**Yash Sinha** Houston/Dallas, TX • H: 901-255-2744 • C: 828-729-9039 • ysinha@smu.edu

Diversely experienced IT Professional and passionate Computer Science and Statistical Science student with over 3 yrs. of full-stack software development experience. Highly skilled in data analysis and data mining with over 2 yrs. of research experience using machine learning and statistical modelling.

* Strong proficiency in Python, PHP, MySQL, NoSQL, UNIX, and Linux.
* Exceptional statistical skills, experience of building predictive models using a wide variety of tools and techniques (including neural networks, linear or logistic regression, random forest)
* Have good exposure in LAMP (Linux, Apache, MySQL, and Python) and WAMP Architectures.
* Deep understanding and implementation experience of Machine Learning models

# Skills/Expertise/Certifications

TECHNICAL Skills:

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| --- | --- |
| *Languages:* | **Python, R, C++**, Java, SQL(MySQL), JavaScript, HTML, BASH, MATLAB, SAS, SPSS |
| *Environments:* | **Git, Linux**, DevOps, **Windows**, Anaconda, Docker, AWS |

EXPERTISE: Machine Learning, Data Mining, Statistical Computing, Time Series Analysis, Algorithms,

Data Structures, Software Architecture, Databases, Graphical User Interfaces

IT Certifications: CompTIA Linux+, Machine Learning Certification by Stanford University

PUBLICATION: Martial Art or Science (ISBN:9781541201613); Real-Time Situation Awareness Assessment for Pilots via Machine Learning: Constructing an Automated Classification System (MODSIM Paper submitted Jan 2022)

**Education**

Southern Methodist University, Dallas, Texas *(Double Major with Discovery Scholar and Provost Scholarship)*

**Bachelor of Science in Computer Science** *(with AI and Research Specialization)* (Grad Date - Spring 2023)

**Bachelor of Science in Statistical Science**  (Grad Date - Spring 2023)

**Mathematics Minor**

**M.S. Computer Science** *(4+1 program)* (Grad Date - Spring 2024)

# Career History - Experience:

**Global Medical Consultancy Inc. TX – Software Developer** *(Part-time)* (May 2019 - Present)

**Project: Home Security System**: Designed and developed a custom security system (used multiple ESP32-CAM microcontrollers as an IoT system) that detects an individual, takes a picture, and stores the images on a local MySQL database using APIs. The system performs facial recognition and matches against ‘Friends & Family’ database, it sends a real-time SMS text for any unauthorized people and analyzes who enters at each time and provides a weekly dashboard of occurrences.

* Created APIs to ingest data from the microcontrollers and store on a local MySQL server
* Created and normalized database using MySQL, wrote several queries to extract data from database.
* Used React framework in JavaScript to manage UI and develop the entire frontend and backend modules tracked by Git.
* Wrote and executed various MySQL database queries from Python-MySQL connector and MySQL DB package.
* Worked on Restful APIs for the internal analysis and statistical representation of data.
* Developed both frontend and backend are in Docker containers for ease of dependencies and future usage on an AWS instance.

**Project: Chatbot for a Corporate Website (Python):** developed and trained a 2-layer feedforward neural network in python incorporating the TensorFlow framework to train responses based on basic questions and answer about the company and used the NLTK as stemmer to derive the intent of the user to create a contextual chatbot.

* Used Natural Language Processing to preprocess data (lemmatical stemming, bag-of-words) to be used on the Machine learning based neural network as a classification of the type of question with dedicated responses
* Built database model, UI views, and API's using Python for interactive web-based solutions.
* Wrote and used Python based APIs to retrieve the content in the database as input data for the model.
* Used Python to place selected responses into JSON files to test Django websites’ functionality with chatbot.

**SMU AT&T Center for Virtualization –** *Research Assistant* (Dec 2020 - Current)

**Project: Deep Learning Avionics Application on Stress (Python):** collected biometrics using an E4 wristwatch to train and use a neural network that predicts the cognitive stress of pilots during specific maneuvers done in a virtualized setting. Deployed a Docker container of the model to be streamed real-time to output the level of stress at different points during a maneuver.

* Used the Python's modules NumPy, matplotlib, etc. for generating complex graphical data for real-time monitoring
* Developed and designed automation framework using Python and Shell scripting.
* Involved in debugging and troubleshooting issues and fixed many bugs in two of the main applications which are main source of data for customers and internal customer service team.
* Implemented SOAP/RESTful web services in JSON format.
* Used Docker containers as part of a Data Pipeline, fulfilling company standards of inputs and outputs.
* Attended many day-to-day meetings with developers and users and performed QA testing on the application.

**Research Paper: Real-Time Situation Awareness Assessment for Pilots via Machine Learning:** using a pilots cognitive and psychological state, we use python to develop a model to classify the level (out of three) for the amount of situational awareness that pilot has during a flight maneuver

* Data uses biometric data for cognitive load as well as eye patterns and movement for a gaze classifier
* Model trained has over 70% accuracy on the current time-series test data
* Compared and analyzed the results of models such as neural networks and random forests

**Selected Projects (**https://github.com/ysinha24**):**

KNW Robot Competition: worked as a team to develop a robot that achieves certain functionality (sensor readings, navigation, and adaptability). Used the scrum methodology to complete certain deliverables within five sprints, efficiently planning and dividing work amongst members and ultimately placed first in the competition.

* Used C++ to program and flash the sensors/microprocessors to create a adaptive system to monitor Environmental Agents and display Sensors
* Used dynamic programming to optimize performance for real-time usage
* Worked with electrical tools related to wire, solder, and test our system
* Applied many mechanical skills in the metal shop and used relevant software such as CAD to create complex diagrams of the robot
* Associated with debugging the progress monitored on JIRA using Scrum methodology.

JSON Search Engine: collaboratively worked to develop an interactive Search Engine that parses JSON files, store key terms and authors in an AVL Tree and Hash Table, and run statistical tests to find the efficiency for each structure. Additionally, we used the TF-IDF Statistic to order the results of each query, supporting set Union, Intersection, and Not operations to create complex queries.

* Used C++ to measure and optimize the performance of various data structures for an expansive archive of data
* Analyzed and optimized the time/storage tradeoff to best fit the requirements
* Use Git to work collaboratively by branching and merging workflows