ADIT SHAH

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EDUCATION

Concordia University Montreal, Canada
M.Eng. in Electrical and Computer Engineering Sep 2021 - Aug 2023
Courses: Neural Networks, Distributed Computing, Cloud Computing,

Nirma University Ahmedabad, India
B.Tech in Electronics and Communications Technology Aug 2015 - Jun 2019
Courses: Data Structure, IoT, MATLAB, Linear Algebra, Embedded Systems, CAD
Minor in Marketing: Marketing Management, Consumer Behavior, Entrepreneurship Development, Sales and Marketing

TECHNICAL SKILLS

Languages	Python, Java, C++, R
Frameworks	PyTorch, Tensorflow, Keras, Spark, Kubeflow, Spring Boot, Flask, OpenAPI, PyTest
Protocols	API, Socket Programming, gRPC, REST, GraphQL
Tools and Platforms	Docker, Kubernetes, GIT, Selenium, MLOps, Azure, AWS S3, EC2, Oracle Cloud, GCP, Jenkins
Packages	Pandas, Numpy, SQL, NoSQL, Postgres, Apache Airflow, MongoDB, Matplotlib, Databricks

EXPERIENCE

AIRY:3D *Montreal, Canada*
Junior Machine Learning Engineer Apr 2023 - Feb 2024

- Implemented NAS algorithms for computer vision based tasks (PDART, UNET DART, DC-DART) for 3D segmentation, achieving a 50% reduction in FLOPs and a 1.73x increase in processing speed compared to U-Net and MiDaS baselines, while maintaining performance based on AbsRel error and IoU for point cloud-based depth maps.

- Optimized model deployment pipeline for vision-based applications using TensorRT and ONNX runtime, and deployed on embedded systems using pruning, quantization, and distillation, resulting in a 33% reduction in transformer model size and doubling inference speed with only a 5% increase in loss.

- Enhanced computational efficiency and speed up processing times by leveraging multi-GPU training, ensuring effective resource utilization and improved model performance.

Robert Bosch Engineering and Business Solutions (AIShield) *Bangalore, India*
Associate Software Engineer (AI/ML Engineer) Jan 2019 - Sep 2021

- Developed comprehensive defense mechanisms to safeguard AI models and ensure data privacy, effectively mitigating potential adversarial attacks and model extraction attacks.

- Engineered and deployed robust microservices system architectures on the Azure cloud platform, leveraging Azure Kubernetes Service (AKS) for seamless integration and scalability, while utilizing multi-threading techniques to optimize deployed model performance.

- Designed and implemented ELT/ETL data pipelines, ensuring efficient data flow and transformation processes, and supporting large-scale data analytics using Apache Kafka for real-time data streaming, Apache Spark for distributed data processing, and an orchestrator for seamless pipeline management.

PROJECTS

- **Recommendation Engine**: Developed a recommendation engine using collaborative filtering techniques on the Amazon Sales Dataset to provide personalized product recommendations, improving user experience and sales.

- **Developed RAG Model**: Created a Retrieval-Augmented Generation (RAG) model using Google Vertex AI and OpenAI API, enabling efficient information retrieval from multiple documents and websites simultaneously.

- **Personalized Text-to-Image Generator** - Retraining a Text-to-Image using CLIP based Stable Diffusion with Dreambooth, for creating custom images using few shot image.

PATENTS

- **Method of Training a Module and Method of Preventing Capture of an AI Module.** Inventors: Adit Jignesh Shah. Applicants: Robert Bosch GmbH. Publication Numbers: US12032688B2 (Granted), JP2023055093A. Filed: October 4, 2021. Published: April 17, 2023. Granted: July 9, 2024.

- **A Method of Validating Defense Mechanism of an AI System.** Inventors: Adit Jignesh Shah, Manojkumar Somabhai Parmar. Applicants: Bosch GmbH Robert, Bosch Global Software Tech Private Limited. Publication Numbers: WO2024105034A1, EP4364052A1. Filed: November 14, 2022. Published: May 23, 2024, May 8, 2024.

- **A Method of Training a Submodule and Preventing Capture of an AI Module.** Inventors: Adit Jignesh Shah, Manojkumar Somabhai Parmar. Applicants: Bosch GmbH Robert, Robert Bosch Engineering and Business Solutions Private Ltd. Publication Numbers: US2023376752A1, WO2022258537A1, EP4217897A1, EP4423648A1. Filed: August 6, 2020. Published: September 28, 2023, August 2, 2023, September 4, 2024.

- **Verfahren zum Trainieren eines Moduls und Verfahren zum Verhindern des Erbeutens eines AI-Moduls.** Inventors: Jignesh Adit Shah, Manojkumar Somabhai Parmar. Applicants: Robert Bosch Engineering and Business Solutions Private Ltd, Bosch GmbH Robert. Publication Number: DE102021211003A1. Filed: September 30, 2021. Published: March 30, 2023.

- **A Method to Prevent Exploitation of an AI Module in an AI System.** Inventors: Adit Jignesh Shah, Manojkumar Somabhai Parmar, Pankaj Kanta Maurya, Yash Mayurbhai Thesia. Applicants: Bosch GmbH Robert, Bosch Global Software Tech Private Limited. Publication Numbers: WO2024003274A1, WO2024003275A1, WO2024115579A1. Filed: June 29, 2022. Published: January 4, 2024, June 6, 2024.

- **A Method to Validate Defense Mechanism of an AI System.** Inventors: Adit Jignesh Shah. Applicants: Robert Bosch Engineering and Business Solutions Private Limited. Publication Number: WO2022063840A1. Filed: June 10, 2021. Published: December 15, 2022.

PUBLICATION

- **Publication**: Published a paper titled "A Low Power and Low Voltage CMOS-Based Operational Transconductance Amplifier for Biomedical Applications" in the International Journal of Scientific Engineering and Technology Research (IJSETR) in 2018.