# ASUTOSH KARANAM

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## EDUCATION:

**MS Computer Engineering (Computer Science)** JAN 2023 – DEC 2024
Arizona State University, Tempe, USA. GPA: 4.0
*Relevant Coursework: Foundations of Algorithms, Cloud Computing, Data Processing at Scale, Data Mining, Probability and Statistics.*

## TECHNICAL SKILLS:

**Programming:** C/C++, Python, Java, HTML5, CSS3, ES6 JavaScript, SQL, Node.JS, React, ExpressJS
**Databases:** PostgreSQL, MySQL, MongoDB
**Tools and Frameworks:** Scikit-learn, Keras, Tensorflow, Postman, Android Studio, Bootstrap, JQuery, Mongoose, Django, REST API
**OSS Libraries**: NumPy, Pandas, Protobuf, MsgPack, cJSON, Hostap-WPA Supplicant, nl80211
**Build Frameworks**: Yocto, CMake

## EXPERIENCE:

**Software Engineer - Solutions Engineering | EdPlus at Arizona State University** - Scottsdale, AZ APR 2023 - Present

- **ASU Online |** *HTML5, CSS3, Node.JS, Cypress*
  Developed a software suite that verifies multiple Web Apps on the ASU Online website such as Tuition Fee Calculator, Request for Information Form, Chat-Bot. Piloted the development of a visual-rich HTML report generation and emailing framework in Node.js, ***completely freeing up engineers to focus on strategic work***.
- **ASU Orchard |** *HTML5, CSS3, PHP, Behat, Drupal*
  Led the effort of building the entire software suite to automate the verification of Course Search Functionality, Role based Access control and specially delegated user access permissions to the educational content hosted on the web service. Achieved a ***90% reduction in manual debugging effort***.

**Engineer 2 - Product Software Development | Comcast** – Chennai, India JUN 2019 – DEC 2022

- **WebConfig** | *C/C++, MsgPack, JSON, Protobuf*
  Developed and maintained an application that bridges XFi Cloud and the customer device to apply the user-set Wi-Fi settings. Parsed cloud-sent msgPack and Protobuf data, and transacted with the device's Wi-Fi manager app. Designed as a wrapper on a common configuration queue to process server config requests sequentially.
- **Passpoint** | C/C++, JSON, nl80211
  Developed and maintained entire multi-threaded software application which highlights a packet processing engine implemented using several data structures. It's built following an SDN model to record and respond to the client queries over Unix sockets. Timed thread signaling mechanisms were also employed to achieve synchronization.
- **HAL 3.0 |** C/C++
  Developed the 3.0 version of the device level API abstraction layer of RDK-B Software, resulting in enhanced system performance and configurability. Conducted extensive optimizations through supporting bulk configurations, leading to ***substantial improvements in both speed and ease of configuration***.

**Intern - Product Software Development | Comcast –** Chennai, India JAN 2019 – MAY 2019

- **App Debug Framework** | *C++, Yocto*
  Implemented a debugging App that inspects native applications of the product. It features a friendly CLI to retrieve runtime diagnostics data of multiple Apps using a sophisticated IPC Bus mechanism. It's designed for developers, QA and Field Engineers and resulted in a ***great reduction of manual debugging effort by 40%***.

## ACADEMIC PROJECTS :

- **Health Monitor** | *Java, Kotlin, SQL, Android, CameraX-API, Google Maps SDK*
  Implemented a Mobile App for users to measure Heart Rate, Respiratory Rate and log disease symptoms leveraging the Camera and Accelerometer Sensor modules, this data will be fed to the Advisory Control of a Level 3 Autonomous Car which is modelled based on the Road Conditions provided by the Google Maps Directions, DistanceMatrix and Routes API.
- **Guardian Angel |** *React-Native, Python, Django, Collaborative Filtering, YOLOv5*
  Developed autonomous driving assistant with collision detection and adaptive infotainment. Curated context-aware music algorithm providing personalized recommendations based on preferences and location. Implemented self-adjusting audio controller customizing music volume based on traffic and user history.

## RESEARCH WORK :

- **Evaluating Machine Learning models to detect DdoS Attacks in Cloud Systems**
  Proposed a research report on using machine learning and deep learning algorithms to detect DDoS attacks in cloud systems. Discussed inadequacies of traditional methods and assessed the effectiveness of alternate approaches utilizing ML. Also, proposed a new hybrid methodology for detecting DDoS attacks in cloud systems.

## AWARDS AND ACHIEVEMENTS:

- Laurelled with accolades namely "YOU NAILED IT!" and "CHAMP-Pinnacle" by Comcast for being the stand-out performer.
- Was a Tutor at SASTRA University and taught Quantitative Aptitude and Computer Programming to peer students.