Supriti Ghosh

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Summary

I'm an innovative Software Engineer at Cardinal Health, specializing in the design and development of AI-driven conversational chatbots to transform healthcare automation. With a strong skill set in leveraging cutting-edge technologies to create intelligent, user-friendly solutions, I am now seeking a full-time software engineering role where I can lead and manage a team to drive impactful projects.

Professional Experience

Cardinal Health, Inc

Dublin, OH 43017 (HQ)

Software Engineer III — *April 2023 - present*

- Tech Stack- **Python, JavaScript, NodeJS, AngularJS, C#, .Net, Google Cloud Patform (GCP), Google Dialogflow, IBM Watson, Microsoft Azure, Dynatrace, Splunk, Service-now, Automation Anywhere, RPA**
- Designing and developing multiple advanced and dynamic conversational chatbots leveraging AI technologies, focusing on state-of-the-art Large Language Models (LLMs) for seamless user interactions and engaging experiences. Utilizing Agile methodologies to effectively coordinate release efforts for various products and solutions, ensuring timely delivery and continuous improvement.
- Leading and orchestrating the Software Development Life Cycle (SDLC) by closely collaborating with cross-functional teams, including requirements gathering, design, development, testing, and deployment, utilizing Atlassian toolset to maintain cohesive workflow and project tracking.
- Spearheaded the establishment and enforcement of coding standards within the team, fostering consistency and efficiency across chatbot development endeavors. Conducting regular code reviews & providing constructive feedback to team members, ensuring adherence to coding standards and best practices. Mentoring junior developers, providing guidance and support to foster their professional growth & development.
- Developing platforms for deploying automation processes and chatbots in technical domains, including building a comprehensive CI/CD pipeline that encompasses code scanning and other essential steps based on the product's requirement to ensure smooth deployment and workflow management across development, staging, and production environments.
- Developed and launched an interactive chatbot showcasing the diverse use cases of chatbots, providing a visual guide that highlights the functionalities of applications to ensure widespread visibility and accessibility across the organization.

NetApp, Inc

San Jose, CA 95128 (HQ)

Software Engineer II — *June 2022 - April 2023*

- Tech Stack- **Go, Kubernetes, MySQL, Ansible, Python, Linux, Grafana**
- Developed CVS (Cloud Volumes Service) in the Storage as a service (STaaS) model and in a microservice architecture for backup services in Microsoft Azure, and Google Cloud Platform (GCP) utilizing Kubernetes, Go, and MySQL in a cross-functional team.
- Build solutions for scheduled & on-demand disaster recovery tasks for Azure which includes the lifecycle management of scheduled volume replication using CRR (Cross-Region Replication), scheduled backup to cloud & on-demand backup to & restore from an object stored in cloud.
- Designed and developed Hybrid Cloud Engineering (HCE) software features for artificial intelligence and high-performance computing (HPC) and build solutions that help customers in the E-Series solutions automation team with Ansible collections.
- Developed infrastructure to automate the deployment of E-Series solutions, especially the SANtricity, Host, and BeeGFS collections which encompass performing development and testing in high availability (HA) solutions.
- Implemented BeeGFS command line interface (CLI) which provides a terminal interface and scripting capability for cloud management tasks.
- Conducted Prometheus support for BeeGFS Monitoring Service. For visualization of the data, it provides Grafana dashboards and charts to provide insight into both the health and performance of the filesystem.
- Led a session at YWIT 2022 to inspire young women to continue pursuing their interest in technology education and careers.

University of South Dakota

Vermillion, SD 57069

Software Engineer, Biocomputational Biological Engineering Lab, Biomedical Engineering — *January 2022 - May 2022*

- Tech Stack- **JavaScript, ReactJS, SailsJS, GraphQL, ElasticSearch, Python**
- Designed Natural Language Processing (NLP) applications using Python and machine learning techniques (Bert and topic model). Used effective text representations and automatic categorization to transform natural language into useful features. Trained and developed NLP models and evaluated them for the deployment of a biomedical-based search engine.
- Developed and maintained the search-engine-based biomedical system which is used by millions of users and more than thousands of scientists. Developed web applications using JavaScript, ReactJS, SailsJS, GraphQL & ElasticSearch to analyze and process data. Ensured the application's security and ability to interact with multiple APIs and databases.

Machine Learning (ML) Engineer, 2AI: Applied Artificial Intelligence Research Lab, Computer Science — *January 2021 - December 2021*

- Tech Stack- **Python, TensorFlow, Keras, Scikit-learn, GradCam, OpenCV, Matplotlib, Tableau** [GitHub]
- **DNN in Chest X-ray to screen Covid-19:** Implemented neural network on the balanced dataset to prevent from possible bias. Collected 10k chest x-rays to implement binary classification (Covid-19 vs Non-Covid-19). Used the different pre-trained models of deep learning to compare the performance. Generated lung segmentation and heatmap to screen and localize interpretable abnormalities.
- **CheXNet to screen Covid-19:** Implemented CheXNet on a dataset of 4.6k to screen Covid-19 using chest X-ray images. CheXNet is initially designed for radiologist-level pneumonia detection in chest X-rays (CXRs). Implemented feature extraction technique using deep learning which showed success in identifying Covid-19. [Publication] [Presentation]
- **Literature Review of Covid-19 Screening Algorithms using Chest X-rays:** Reviewed 50 peer-reviewed papers and compared the results for screening chest X-rays. Also collected their datasets and compared performance with relation to the size and quality of data. [Publication]

NAMI (National Alliance on Mental Illness)

Ames, IA 50010

Intern, Data Analyst — *March 2020 - November 2020*

- Tech Stack- **Python, PHP**
- Data interpretation and results analysis using statistical training and sampling. Also developed the data collection systems and storage.
- Optimized statistical efficiency and quality. Conducted data filtration and cleaning by reports generation (Python).
- Developed web platform with PHP backend and worked with management to prioritize business and information needs.

Coursera

Sacramento, CA 94041 (Remote)

Mentor, DeepLearning.AI — *August 2021 - June 2022*

- Tech Stack: **Python**. Mentored and guided learners with code reviewing, technical problems, and professional paths.

Jahangirnagar University

Dhaka, Bangladesh

Research Assistant, Institute of Information Technology — *January 2016 - December 2017*

- Tech Stack: **Matlab, SQL**. Project: Identify Fingerprint Using Minutiae Matching in Biometric Security System. [Publication]

Education

University of South Dakota (USD)

Vermillion, SD 57069

MS in Computer Science — *January 2021 - May 2022*

- **CGPA:** 3.8/4.0, **Thesis:** Deep Features to Analyze Pulmonary Abnormalities in Chest X-rays due to Covid-19 [Dissertation] [Presentation]

Jahangirnagar University (JU)

Dhaka, Bangladesh

MS in Information Technology — *January 2016 - January 2018*

- **CGPA:** 3.71/4.0, **Project:** Identify and Recognize Person Using Iris Biometric Security System

Jahangirnagar University (JU)

Dhaka, Bangladesh

BS in Information Technology — *December 2011 - December 2015*

- **CGPA:** 3.58/4.0, **Thesis:** Novel Method to Assess Motion Blur Kernel Parameters and Comparative Study of Restoration Techniques Using Different Image Layouts [Publication]

Technical Skill

Programming Language	Python, JavaScript, NodeJS, ReactJS, AngularJS, SailsJS, Go, Java, C, C++, C#
DevOps	CI/CD, GIT, Agile Methodologies, Jira, Scrum
Platforms	Google Cloud Platform (GCP), Microsoft Azure, IBM Watson, AWS Sagemaker, Linux, Shell
Cloud Technologies	Kubernetes, Dialogflow, BigQuery, Google Cloud Function (GCF), Ansible, REST APIs, Microservices
Web Technologies	GraphQL, ElasticSearch, HTML, CSS, PHP
Database and Visualization	MySQL, PostgreSQL, Splunk, Dynatrace, Tableau, Firebase, Grafana, Power BI, SQL Server, Oracle, NoSQL
Machine Learning	Tensorflow, Keras, Scikit-learn, PyTorch, Pandas, GradCam, Seaborn, OpenCV
Frameworks & IDEs	ASP.Net, Visual Studio, Goland, Anaconda, Jupyter Notebook, Netbeans, Matlab, Automation Anywhere
Other Skills	Latex, Adobe Photoshop

Projects

Prometheus Support for Beegfs Mon service

Prometheus, Grafana, C++

E-series Hackathon Project [Git] — *November 2022*

- For visualization of the data, beegfs-mon provides predefined Grafana dashboards and charts to provide insight into both the health and performance of the filesystem. The service and the Grafana panels are contained in the optional beegfs-mon package. The package is available from the general BeeGFS repository.

Covid-19 Recognition in CT Scans using Artificial Intelligence (AI) guided tools

Python

Course Project for Advanced Artificial Intelligence Course [GitHub] — *January 2022 - May 2022*

- AI-guided algorithms have been utilized to screen CT scans for Covid-19 analysis. A total of 1, 810 CT scan datasets have been collected for this project where 1, 267 Covid-19 patients' and 543 healthy patients' CT Scans. The pre-trained models InceptionNet V3 and U-net have been used for training purposes. K-fold cross-validation has been used to verify a better model.

Fake Job Detection

Python, NLP

Data Science Project [GitHub] — *May 2021 - August 2021*

- Used Python libraries to detect fake jobs. The dataset contains of 18k job descriptions where around 800 false job descriptions is also included. Used logistic regression model because it can be used when the dependent variable is binary and also the dataset has been used to train and classify suspicious job descriptions.

Sensor Data Analysis for Internet-of-Things

Python, esp32, Raspberry Pi 4

Course Project for IoT & Security Course [GitHub] *January 2021 - May 2021*

- In this project, collected temperature and humidity data for continuously two hours on five different days using esp32, DHT11, MQTT, Raspberry Pi 4, breadboard and saved all the data in google firebase. Used Python libraries for data plotting of temperature and humidity data.

IoT Big Data Management

PostgreSQL, Python

Course Project for IoT & Security Course [GitHub] *January 2021 - May 2021*

- Used PostgreSQL to manage big datasets for Internet-of-Things in this project. Also used python to change the time format (UNIT time to dd-mm-yy) and after that, included the data in the PostgreSQL to store and process.

Identify and Recognize Person Using Iris Biometric Security System

Matlab, SQL

Masters Project [GitHub] *August 2016 - December 2017*

- Used automated iris recognition for personal identification to verify both uniqueness of the human iris and also its performance as a biometric based system. The performance of research was measured for stored database which is scored 0% each for False Reject Rate (FRR) and False Accept Rate (FAR) and consequently, iris recognition is shown to be a precise and reliable biometric technology.

Hotel Management System

MySQL

Course Project for Information Storage and Retrieval Course [GitHub] *August 2021 - December 2021*

- Designed a database for the hotel management system. In this project, created relations between customers, HR, services of the hotel etc. It would allow the hotel management to handle all hotel activities.

Final Result Processing System

C#, MySQL

Semester Project for Software Engineering [GitHub] *July 2014 - December 2014*

- In this project, developed an application software in C# entitled "Final Result Processing System" which is a desktop application where the teachers can insert students databases, calculate results and Grade Point Average. The teachers could log in and update the student databases and results. The mark would be calculated automatically and saved in this software for future use. The application is built through C#, MySQL and provides the flexibility to add, modify or recreate new results for students.

Publications

International Conference/Journal Papers *Google Scholar*

- KC Santosh, **Supriti Ghosh**, Debasmita GhoshRoy, "Deep Learning for Covid-19 Screening using Chest X-rays in 2020: A Systematic Review" *International Journal of Pattern Recognition & Artificial Intelligence (IJPRAI).* [IJPRAI]
- KC Santosh, **Supriti Ghosh**, "CheXNet for the Evidence of Covid-19 Screening using 2.3K Positive Chest X-rays" *The 4^{th} International Conference on Recent Trends in Image Processing & Pattern Recognition (RTIP2R), December 2021.* [RTIP2R] [Presentation]
- **Supriti Ghosh**, Mohammad Abu Yousuf, "Novel Method of Identifying Fingerprint Using Minutiae Matching in Biometric Security System" *International Journal of Advanced Engineering, Management and Science (IJAEMS), ISSN: 2454-1311, Vol-2, Issue-7.* [IJAEMS]
- Munira Akter Lata, **Supriti Ghosh**, Farjana Bobi, Mohammad Abu Yousuf, "Novel method to assess motion blur kernel parameters and comparative study of restoration techniques using different image layouts" *5^{th} International Conference on Informatics, Electronics and Vision* (ICIEV 2016), Dhaka, Bangladesh. [IEEE XPlore]

Professional Activities

Volunteer Opportunities and Services

- **Core Member of WIT NANE**, NetApp Inc, Cranberry Township, PA 16066. [July 2022 - January 2023]
- **Session Lead at YWIT 2022**, NetApp Inc, Cranberry Township, PA 16066. [September 2022]
- **Journal Reviewer**, SN Computer Science, Remote [October 2022]
- **AI Ethics Mentor**, Teens in AI x Harvard x MIT Hackathon, Cambridge, MA. [March 2022]
- **Social Media Coordinator**, Association for Computing Machinery (ACM), University of South Dakota, Vermillion, SD 57069. [July 2021-May 2022]
- **AI Ethics Mentor**, Teens in AI, San Francisco, CA. [March 2021]
- **Mentor**, YSS (Youth Standing Strong), Ames, IA 50010. [Sept 2019 - Oct 2020]
- **Program Coordinator (Professional Activities)**, IEEE Student Branch, Jahangirnagar University, Dhaka, Bangladesh. [May 2015 - May 2016]
- **Volunteer (Technical Activities)**, International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT). [May 2015]

Presentation

2022	**YWIT 2022,** Presented in the YWIT 2022 at the NetApp Inc.	*C. Township, PA*
2022	**IdeaFest 2022,** Presented research in the IdeaFest 2022 at the University of South Dakota (USD).	*Vermillion, SD*
2021	**RTIP2R'2021,** Presented paper in the International Conference on Recent Trends in Image Processing & Pattern Recognition (RTIP2R).	*Msida, Malta*
2021	**IdeaFest 2021,** Presented research proposal in the IdeaFest 2021 at the University of South Dakota (USD).	*Vermillion, SD*
2021	**CSC 790 - Seminar,** Presented my research in the seminar lecture series of department of computer science at the University of South Dakota (USD).	*Vermillion, SD*