Mayukh Bhattacharyya

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Experience

Belva AI, Backend AI Developer — Jul 2023 - Present

• Developing the backend of **LLM based** phone call platform. Developed core APIs supporting the platform **on FastAPI, MongoDB stack**. Building Langchain-based conversational agents as well as recommendation systems for a legal marketplace built on top of AI stack.

Snapchat, Machine Learning Engineer Intern — May 2022 - Aug 2022

• Developed **offline model evaluation** metrics for **large-scale recommendation systems** in the Lens Ranking team. Implemented counterfactual evaluation methods that can emulate online A/B test results from historical data, thus reducing reliance on **A/B tests**.

• Adapted and validated **ideas from multiple research papers** for use on internal user data using GCP and BigQuery, which showed superior efficiency over traditional metrics. Integrated the best methods Snap's in-house ML platform using **Apache Beam**.

Applied Materials, Algorithm Developer II — May 2020 - Aug 2021

• Worked in the CTO division on the development of an **AI-based product** for **breast cancer diagnosis** with a focus on explainable AI. As one of the first developers of the project, built the algorithmic core of the product and deployed it to **production on AWS** in 12 months.

• Developed core **Computer Vision** models using both **Tensorflow and Pytorch** for semantic and instance **segmentation** with extremely scarce training data leveraging weakly supervised techniques. Built efficient latency-focused data pipelines for running the model inference on gigapixel-sized images on the cloud.

Sigtuple Technologies, Software Engineer — Oct 2019 - Mar 2020

• Developed **deep learning** models for object detection and **object tracking** for AI-based pathology tests. Developed YOLO-based models improved detection precision by 30%. Developed **ffmpeg** camera modules in Python for capturing videos in a proprietary scanner device.

Samsung Electronics, Software Engineer — Jul 2017 - Oct 2019

• Worked in the Enterprise Displays Team, where I developed multiple **core products in C/C++** with complete ownership for large format displays - video content player, weather app, network-based multi-tv video wall, synchronized play, etc. for a Linux-based OS framework.

• **Led the research and development** of gaze estimation and **object detection**-based content/advertisement recommendation system for large outdoor displays. Used crowd gaze as implicit feedback for suggesting better content to be played on screen.

Publication

- DeCAtt: Efficient Vision Transformers with Decorrelated Attention Heads — **CVPR 2023** (link)
- SERF: Towards better training of deep neural networks using log-Softplus ERror activation Function. — **WACV 2023** (link)
- Deciphering Environmental Air Pollution with Large Scale City Data. — **IJCAI 2022** (link)
- Hybrid Style Siamese Network: Incorporating style loss in complementary apparels retrieval. — ***CVPR 2020*** (link)

Education

Stony Brook University, M.S. in Computer Science — Aug 2021 - May 2023, NY

Jadavpur University, B.E. in Electrical Engineering — Aug 2013 - Jun 2017, India

Projects

reco — Recommender Systems library (link)

Created a comprehensive Python library of Recommender Systems with core modules of Collaborative Filtering, SVD, Factorization Machines, and Wide & Deep Networks with an underlying **Cython** core. The published package has been **downloaded over 14k times.**

BlindChat— Flask-based chat app on FB Messenger (link)

Built and deployed a cross-matching chat app in Flask on top of Facebook's messenger APIs. Implemented **REST API**-based server backend with **SQL database** for associated data storage. It had over **0.5 million messages** exchanged.

Miscellaneous

- **Top 0.1%** in **Kaggle**'s Competitions and Notebooks leaderboards.
- Best Business Value Award, **Samsung Delhi** Hackathon 2019.
- **4th Place** in FashionIQ (Image Captioning) Challenge, CVFAD Workshop, **CVPR 2020.**

Skills

Python, C++, Java, Javascript, SQL, NoSQL, Machine Learning, Deep Learning, Computer Vision, Operating Systems, Data Structures, Algorithms, Recommendation Systems, Big Data, NLP, LLM, MLOps, Linux, FastAPI, Flask, PyTorch, Tensorflow, XGBoost, Numpy, OpenCV, Scipy, Spark, Apache Beam, MongoDB, GCP, AWS, Docker, MLFlow, CI/CD, Jenkins, ETL, Git