan, US*

- Relevant Coursework: Computational Data Science and Machine Learning Lab(EECS-605), CSE Machine Learning (EECS-545), Matrix Methods in Machine Learning (EECS-551), Mobile Robotics (EECS-568), Analysis of Social Networks (EECS-544)
  Graduate Grader — Graded courses EECS-545 (Machine Learning), EECS-216 (Signals and Systems)

Netaji Subhas Institute of Technology, Delhi University — GPA: 8.10/10 June. 2014 – May 2018

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

- Relevant Coursework: Advanced Data Structures and Algorithms, Artificial Intelligence, Digital Electronics, Control Systems

Experience

Mentor Graphics, Siemens EDA July 2018 – July 2021

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

- Successfully delivered more than 15 projects across multiple verticals of the tool and resolved more than 150 bugs. Journeyed the growth of symphony 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 robotic implementation to study limb movements *New Delhi, India*

- Implemented serial communication between a 3-axis MEMS accelerometer sensors and ESP wifi communication units using a **raspberry-pi**. Environment of implementation: Arduino-IDE, 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.

Tellmate Helper May. 2017 – July 2017

Computer Vision Intern — Engineered a product for blind people *Jaipur, India*

- Entirely developed a web API using **AWS**'s Lambda cloud computation and S3 bucket. Used Amazon's rekognition API along with Tesseract open-source optical character recognition (OCR) libraries to create a real-time object detection and text-to-speech pipeline.
- Pitched the product along with the founder, CEO for funding rounds in Microsoft's accessibility summit and the National 'India innovates challenge' in front of a panel of 5 judges and an audience of more than 100 people.

Projects

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.

Transfer learning based CNN for dog breed identification Fall 2021

- Improved the classification accuracy by 4% using a pre-trained transfer learning model based on ResNet.
- Pre-processed the skewed data for ideal training. Implemented a deep Neural Network in Pytorch and contrasted training and testing accuracy between standard DNN and transfer learning based DNN

Reinforcement Learning based Quad-Copter Winter 2022 - ongoing

- Created a fully functional auto-flying quad-copter implementation in real physics simulated in the **unity C#** ecosystem.

Technical Skills

- **Programming Languages**: C++/C, Python, Julia, Verilog, Perl, C#
- **Tools and Frameworks**: Pytorch, Numpy, Git, Perforce, Jenkins, AWS, GDB, VIM, ArduinoIDE
- **Softwares:** QuestaSim, MATlab, Robot Operating System (ROS),Eclipse IDE, Jupyter for python/Julia

Papers

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