**Sandeep Reddy Somu**

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# EDUCATION

# Master of Science - Computer Science & Engineering Graduating Dec 2022

Arizona State University, Tempe, AZ GPA: 4.0 /4.0

**Coursework:** Foundations of Algorithms, Distributed Database Systems, Data Visualization, Statistical Machine Learning, Info Assurance and Security, Advances in Robot Learning, DS and Algorithms, Principles of Programming Languages.

## Bachelor of Technology - Engineering May 2019

National Institute of Technology Durgapur, India

**Coursework:** Operating Systems, Database Management Systems.

# TECHNICAL SKILLS

**Programming Languages :** Python, SQL, Java, C++

**Web Technologies :** HTML5, CSS3, JavaScript, D3 JS, Django

**Databases :** MySQL, SQL Server, Mongo DB, Apache HADOOP, PostgreSQL

**Cloud & Technologies :** AWS, Bitbucket, JIRA, Git, Jenkins

# PROFESSIONAL EXPERIENCE

## Software Engineer, Wipro, Hyderabad, India July 2019 – Aug 2021

* Worked on the design and implementation of web-based applications needed for one of the major American banks.
* Automated their end-to-end processes which include generating their weekly, monthly, and quarterly reports using java-based cloud platform Appian.
* Used Oracle Database for the backend, Agile and Scrum methodologies for timely production releases, and JIRA tool for the smooth feedback of issues and in time resolutions.
* Mastered the skill of working in teams and was one of the two candidates to receive “The Bright beginning” award out of the 200 employees.

## Research Intern, Indian Institute of Science Bangalore (IISc), India May 2018 – July 2018

* Tested and implemented a couple of deep learning methods for effectively counting the number of people from the images obtained from the drones.
* Used OpenCV and Anaconda framework, while doing so became familiarized with the state-of-the-art crowd counting methods. In the process became familiarized with Robot Operating System, Deep Learning methods, PyTorch and OpenCV.

# ACADEMIC PROJECTS

# Spatial hotspot Analysis using Apache Spark

* To conduct range and distance queries on point and rectangle coordinate sets, I created a distributed application utilizing Spark APIs and Hadoop File System.
* Using SparkSQL, applied spatial statistics to spatial temporal data to find hotspots; identified the 50 most important yellow taxi pick up locations in PHX.

# Auto-Scaling AWS Iaas Framework

* Built an Elastic Iaas Framework that auto-scales based on the number of requests an AWS Cloud-hosted application receives. AWS EC2 cluster was used to deploy a deep learning model for image classification, and the auto-scaling functionality was demonstrated by adjusting the number of image inputs.
* Used AWS Cloud Resources like AWS EC2 for deploying image classification model, AWS S3 for storage, and AWS SQS for auto-scaling. Based on the number of inputs in the SQS queue, AWS EC2 instances bootup, completes the classification task, and shut down automatically making the application end-to-end elastic.
* Implemented the whole framework in multi-tiered architecture developed using NodeJS IAC on AWS from scratch.

# Rotating and balancing a pad via Robot Manipulator

* The whole idea is to make the robot manipulator simultaneously balance and rotate the pad without any link between the manipulator edge and the pad. We used Q-learning Reinforcement algorithm to achieve this task.
* Used PANDA – Robotic manipulator, Gazebo simulator, MoveIt! – Motion planning framework and ROS Noetic software framework.

# Selection of Bridge type using Machine Learning Algorithms

# Developed and implemented One-Vs-all multi-class classification and Neural Networks for selecting the best suitable type of bridge to constructed at a particular location in India.

# The factors weighed in for the determination are soil type, river properties, lanes needed, etc. which I used as attributes for both models. The data needed for this training is collected from nearby bridges to my university and the other half were taken from Wikipedia and got an accuracy of 88%.