Sanjiv Soni

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Education

- **University of Southern California (USC)** — Los Angeles, CA
  Master of Science in Computer Science — *26 Aug 2019 - 16 Dec 2020*
- **University of Delhi** — New Delhi, India
  Bachelor of Technology in Computer Science; First Division Honour — *01 June 2013 – 31 May 2017*

Programming Skills

- **Languages**: Python, C++, Objective-C, SQL

Experience

- **Apple Inc.** — Cupertino, CA
  Senior Systems Software Engineer - Core OS Power & Performance Team — *8 Feb 2021 - Present*
  - **Power & Performance Telemetry**: Tech-Lead working on future Apple products to drive power, triage, analytics and optimizations. Building specialized production software that runs on billions of Apple Customer devices while preserving customer privacy
  - **Satellite Connectivity**: Led architecture and development of satellite-enabled emergency connectivity telemetry for iPhone and apple Watch, enabling off-grid communication for emergency services and critical messaging under extreme power, bandwidth and reliability constraints.
  - **Core OS**: Maintain and develop a logging daemon for data ingestion and processing of raw data which is used to monitor radio power and other related telemetry across iOS and watchOS to drive power optimizations.
  - **Energy Modeling**: Built on-device energy models for iPhone Battery UI and also off-device energy model for driving All Day Battery Life optimizations and enhance customer experience.
  - **Triage Tools**: Actively developing and improving internal triage tools used by customer facing Apple Care Teams and also Internal teams for driving power optimizations and energy modeling.
  - **Analytics**: Use large data-analytics to analyze cellular usage in the field to triage power and performance improvement opportunities. Driving large scale analytics to understand the scope of battery life issues across all Apple products.
- **Amazon** — Seattle, WA
  Software Development Engineering Intern (SDE) — *5 May 2020 - 7 Aug 2020*
  - **Dynamic Configuration Storage**: Designed and Implemented dynamic configuration storage system for Amazon's Alexa audio mixing speech library in Java; primarily being used for reducing time to change configuration from 8h to 5 sec(2000%). Deployed system in production at scale across all Alexa Marketplaces.
  - **Alexa Skill for run time validation**: Internal Alexa skill created to automate functional testing; mainly a mechanism for testing development changes using Python for multi-modal audio devices.
- **Viterbi School of Engineering** — Los Angeles, CA
  Research Assistant and Programmer — *26 Aug 2019 - 16 Dec 2020*
  - **Research Assistant**: Created pipelines to track technology ventures by contributing to an existing tool backed by PatentsView API(US). Automated the testing across releases.
- **Monatane Ventures** — Mumbai, India
  Data Scientist — *16 Aug 2018 - 6 Jul 2019*
  - **Supplemental Search Dashboard**: Service for scraping startup websites using anonymous TOR back-end, automated alarms and created filters to flag potential startups. Built app to run batch searches for sourcing startup deals.[Medium Blog]
  - **Workflows**: Internal workflow framework to create and manage data pipelines leveraging reusable patterns to expedite investor productivity by 50% through aggregating multiple data sources.
  - **Data Collection**: Designed Cron scripts to periodically comb multiple startup websites and store data into AWS RDS and DynamoDB instances by setting up schema design and automated CloudWatch alarms. Decreased the latency of gathering process by 40%.
  - **Clustering of Startups**: Improved discovery of new startups by building a clustering algorithm backed by BFR(Bradley, Fayyad and Reina) and Collaborative filtering on Spark(MapReduce). Used this to speed up the searching and filtering experience by 20%. Also worked on ranking and indexing of deals.
  - **ML Classifier for Predicting Cardiovascular Diseases**: Consulted a portfolio startup on bulk data processing and classification of lab health data to predict the risk of diabetes and cardiovascular diseases. Recommendations used by 60K people based on a sample of 3 million for early detection of diabetes.

- **Str8bat Sports Wearable** Bangalore, India
  Devices Software Engineer *1 June 2017 - 3 Aug 2018*
  - **Offline ML Predictions**: Created models for classifying cricket bat shots based on types of shots, performance optimization and bat trajectory forecasting; thereby replacing the manual process and improving efficiency of the system by 100%. Also created a strategy for back-testing used for simulating cricket shots in 3D unity engine.
  - **Buffer Management Library**: Built C backed library for sensing cricket shots by using Accelerometer, Gyroscope and Magnetometer data from IMU sensor unit mounted on cricket bat. Used Queues to maintain faster sensor buffers for taking snapshots of sensor data corresponding to bat strokes. Improved time to save data by 30% by using dynamic moving mean.
  - **Sweet Spot Detection**: Detected sweet spot shot using one Accelerometer source. Patented detection of sweet spot hits using single accelerometer as innovator; worked on Machine learning models and feature engineering.
  - **Cloud-Assist**: Python Flask back-end for a web application used by cricket players and coaches for better performance management and monitoring, increased the MAU by 60%.

Projects & Publications

- **Patent: System and method for sweet spot detection Application | US20220096905A1 |WIPO 2020/100163 A1**: Date Issued: 2020-05-22 | Lead Inventor | Developed novel method for detecting sweet spot on cricket bat using low resource device mounted on a cricket bat using event based data elements.
- **Role of Perception in Big Data**: Created Open source python library for sensing environment around a differential drive robot. Created the robot using RaspberryPi, Arduino, Ultrasonic Sensors and Infrared array sensors.
- **RaceOn: Self Driving Car Competition at USC**: Secured 2^{nd} position. Developed algorithm for navigating $\frac{1}{10}^{th}$ F1 car mounted with camera and sensors for fastest lap time (8 sec) using OpenCV library.
- **Swing and Miss, Pycon Sydney**: Talk Proposal selected to address technical audience of around 1000 people on Deploying machine-learning models for IoT enabled devices.