

SHIVAN PRASAD

1515 Charlevoix Dr., Troy, MI, 48085

Mobile: 248-325-7096 Email: shprasad@umich.edu

Summary

Computer Science and Engineering Masters Student at University of Michigan, with experience in software development, data analytics, AI and Machine Learning. Looking for Software Engineer/Research positions for 2024

Education

- **University of Michigan, Ann Arbor** **Sep 2023 – Dec 2024**
 - *Masters of Science in Engineering Degree (Computer Science and Engineering)*
 - **Coursework:** Matrix Methods for Signal Processing and Machine Learning, Robotic Kinematics and Dynamics, Adv. Compilers, Randomness and Computation, Quantum Computing and Probability, Microarchitecture, Intro to Operating Systems, Independent Directed Study
 - **GPA:** 3.46
- **University of Michigan College of Engineering, Ann Arbor** **Sep 2019 – Dec 2022**
 - *Bachelor of Science in Engineering Degree (Major: Computer Science)*
 - **Coursework:** Data Structures and Algorithms, Web Systems, Foundations of CS, Programming Languages, Database Management Systems, Intro to Computer Organization, Machine Learning, Computer Vision, Deep Learning in Computer Vision, Intro to AI, Intro to Natural Language Processing, Intro to Probability and Statistics, Linear Algebra, Vector Calculus
 - **GPA:** 3.81

Project/Work Experience

- **Software Development Engineer – Amazon** **Oct 2024 – Present**
 - AWS S3 Storage Nodes Team
- **Software Engineer Intern – Ohai.ai** **May 2024 – Aug 2024**
 - Tech Startup providing a new family-oriented AI personal assistant
 - Designing and implementing SEO landing pages to introduce model usage to new users
 - Working on both front-end output and back-end workflows for generating pages appropriately
 - Developed mainly using NextJS, TypeScript, Storybook, Strapi, and PostgreSQL
- **Software Development Engineer Intern – Amazon Photos** **June 2022 – Aug 2022**
 - Designed and developed “Text Detection Service” for Amazon Photos
 - On-upload service that extracts text information from images in an album and stores in index to allow users to search for images
 - Created design document for end-to-end service, started and demoed initial development (on-upload API call to extract and store text for photos in a user’s album)
 - Developed mainly in Java, utilized core AWS services such as S3, DynamoDB, Rekognition
- **SPQR Undergraduate Research Assistant** **Sep 2021 – Dec 2022**
 - Security and Privacy Research Group at the University of Michigan
 - Works on research problems related to embedded security, focusing on protecting analog sensors from unintended side channels
 - Co-authored security paper, my contribution focused on computer vision application for objective evaluation metric and threat mitigation algorithm (<https://arxiv.org/abs/2205.03971>)
 - Worked on another project during final semester, creating a model for facial anti-spoofing methods through biometric info extraction
- **Software Development Engineer Intern – Amazon Photos** **June 2021 – Aug 2021**
 - Designed and developed first iteration of “Decluttering Service” for Amazon Photos team
 - Serves as a suggestion tool to filter/clean potentially unwanted images in customer’s photo library
 - Uses machine learning to identify images with less sentimental value among all images
 - Created and presented design document and POC demo of the service
 - Developed mainly in Python, utilized core AWS services such as S3, DynamoDB, SageMaker, Lambda

SHIVAN PRASAD

1515 Charlevoix Dr., Troy, MI, 48085

Mobile: 248-325-7096 Email: shprasad@umich.edu

- **Software Engineer (Intern) – Universal System Technologies, Inc.** **May 2020 – Aug 2020**
 - Worked on **MobiShip** project, development of a mobile application for supply chain operations and warehouse management system.
 - Using this app, the Shop floor user can facilitate customer shipment based on delivery number assigned to him/her on the mobile device he/she is carrying. This process will enable the shop floor user to complete the delivery/shipment process on the move
 - Ionic/Cordova Angular Framework and Java Web Service, SAP Java Connector Backend
- **Software Engineer (Intern) – Universal System Technologies, Inc.** **Jun 2019 – Aug 2019**
 - Work on data analytics projects using Python, Visual Studio and SQL Server database
 - Developed predictive model for HR attrition using Machine Learning in R
 - Model used several key factors that influence employee turnover
 - Tested with both k-NN algorithm and Artificial Neural Networks

Other Projects

- **Facial Expression/Emotion Recognition Program**
 - Using OpenCV and Tensorflow in Python, Haar cascade classifier used for frontal face detection
 - Utilizes MobileNet CNN architecture to train model using FER 2013 dataset, accuracy > 60%
- **Independent Research Project to Model US GDP**
 - Developed model of US GDP using Machine Learning and an Artificial Neural Network
 - Meant to demonstrate effect of various industries' outputs on overall economy
 - Accepted for publication
 - 3rd place Regional Science Fair, Award of Merit from ASA
- **Side-Channel Vulnerability Detection in Microarchitecture using Transformers (Microarchitecture)**
 - Used Intel PCM to create time-series dataset of various benchmarks during benign application execution and applications being affected by side-channel (cache timing) attacks
 - Built LSTM (baseline) and Transformer models to predict outputs for benign application behavior, then executed thresholding function for anomaly detection
- **Clickbait Thumbnail Image Predictor (Deep Learning in Computer Vision)**
 - Collected 100 images of "clickbait" and "non-clickbait" thumbnails for dataset
 - Implemented ResNet50 and RegNetY3.2GF using PyTorch with 3 methods (training from scratch, feature extraction, and fine tuning) resulting in 6 models to determine best architecture
 - Achieved over 92% test accuracy with fine tuning RegNet model
- **Human Pose Estimation in Basketball (Intro to Computer Vision)**
 - Utilized OpenCV and PyTorch to track joint movements of basketball players throughout a match
 - First, created a joint predictor CNN that would output coordinate predictions of 18 different joints based off an input image, which was capable of handling variable image height and width
 - Then, utilized YOLOv3 algorithm to perform a grid search on objects in the broadcast's frame in order to identify player location before applying joint predictor
- **Compiler Branch Probability Predictor (Advanced Compilers)**
 - Use LLVM, LightGBM, and PyTorch to predict branch probabilities in the absence of profiling data to outperform heuristics for compiler optimizations
 - Extract dataflow, control flow, and loop features for each conditional branch instruction
 - Created LLVM pass for feature extraction with integrated ML model to provide real-time predictions for O3 optimization

Skills

- **Software Development:** C++, Python, Java, Swift, R, MATLAB, Julia, HTML, CSS, JavaScript (including Angular, React, and Ionic Frameworks), Flask, SQL, Back-end development, Web systems, AWS integration, LLVM
- **AI/ Machine Learning:** Experience with Artificial Neural Networks and Applications, Computer Vision, Natural Language Processing, Experience with PyTorch, OpenCV, and Tensorflow, Linear Algebra
- **Databases:** MS SQL Server, Access