

EASWARAN SUBRAMANIAN

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SUMMARY

As a dedicated professional and master's in Machine Learning student at Tübingen University, I am driven by the challenge of creating and scaling advanced AI systems. I am skilled in Python, SQL and have hands-on knowledge in building ML Models, automating workflows and translating complex data in meaningful insights across different domains.

My 3+ years of work experience in data science and machine learning has led me to a strong interest in MLOps, operationalising generative AI and predictive modeling, and I am focused on leveraging my skills to make a tangible impact by bringing cutting-edge models to life.

TECHNICAL SKILLS

Programming: Python (Pandas, NumPy, Flask), PHP, SQL, Java

ML & Data: Pytorch, scikit-learn, LangGraph, CNN, NLP, LLM, PostgreSQL, MySQL

Data Visualisation: matplotlib, seaborn, plotly, W&B

Tools: JIRA, Microsoft Excel (VLOOKUP, Macros, Pivot Table), VS Code, Jupyter

Deployment: Docker, AWS (EC2 + S3), Git, API Integration

Languages: English (C2), German (A1), Tamil (Native)

EXPERIENCE

Tübingen Institute for Medical Education, Tübingen, Germany

Nov 2023 - Jul 2024

Research Student - Programming and Web Interface

- Created a web interface to analyse survey data from over 200 final-year medical students and nurses, providing educational insights.
- Built an admin page with PHP and JavaScript and managed data storage and retrieval using MySQL.
- Developed interactive data visualisations using a library like Chart.js and Plotly to present complex survey results in an intuitive format.
- Implemented a secure user authentication system with session management to protect sensitive survey data and ensure access was restricted to authorised personnel using PHP and MySQL.

Sony B.V. Stuttgart Technology Center, Stuttgart, Germany

. Mar 2023 - Aug 2023

Working Student - Machine Learning Engineer

- Supported the R&D with building a custom Neural Architecture Search (NAS) framework in PyTorch, running over 20 comparative experiments to validate a projected performance increase of up to 20%.
- Optimised the end-to-end machine learning pipeline by developing efficient data preprocessing scripts and conducting systematic hyper-parameter tuning to find optimal network configurations.
- Managed the project's codebase using GitLab for version control, where I contributed to refactoring modules for improved efficiency and authored technical documentation for new components.

Verloop.io, Bengaluru, India

Mar 2022 - Sep 2022

Data Analyst

- Applied NLP techniques, including topic modeling and sentiment analysis, to analyze and categorize thousands of user queries, identifying key customer pain points and behaviour patterns.
- Designed and built interactive dashboards using Matplotlib to provide the Customer Success team with real-time insights into chatbot performance and customer satisfaction KPIs.
- Developed and automated reporting pipelines in Python, which reduced the time required for weekly report generation by 70%, freeing up the team to focus on proactive customer engagement.
- Collaborated closely with the Customer Success and Product teams to present actionable findings, directly influencing the refinement of chatbot conversation flows and user experience strategy.

Quantum AI Systems, Hyderabad, India

Jan 2021 - Feb 2022

Machine Learning Intern

- Implemented and compared ConvLSTM and LRCN deep learning models for video classification, developing a data preprocessing pipeline with OpenCV and training the networks using TensorFlow and Keras.
- Adapted the models for a customer service use case and deployed the final solution into a user-friendly web interface using Flask.

Tiger Analytics, Chennai, India

Jan 2020 - Nov 2021

Senior Data Analyst

- Supported a large-scale pricing strategy project for a major fast-food client, delivering optimal menu price recommendations that drove a projected 10-15% increase in revenue across more than 15 global markets.
- Developed and implemented a price optimisation model using Conjoint Analysis to simulate customer choice and forecast the impact of price changes on key business metrics like sales, revenue, and gross margin.
- Utilised the COBYLA (Constrained Optimisation by Linear Approximation) algorithm to solve complex, non-linear optimisation problems, balancing the objective of revenue maximisation against critical business constraints such as price ceilings and sales volume limits.
- Authored and refactored the project's analytical codebase in Python, enhancing its efficiency and scalability to handle diverse market data and complex modeling requirements.
- Conducted extensive scenario modeling and sensitivity analysis to evaluate hundreds of potential pricing strategies, providing the client with a clear understanding of the trade-offs between different business outcomes.
- Synthesised complex analytical findings into actionable market-level insights, leading communication and presenting strategic recommendations to senior client stakeholders and internal leadership teams.

EDUCATION

Tübingen University, Baden-Württemberg

Oct 2022 - present

Masters in Machine Learning

Relevant Coursework: Deep Learning, Computer Vision, Probabilistic Machine Learning, Virtual Humans, Understanding LLMs, Automated Machine Learning and Hyper-parameter Optimisation

Vellore Institute of Technology, Tamil Nadu, India

Jun 2016 - Jul 2020

Bachelor of Technology in Electronics and Communication Engineering

Relevant Coursework: Advanced Micro-controllers, Data Structures and Algorithms, Machine Learning, Neural Networks, Applied Linear Algebra, Business Analytics

RECENT PROJECTS

Masters Thesis: Reproducing the Hypencoder (in-progress)

- Investigating and reimplementing the Hypencoder framework, a novel Information Retrieval model that uses a hypernetwork to dynamically generate a query-specific neural network for more expressive relevance scoring.
- Implementing and analysing a graph-based greedy search algorithm to assess the trade-offs between retrieval speed and accuracy when compared against a traditional search approach on a large-scale document corpus.
- Investigating potential improvements to the model's architecture by modifying the provided codebase. The primary experiment focuses on adapting the q-net to accept multi-vector document representations instead of a single vector, aiming to enhance performance on complex and hard retrieval tasks.

AI Agent Robustness Testing Framework

- Developed an automation framework to systematically evaluate the robustness of a ReAct-style LLM agent, testing its performance against various data corruption scenarios like shuffled column headers, missing values, etc.
- Engineered and refined the agent's prompts to improve its reasoning and tool-using capabilities, enabling it to correctly interpret corrupted data schemas and still answer questions accurately.
- Built the agent's architecture using the LangGraph library to create a cyclical graph of nodes representing the agent's state, and used Pandas for all data manipulation and analysis within the agent's tools.