Srishti Mishra

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About me

Passionate about contributing to the future of artificial intelligence and pushing the frontiers of technology to empower people and systems. Currently bringing intelligent assistive technology to smartphones through the SeeingAI mobile app, and previously created intelligent automation platforms for enterprise networks at scale, at Microsoft India Development Center.

My strengths - Machine learning/AI, Research & Experimentation, (Azure) Cloud Computing services and development. My love for learning also led me to develop IoT Edge products, Unity Gaming/AR experiences, and to share my knowledge through various forums.

Fun Fact - my latest Hackathon projects were creating realistic game characters in Unity using OpenAI's language models, and an Augmented Reality App to showcase AI Generated Art using VQGAN+CLIP models. I try to write on https://srishti-56.medium.com/ when I can!

Skills

Programming: Python, C#, C++, R, JavaScript, JQuery, C, PHP, Node.js, Vue/React (beginner)
Frameworks: Azure Cloud (App Services, Storage etc), Azure ML Services (Machine Learning Workspaces, PySpark, Data Factory, Python ML libraries), DevOps, WebAR, Beginner - Unity, Tensorflow, Keras, Kubernetes

Experience

Microsoft India (R&D) Pvt Ltd *July, 2019 - Ongoing*

Software Engineer

- **SeeingAI:** Working across the Android mobile experience and cloud back-end on features integrating text recognition, image processing, object detection and facial recognition to process the visual world through a smartphone camera and translate it to an assistive audible experience for the user.
- **AIOps**: Worked on and re-architectured an intelligent AIOps solution to monitor Microsoft's Enterprise Network Infrastructure. Key features include machine learning based incident creation, auto-troubleshooting & remediation using classification models and pattern mining on critical and time-sensitive network data. Built on the latest Azure Cloud technologies following high-quality engineering standards, agile practices and DevOps integrations.
- Designed and developed an end-to-end ML Model to Detect Critical Outages in the network, and took part in early AIOps strategy meetings with neighboring teams. Worked on Data Processing, Feature Engineering, Offline Model Training, & real-time data processing using Azure Cloud & ML Services.
- Expanded the project scope to scalable Auto-Correlation of incidents from mined patterns, and an Auto-Remediation solution using NLP, pattern-mining and clustering techniques to recommend mitigation steps on repetitive incidents. Mentored an intern to create a web-based Network Health Visualization tool, aimed to increase transparency of AIOps in the system for stakeholders and customers.

- The AIOps blueprint for self-healing networks was presented in Microsoft's Machine Learning & Data Science Conference (MLADs), published on the Microsoft Inside Track blog, and the research paper is currently under review for Microsoft Journal of Applied Research (MSJAR).
  Link 1: Responding to Site Outages At Microsoft With Machine Learning & AI
  Link 2: https://tinyurl.com/EarlyInCareerAIOps (LinkedIn)

Akamai Technologies Pvt Ltd *Jan, 2019 - May, 2019*

Technical Intern

- Developed end-to-end network analytics and visualization solutions with a research paper for the Networks - Planning department to provide vital insights from network performance data produced by the Large Scale Content Delivery Network.
- Built an intelligent tool for the Global Optimization team to infer 'Causal Relationships between Network Performance Degradation and Network Metrics' based on our research.
  Co-authored a paper on findings - "Time series event correlation with DTW and Hierarchical Clustering methods" (https://peerj.com/preprints/27959/)

Centre for Cloud Computing & Big Data (CCBD) *Jan, 2019 - Aug, 2019*
PES University

Research Intern

- Achieved grade point 10 on a novel research project on Hierarchical Learning Approaches for Anomaly Detection and detecting System Failures in Large Scale Multi-Node Systems. Proposed Hierarchical Conditional Random Fields based on network graphs with over 80% accuracy, and compared Hierarchical Temporal Networks (HTM), SVMs and Changepoint Detection approaches for complex systems. The research paper is currently under review for publishing.
  Link 1: [2210.15030] A Hierarchical Approach to Conditional Random Fields for System Anomaly Detection (full link: https://arxiv.org/abs/2210.15030)

  Link 2: Hierarchical Learning CRF Research Final Presentation

Maventic *June, 2018*

Data Science Intern

- Developed predictive solutions in Retail Analysis to predict product sales, perform customer segmentation and identify buying patterns using the SAP HANA platform and real-time store data.

Centre for Cloud Computing & Big Data (CCBD) April*, 2018- Nov, 2018*
PES University

Research Intern

- Software Regression Testing Platform - A research project sponsored by a startup Algoshack in partnership with the CCBD at PES University, aimed to optimize test suite execution time and identify regression tests in large software projects.
- Used prioritization, minimization, and selection techniques along with machine learning algorithms in Python to recommend efficient test cases suites based on historical test runs and features including code complexity, code maturity and errors.

PES I/O Projects (http://www.pesu.io/) *Sept, 2017 — March, 2018*

Subject Matter Expert/Mentor, Back-End Developer

- SME role - Prepared and Conducted a 4-week course on Web Development for first year students. At the end, 90% of the students successfully created web pages with JavaScript, hosted websites in NodeJs and were aware of open-source collaboration + Github
- Developer role - Engineered and deployed the initial website on AWS Cloud using NodeJs and SQL, to display media-rich content and handle over 3000 registrations during peak load.

Evok Analytics (http://evokanalytics.com) *June, 2017 — July, 2017*

Technical Intern

- Worked on Time Series Forecasting to predict daily and weekly demand of products in supermarkets, using Facebook's open-source algorithm - Prophet. Analyzed the source code of Prophet, made modifications, and implemented it with the current datasets for consumer buying patterns, in R.

PROJECTS (... SEE MORE ON https://github.com/srishti-56)

E.C.S.T.A.T.I.C.S - Enabling Civilian Security through Adaptive Tracking and Intelligent Computer Systems
- Developed a standalone, real time abandoned luggage tracking solution which can be integrated with existing surveillance camera systems.
- Runs on a *Raspberry Pi 3B using OpenCV and TinyYOLO models, trained on ImageNet datasets in C++* for image processing & luggage detection. Uses a mesh network to alert the security personnel & other surveillance nodes of a threat.
Link 1: (ECSTATICS) Overview: Enabling Civilian Security through Adaptive Tracking & Intelligent C…
Link 2: (ECSTATICS) Object Detection Results: Enabling Civilian Security through Adaptive Trackin…

Smart City Analytics
- Analyzed Bangalore city civic data with citizen feedback to present ward-wise priorities, current performance, and the issues in the city to improve infrastructure and citizen safety.
Source code: https://github.com/srishti-56/city-analytics/,
Research Paper: Smart City - Analysis of City Infrastructure with Citizen Feedback.pdf

Predict Success of new Youtube content
- Analyze a Youtube dataset containing statistics of daily top 200 trending videos to predict the number of Likes and Views of new videos.
- Designed a Machine Learning Pipeline of Gradient Boosted Regressors to identify important features, perform natural language processing on text fields and use a weighted combination of predictions from ridge regressors and baseline neural networks to improve the prediction.
Report: Predict Success of Youtube Content.pdf

Converting Natural text queries to MySQL queries
- Created a solution using a combination of TensorFlow Seq2Seq models, SVMs and classification models on natural language questions from the WikiSQL dataset to predict the SQL clauses and columns associated with the query
Converting Natural Language Questions to SQL (https://tinyurl.com/nlpquery2SQL)

Term Paper on Analysis of Security in Docker Containers and Systems -
Term Paper: Analysis of Security in Docker Containers and Systems.pdf
(https://tinyurl.com/dockerSec)

Operating Systems Projects
- Implemented a Virtual File System from scratch, integrated with FUSE (FileSystem in UserSpace) to

perform system calls with custom functionality
- Created a Unix shell clone from scratch for a user to execute commands, use a custom text editor, see command history, set up environment/path variables and aliasing
- Developed a Front-End compiler for PHP - Using Lex and Yacc to parse, and a C codebase to generate a Symbol Table, Abstract Syntax Tree, Intermediate Code and perform dead code elimination and constant folding optimizations
- Forked the open source xv6 operating system and added functionality to display current time and date using system calls and the CMOS I/O ports of the hardware.

Hackathons

Bring NPC to Life with OpenAI - Set character narratives, and mimic realistic dialogue for non player characters in a Unity game. Dialogue is generated via OpenAI language models with character wikis.
Link: Bring NPC to Life with OpenAI (Github)

AI Art Generator in Augmented Reality - Uses Deep learning VQGAN+CLIP AI model to generate artistic images based on user input. Art is showcased in an Augmented Reality app in Unity on a canvas, and walls are automatically detected to hang art around the user.
Link: AI Art Generator in Augmented Reality (Github)

Song Detector - Uses signal processing techniques on a video clip, extracts MFCC features, and runs a ML classification model to identify the start and end of a song. Provides an option to skip the song on web browsers.

Education

PES University

B.Tech in Computer Science Engineering *2015 - 2019*

Specialization in Data Science

CGPA: 8.24

Additional courses

- Microsoft Azure AI Fundamentals *Nov, 2021*
  (Microsoft)
- Pattern Discovery in Data Mining *Jan, 2021*
  (Coursera: University of Illinois at Urbana-Champaign)
- AZ-900: Microsoft Azure Fundamentals *Dec, 2020*
  (Microsoft)
- Natural Language Processing with Classification and Vector Spaces *June, 2020*
  (Coursera: DeepLearning.AI)
- Machine Learning Foundations: A Case Study Approach *Jan, 2017*
  (Coursera: University of Washington)