Ashutosh Jha

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Languages: English (C1), Deutsch (B1)

Education History

M.Sc. Quantitative Data Science Methods, Machine Learning & Econometrics — October 2023 - June 2026
Eberhard Karls Universität Tübingen, Germany — *Grade: 1.48/5 (1.0 = Highest)*

Erasmus Exchange Semester - Financial Economics and Machine Learning — February 2025 - June 2025
Katholieke Universiteit Leuven, Belgium — *Grade: 1.5/5 (1.0 = Highest)*

B.E. Electrical and Electronics Engineering — August 2016 - May 2020
Birla Institute of Technology and Science, Pilani, K.K Birla Goa Campus, India — *Grade: 8.12/10 (Original), 2/5 (German)*

Professional Experience

Intern Quantitative Analyst - Finanzstabilität — *July 2025 - September 2025*
at Deutsche Bundesbank, Frankfurt, Germany

- *Built forecasting models for investment fund characteristics to derive financial stability insights, successfully modeling portfolio vulnerabilities against diverse market, monetary policy, and geopolitical risk shocks, by stress-testing traditional econometric, decision trees probabilistic, and foundation tabular (TabPFN) time-series models. Tools: Python, Git, SQL.*

Student Research Assistant - OS Lab, Perceiving Systems — *Nov 2025 - Present, July 2024 - June 2025*
at Max Planck Institute for Intelligent Systems, Tuebingen, Germany

- *Developed the NICE toolbox's capability to successfully process non-verbal communication data, by integrating computer vision detectors for pose estimation, emotion detection, and head orientation using Python and PyTorch.*
- *Streamlined the deployment and asset management for experimental models, reducing environment setup time and improving version control, by containerizing the application and managing CI/CD testing pipelines. Tools: Docker, Apptainer, GitLab CI/CD, Git, Hugging Face, Keeper, and Linux.*

Software Engineer - Cloud Economics & FinOps — *September 2020 - September 2023*
at HSBC Holdings PLC, Pune, India

- *Generated $500K in cloud cost savings and secured 1.5× vendor discounts across multiple cloud providers, by developing statistical cost-benefit models and designing FinOps frameworks utilizing Python, SQL, GCP BigQuery, and Microsoft Power BI.*
- *Reduced data processing latency by 4×, by architecting and deploying real-time ETL pipelines and scalable data infrastructures using Python, GCP Compute, AWS Lambda, S3, Jenkins (CI/CD), and Git.*

Software Engineering Intern - Automotive Software Solutions — *August 2019 - December 2019*
at Nvidia Corporation, Bengaluru, India

- *Accelerated diagnostic and root-cause analysis times, improving SoC CPU verification efficiency during boot sequences, by building a customer-facing real-time visualization tool using Python, Linux, shell scripting, and Git.*

Skills

Language, Systems, and Tools: *Python, Git, SQL, R, Matlab, Linux, Power BI, Cloud Platform(s) - GCP, AWS, MS Excel - VBA, Microsoft Office Tools, LaTeX.*
Relevant Coursework: *Financial Engineering, Machine Learning in Econometrics, Statistics of Financial Markets, Empirical Asset Pricing, Derivatives and Risk Management, Advanced Time Series Analysis, Machine Learning,*

Probabilistic Machine Learning, Deep Learning, Optimization, Probability & Statistics, Bayesian Modelling.

Technical Projects

Master Thesis: Optimal Transport in linear Independent Component Analysis
at Max Planck Institute for Intelligent Systems - Empirical Inference, Germany *October 2025 - April 2026*
Link: [GitHub Link]

- *Improved signal separation accuracy across diverse, mixed-source datasets, effectively optimizing the unmixing matrix B, by investigating Optimal Transport Theory to build a reliable linear Independent Component Analysis algorithm. Tools: Python, PyTorch, Git, LaTeX, and Inkscape.*

Heilbronn Hackathon 2026: TuebiFit (Full-Stack Agentic Application) *March 2026*
Link: [GitHub Link]

- Engineered an AI-powered fitness companion capable of personalized workout and nutrition planning, by orchestrating LLM agents and Model Context Protocol (MCP) servers using LangChain, LangGraph, and Python.
- Deployed a scalable, containerized full-stack architecture on Google Cloud Run, integrating real-time pose estimation (MediaPipe) with a React frontend and FastAPI backend.

Design, Pricing and Hedging of a Structured Product - Bonus Certificate
at Katholieke Universiteit Leuven, Belgium *February 2025 – May 2025*
Course: Financial Engineering, Summer Semester 2025
Link: [GitHub Link]

- *Successfully priced and modeled hedging strategies for a Bonus Certificate structured product using Bates Pricing model (Heston model and Poisson price jumps) and Carr-Madan Fast Fourier Transform. Tools: Python, Git.*

Probabilistic Asset Pricing
at Eberhard Karls Universität Tübingen, Germany *November 2024 – January 2025*
Course: Master Seminar on Econometrics, Winter Semester 2024-25
Link: [GitHub Link]

- *Evaluated asset pricing anomalies and risk premiums, by developing Bayesian approach to asset pricing using asset pricing theory as prior and using state space representation (Kalman Filters) to formulate posterior prices. Tools: Python, Git.*

Empirical Asset Pricing: CBM and UCCAPM
at Eberhard Karls Universität Tübingen, Germany *April 2024 – July 2024*
Course: Empirical Asset Pricing, Summer Semester 2024
Link: [GitHub Link]

- *Replicated and analyzed Consumption-Based Macroeconomic (CBM) models and UCCAPM, by evaluating empirical asset pricing methodologies using Matlab, Git.*