Sarbani Das, PhD
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LINKS

LinkedIn, Github, Google Scholar

PROFILE

Highly efficient, motivated and experienced Software Professional currently working with Sky as a Software Developer in Python. Previously, worked with TCS in India and USA as a JAVA developer for seven years. Before joining Sky as a developer, I have earned PhD in Application of computer in next-generation health care from the University of Southampton. Apart from my computational modelling and programming skills, I have excellent analytical skills and I am also good at debugging critical issues. I have excellent communication skills, which helped me in client management, requirement gathering, requirement feasibility analysis and requirement sign-off in all my past and current roles. Developed and maintained software in multiple programming languages, such as Java, Python, and JavaScript.

EMPLOYMENT HISTORY

Jan 2024 - Present

Personal Projects

Fyyur-Artist Booking Site

- Created a booking site that facilitates creating new venues, artists, and new shows, searching for venues and artists, learning more about a specific artist or venue.
- Built the data models by connecting to a PostgreSQL database for storing, querying, and creating information about artists and venues.
- Used SQLAlchemy syntax to define the models, wrapped in SQLAlchemy commands per API endpoint, calling to define data models and serving expected responses per API endpoint.

Full Stack Trivia API

- Developed Full Stack Trivia app using Python, Flask, SQLAlchemy, Flask-CORS.
- The objective was to use APIs to control and manage web application.
- Used Flask-CORS to enable cross-domain requests and set response headers.
- Developed REST APIs and implemented authentication protocols, such as OAuth, to securely expose data to clients

Coffee Shop Full Stack App:

- Developed a full stack drink menu application that can display ingredients in each drink, allow public users to view drink names, allow the shop baristas to see the recipe, allow the shop managers to create new drinks and edit existing drinks.
- Implemented role-based control design patterns using JWT.
- Designed securing a REST API through role-based-access-system (RBAC).
- Developed backend functionality using Python
- Used third party authentication system Auth0.

Deploy Flask App to Kubernetes using EKS

- Build and run a container from docker files.
- Created a Continuous Integration/Continuous Deployment (CI/CD) pipeline using AWS Codebuild + CodePipeline that reduced time-to-deployment.

Daily Planner App

- Created a simple calendar application that allows a user to save events for each hour

of the day.
- Designed logic that dynamically render HTML elements based on the time of day.
- Used third-party APIs like jQuery to perform DOM manipulation to traverse among the parent and child elements.
- Created time-based operations using Day.js

Weather Dashboard App
- Created a weather dashboard with form inputs, that when a user searches for a city they are presented with current and future conditions for that city and that city is added to the search history, when a user views the current weather conditions for that city they are presented with: The city name, The date, An icon representation of weather conditions, The temperature, The humidity, The wind speed; when a user views future weather conditions for that city they are presented with a 5-day forecast that displays.
- Build the weather dashboard to run in the browser and features dynamically updated HTML and CSS.
- Used the https://openweathermap.org/forecast. to retrieve weather data for cities.
- Created a Continuous Integration/Continuous Deployment (CI/CD) pipeline using netlify that reduced time-to-deployment.

Oct 2021 - Dec 2023 **Software Engineer, SKY** Brentwood

Automation Framework for Mesh network
- Sky has implemented a Mesh networking system in its Sky Q proposition and integrated it in its Sky Q boxes, Minis, Hubs and Boosters. In Sky's Mesh network a group of devices act as a single Wi-Fi network. There are multiple sources of Wi-Fi around a Sky Customer's house, instead of just a single router. These additional Wi-Fi sources are called points. The framework was developed to create and maintain the Mesh network among multiple nodes using RPi as agent, Docker as container for running tests, python for developing libraries and Robotframework for scripts.
- Developed framework and libraries for creating and maintaining Mesh network.
- Developed automated scripts to simplify common tasks and reduce manual effort.
- Conducted code reviews and mentored junior developers to improve code quality and ensure adherence to best practices
- Implemented a microservices architecture that improved system modularity and reduced dependencies between components.

June 2021 – Oct 2021 **Research Software Engineer, University of Southampton** Southampton

EMG Data Analysis and Classification Dashboard
- Designed interface among the Seeeduino sensors, Arduino platform, and the host.
- Developed a python script that collects the EMG data using the Seeduino sensors, processing the data in the Arduino using the in-house library and generating the EMG envelopes.
- Developed python script for Data visualisation on the screen and created a dashboard that demonstrates the live data captured on the Arduino in graphical formats.
- Developed a neural network model using Scikit-learn in Python.
- Validating the model with the classifying the live data, generating the report, and sending to the stakeholders.

Sep 2016 - June 2021 **Doctoral Student, University of Southampton** Southampton

- Developed computational model for analysing neural signal disruption properties of single myelinated axon using PSpice and Matlab.
- Developed a novel method to parcellate cortical surface into equal size brain areas using Matlab and Freesurfer tool.
- Developed end-to-end framework that processes raw MRI data both structural and diffusional, parcellate cortical surface into equal size brain areas, extract white matter tracts, build structural connectome and extract complex graph measures. Tools used: Python, Mrtrix3, Freesurfer and Brain Connectivity Toolbox from Matlab https://ieeexplore.ieee.org/abstract/document/9176642.
- Modelled a dynamic system for white matter tracts to perform frequency response analysis from signal propagation perspective to characterise the structural brain connectivity and its influence on functional connectivity of the brain by applying circuit theory-based modelling approach. Modelling structural connection using circuit theory allowed the analysis of signal propagation in both time and frequency domains. Work includes defining the brain areas (ROIs) by a non-anatomical equal area parcellation process from structural MRI data, extracting white matter tracts from diffusion MRI data, extracting geometrical properties of white matter tracts, designing the circuit model for single axon, defining the transfer function for single axon from the circuit model and analyse its frequency response and modelling the coupling effects between myelinated axons bundle https://www.nature.com/articles/s41598-023-49208-9.

Nov 2005 – June 2011 **Software Developer, TATA Consultancy Services** Chicago, New Delhi, Kolkata

Deal Entry System, Walgreens

- Gathered requirements and prepared requirement analysis documents (SRS).
- Prepared high level design documents and low level design documents.
- Designed features in JAVA
- Designed test cases.
- Developed Unit testing scripts.
- Fixed critical customer bugs.
- Involved in peer code review.
- Skills used: Java, JSP, Servlets, SDF Framework, Database: DB2.

Mortgage Insurance, Genworth

- Developed a module called Underwriting in JAVA
- Designed test cases.
- Developed Unit testing scripts.
- Fixed critical customer bugs.
- Skills used: Java, JSP, Servlets, MVC Architecture, Database: Oracle, PL/SQL

Feb 2005 – Nov 2005 **Research Personnel, ISI** Kolkata

- Worked in the project of approximation algorithms for shortest descending paths in terrains. Given a polyhedral terrain, and points s and t on the surface, find a shortest path on the surface from s to t such that, as a point travels along the path, its elevation never increases. We tried to compute a shortest descending path.

EDUCATION

Sep 2016 - June 2021	Doctorate, University of Southampton	Southampton
June 2003 - June 2005	Master in Technology, Calcutta University	Kolkata
Sep 1999 - June 2003	Bachelor in Engineering, North Bengal University	Siliguri

SKILLS

- Python, Flask, SQLAlchemy, Flask-CORS.
- Restful APIs, Auth0, JWT, RBAC
- Container, Docker, AWS CLI tool, EKSCTL tool, and KUBECTL tool
- Robot Framework, Jenkins
- HTML, CSS, BootStrap, JQuery, JavaScript, ES6, node.js, npm
- React JS, JSX, axios, route
- Java, JSP, Servlets
- SQL, PostgreSQL
- FreeSurfer for MRI data processing
- MRtrix3 for MRI data processing
- SPM for Dynamic Causal Modelling
- Machine Learning and Scientific Data analysis with Python using Scikit-learn, TensorFlow
- Computational Modelling, Signal Processing, Image Processing and Brain connectivity analysis, System Identification using MATLAB.
- PSpice and Netlist for Circuit design
- Basic C, C+

CERTIFICATIONS

- Certification on TensorFlow with JavaScript (Online)
- Python Certifications (Intermediate Level)
- Full Stack Web development Certification course
- Coursera Machine Learning Certification
- Coursera Fundamentals of Quantitative Modelling
- Sun Certified JAVA Professional (2009)