SFU
SIMON FRASER UNIVERSITY

Animesh

Master of Engineering
Engineering Science
Simon Fraser University, Canada

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Summary

Passionate Full Stack Developer, dedicated to the dynamic convergence of technology and innovation. With a Master's in Engineering Science and over 5 years of immersive experience in the tech landscape. I thrive in dynamic environments that value technical expertise and teamwork. Excited to contribute my skills to drive innovation and work seamlessly with diverse teams to achieve shared goals.

Education

Degree	Institute	Year
Master of Engineering	Simon Fraser University, Canada	2021-2023
Bachelor of Engineering	Sri Siddhartha Institute of Technology, India	2010-2015

Experience

- **Venue Kings** | *Feb. 2023 - Present*
  Full Stack Developer North Vancouver, CA
  → Contributed to the advancement of the Automation Server by developing Python processes on the Flask framework, using celery tasks to automate new processes. Aiming to enhance functionality and deliver new and improved user experiences.
  → Managed the development and upkeep of the main internal website which is a web based applications using the Microsoft .NET Framework. Employed a comprehensive tech stack encompassing CSharp, ASP.NET, Angular, JavaScript, Python, HTML, CSS, and SQL.
  → Demonstrated expertise in SQL Server Management Studio (SSMS) for database administration, skillfully optimizing SQL databases by crafting efficient queries to ensure data integrity and security measures.
  → Engineered automated tasks using Celery to efficiently process and execute time-sensitive operations using AWS lambda functions to establish secure and scalable API endpoints and AWS Eventbridge to schedule automated tasks and maintain operational efficiency.
  → End-to-end development of the FrontcourtEvents website for VenueKings' basketball program, employing JavaScript and HTML within the WIX platform. This cutting-edge website emerged as Canada's premier tournament hosting platform, accommodating numerous teams during each summer season.

- **Binary Stream Software** | *May. 2022 - Jan. 2023*
  Software Developer in Artificial Intelligence Co-op Burnaby, CA
  → Developed a sophisticated lease renewal prediction model using advanced random forest techniques in CSharp with the ML.NET framework, ensuring seamless integration with property lease management in Microsoft Dynamics 365. The utilization of CSharp and ML.NET provided a robust and scalable solution for handling large-scale lease data.
  → Conducted a comprehensive analysis of various algorithms and hyperparameters to ensure optimal model selection, considering factors such as performance, complexity, explainability, and training time. This analysis was carried out using Python and sklearn in a controlled sandbox environment, adhering to the application's specific constraints.
  → Designed and implemented a dynamic Power BI dashboard, enabling intuitive visualization and in-depth analysis of cumulative results and predictions derived from the AI model.
  → Continuously refined the model's accuracy through systematic data loaders, meticulous loss analysis, feature engineering, and identification of vulnerabilities pertinent to the unique application domain.
  → Developed a Microsoft Power App, integrated with Power Flow and Power Automate in Azure ML Studio, to streamline the extraction of billing information from invoice images. This automation facilitated efficient invoice processing and was hosted in Azure cloud services.

- **Amelia** | *Aug. 2018 - Dec. 2020*
  Virtualization and Cloud Engineer Bangalore, IN
  → Managed a large-scale virtual infrastructure including more than 100 Cisco UCS utilizing Vmware on AWS to deploy and manage virtual machines, including Vcenter and Vmware Esxi hosts for Moody's analytics.
  → Configured vSphere for optimal resource allocation, including using DRS and HA for automatic failover and snapshot for point in time recovery.
  → Deployed application specific containers using yaml deployment configurations in docker and Kubernetes for test env.

- **Dell Emc** | *Feb. 2016 - Jul. 2018*
  Associate Delivery Specialist Bangalore, IN
  → Assisted in the management of virtual infrastructure utilizing VCenter and vRA for Pfizer datacenters worldwide.
  → Within 2 years, became team lead of a 10-member team, achieving a 20% improvement in team performance through process optimization and skill development.

Projects

- **Emotional Messenger - Poster presented at CS Undergrad Research Symposium 22** *Jan. 2022 - Sept. 2022*
  Improving text-based communication by adding emotion detection **Github**
  → The purpose of this project is to improve the understandability of text-based communication(whatsapp) by adding emotion through the use of facial emotion detection and textual emotion recognition.
  → Utilized a CNN for facial emotion detection using opencv, sklearn and keras for facial recognition and FER2013 dataset was used to train the model. Accuracy for facial model was around 88%.
  → Developed a text emotion detection model which used tensorflow, keras for modelling and Glove dataset with word embedding from twitter dataset along with tokenizers library for data cleaning. Model accuracy was 85% for text to emotion detection.
  → Matplotlib, seaborn, sklearn and Plotly were widely used for univariate and multivariate analysis on dataset.
  → The project utilizes Google's text-to-speech library in python to voice the text with the recognized emotion and initially focuses on detecting four emotions (anger, happiness, sadness, and neutral)

- **Optimization of Rodinia benchmark kernel hotspot3D** *Sept. 2022 - Dec. 2022*
  Parallel programming for Heterogeneous system to optimize benchmark kernels used for chip designing **Github**
  → Hotspot3D is one of the 13 computational "grid structured" dwarf in Berkeley suite. It is a transient thermal modeling kernel with a execution time of 80 seconds on a CPU with a 64x64x8 layout.
  → Utilized vitis hls to generate RTL code for FPGA chip to optimize the kernel using various techniques including buffering, tiling, unrolling, array partitioning, pipelining and memory coalescing with OpenMp.
  → CUDA optimization is performed with warp partitioning, memory bursting, asynchronous multi-streaming and shared memory access in the kernel.
  → Computation time was reduced to 0.25 milliseconds and further reduced to approximately 0.14 microseconds with a CUDA implementation. This resulted in a computation speedup of more than 100x compared to running the code on a CPU.

- **Predicting NBA winner using Machine Learning** *Jan. 2021 - July. 2021*
  Sports prediction and comparison with legacy industry techniques **Github**
  → Aim for the project was to provide insights and strategies for improving prediction accuracy in the context of sports prediction(NBA) using Machine learning and evaluate ml techniques on sports dataset.
  → Two machine learning models were developed using the Keras, sklearn, pandas, and numpy libraries, logistic regression and artificial neural networks. These models were evaluated using various evaluation metrics. The performance of the two models was then compared using these metrics to determine which model was better for sports predictions.
  → The dataset for this study was obtained from Kaggle and consisted of boxscore data from NBA games from 2012 to 2019. In order to improve the accuracy of the results, the data was transformed by taking the average of the last five games played by each team. This remodeled dataset was then used to build and evaluate the machine learning models.
  → Accuracy of machine learning models was compared to that of gaming experts and reviewers, as well as betting websites. The results showed that the experts had an accuracy of 70%, while the artificial neural network model had an accuracy of 66%. The machine learning model thus had a slightly lower accuracy compared to the experts.

- **Black Box Machine Learning Model Interpretation** *May. 2021 - Aug. 2021*
  Interpreting Complex Machine Learning Models with LIME **Github**
  → Implemented LIME (Local Interpretable Model-agnostic Explanation) to interpret the predictions of a black box machine learning models Xtreme Gradient boost.
  → Focused on both interpretability and local fidelity in the interpretation of the model.
  → Utilized sklearn, pandas, numpy and label encoding in the model building and used K Medoid clustering for local feature importance.
  → Determined global and local feature importance and verified results on two datasets: bike sales price and NFL player statistics.

Technical Skills

- **Programming Languages :** Python, CSharp, NodeJS, Javescript, HTML, CSS
- **Frameworks :** Flask, Angular, .NET, SQL, Matlab, Docker, Git, Postman, Celery, Bootstrap, Object oriented framework, DSA, Virtualizaiton, Cloud, Server, Storage, Backup.
- **Machine Learning :** Clustering, Regression, Classification, Deep Learning, Image classification, Anomaly Detection, Supervised Learning, Operational Efficiency, Natural Language Processing

Volunteering Activities

- **Student Technical Staff** *Nov. 2021 - Dec. 2022*
  Simon Fraser University student technician at IT Services
- **International Community Leader** *Jan. 2022 - Sept. 2022*
  Community leader at International services for International students
- **Global Peer Educator** *Aug. 2021 - Jan. 2022*
  Peer educator for Student society at Simon Fraser University
- **ComSciCon Member** *Apr. 2021 - Aug. 2021*
  Science Communication workshop