

JAGAN SHANMUGAM

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Experience

MBiton GmbH

Expert Data Scientist

Jun 2020 – Present

Berlin, Germany

Internal Knowledge Assistant & Persona Chat | *LangGraph, LLaMaIndex, PGVector, Azure OpenAI, RAG*

- Devised the business case for the Knowledge Assistant, enabling easier and more efficient access to useful information instead of wasted effort on searching & processing information from silo-ed and sometimes outdated sources.
- Designed the architecture for the Interface and Backend considering data security and governance.
- Implemented Data Ingestion pipelines to vectorize multimodal data from Confluence, JIRA, Gitlab, and internal tools.
- Deployed a FastAPI backend to serve requests from multiple frontends including Rocket.Chat and a web app.
- Extended to Agentic workflows with MCP (Model Context Protocol) servers and also implemented monitoring and observability using LangFuse, and evaluated the solution on the usefulness of responses and relevancy of references.

ExploreMe - HeyMercedes Voice Assistant | *BERT, MLFlow, Databricks, PromptFlow, Azure CognitiveSearch*

- Devised and implemented a BERT-based binary classifier to identify Car Info Requests from all utterances.
- Trained & Evaluated the classifier based on the dataset curated from real driver utterances for six languages.
- Integrated the classifier in the Mercedes Voice Assistant Platform via Kubernetes to serve requests from drivers on-road.
- Having solved the needle-in-the-haystack problem with domain-specific binary classifier, assisted in the development of an ensemble-based domain classifier and User-Manual Augmented Generation module.
- With data-driven feature development and prioritization, identified 6 features that led to an increase in feature coverage by 51%, Analyzed PROD utterances and benchmarked NLU providers, detected feature scope gaps, and derived improvements for existing voice assistant domains.

Telelog - Driver & Vehicle Data Analytics | *Tableau, Databricks, PySpark*

- Analysed millions of trips from the Mercedes fleet for a variety of features from the infotainment system.
- Closely collaborated with the business teams to drive data-driven product & feature decisions.

Scientific Games, India Pvt Limited

Software Engineer - Business Intelligence

Oct 2014 – Aug 2017

Bengaluru, India

- Integration of Business Intelligence (BI) suite with a customer data hub - Developed SSIS-SQL packages for integrating customer data hub (Ontario Lottery Gaming Corporation, Toronto) with Business Intelligence suite.

Education

University of Stuttgart

Master of Science in Information Technology - Focus on Machine/Deep Learning

Grade: 1.5, Oct 2017 – Jan 2020

Stuttgart, Baden-Württemberg

Master Thesis & Research Internship | *Bosch Center for Artificial Intelligence, Renningen* | *Apr 2019 – Dec 2019*

- Latent space Bayesian Optimization with Transfer Learning: 🌀 - Developed a method for warm starting Bayesian Optimization (BO) of the target task with previous optimization data from related tasks for finding optimal parameter settings in industrial processes.

Student Research Assistant | *Machine Learning and Robotics Lab, Stuttgart* | *Dec 2018 – Mar 2019*

- Collected motion capture data using ROS (Robot Operating System) and developed test environment for Hierarchical Inverse Reinforcement Learning algorithms.

Work Student | *Daimler AG, Sindelfingen* | *Mar 2018 – Jan 2019*

- Validated ADAS attributes in NDS (Navigation Data Standard) databases to detect discrepancies.

College of Engineering, Guindy

Bachelor of Engineering in Electronics and Communication

Grade: 85%, Aug 2010 – May 2014

Chennai, India

Technical Skills

Languages/ML Tools: Python, SQL, Typescript, Scala, PySpark, PyTorch, Pandas, Transformers, Airflow, MLFlow, LLaMaIndex, DSPy, LangGraph, MCP

Cloud/Databases/Non-ML: Databricks, Azure, K8s, Docker, Postgres, MS SQL Server, React, NextJS, Streamlit, FastAPI

Leadership / Awards

- Mentoring junior data scientists and supervised bachelor and master thesis students in MBiton.
- Co-organizing Generative AI CoP (Community of Practice) and delivering talks on recent developments in the space.
- Providing technical leadership & guidance while managing the department's Azure subscription budget.
- Recipient of Deutschland Stipendium - winter semester 2019/20, for excellent academic performance in Masters.