Rajeev Lochan Joshi

Dual Degree (Mechanical & Financial Engineering)
Indian Institute of Technology, Kharagpur
Department Rank : 5

+91-7668659003
joshirajeev1815@gmail.com
LinkedIn

Education

Degree	Institute	Board / University	CGPA/Percentage	Year
Dual Degree	Indian Institute of Technology, Kharagpur	IIT	**8.92**	2020-2025
Senior Secondary	BLM Academy	CBSE	97.20%	2019
Matriculation	Himalaya Inter College	Uttarakhand Board	95.2%	2017

Work Experience

- **Nomura | Mumbai** ***May '25 - Present***
  Quantitative Analyst, Model Validation Group
  – Implemented **SA-CVA** model under regulator-specifications, computing capital from **Greeks** (risk sensitivities) and eligible hedges
  – Performed comprehensive periodic review of **Stressed BA–CVA** capital model, validating applied stress calibration methods
  – Reformed **computational engines** by migrating selected models from **Excel** to robust **Python** setups, improving workflow efficiency

Publications

- **Relativistic Reformulation of Black–Scholes** ***2025***
  Under Review *Link*
  – Introduces a novel blend of **Einstein's relativity** and **financial mathematics**, embedding finite information propagation, time dilation, and liquidity contraction into option pricing; derives a stress-sensitive PDE reducing to Black–Scholes in normal regimes.

Internships

- **Microsoft | Hyderabad** ***May '24 - July '24***
  Software Engineering Intern, Windows Shell AI Team ***Certificate***
  – Developed a tool that stores user interactions on web & desktop, and later uses to power an **automation engine** for Windows PC
  – Utilized **Playwright, Pywinauto**, JavaScript, PyAutoGUI, PIL, & SpeechRecognition for raw data capturing, storing in Cosmos DB
  – Developed tool converts raw data into intelligence units based on user input using **GPT-4v** and **GPT-4o** for automation engine

- **IIM Ahmedabad | Ahmedabad** ***July '23 - Aug '23***
  Quantitative Risk Analyst Intern, Prof. Sanket Mohapatra ***Certificate***
  – Assessed risk for **NIFTY 50**, **USD/INR**, and **GOLD** by developing **VaR** models; focused on historical VaR estimation technique
  – Implemented **Historical**, GARCH, Parametric and **Monte Carlo VaR** models, utilizing 1000-day rolling back testing on 20-year data
  – Achieved lowest exceedance rates, with Historical VaR - **0.0094%** for NIFTY 50, **0.0133%** for USD/INR, and **0.0078%** for GOLD

- **Microsoft | Hyderabad** ***May '23 - July '23***
  Software Engineering Intern, Windows Novel Developer Experience Team ***Certificate***
  – Worked on providing **proof-of-concept** in Windows Search by developing a **Natural Language Query Search** feature for user queries
  – Leveraged **DistilBERT** (offline) and **GPT-3.5 Turbo** (online) to interpret natural language, enabling accurate data retrieval
  – Implemented the search architecture using OLE Database in **C++** and achieved a **10%** reduction in execution time

Projects

- **Credit Risk Determinants using Machine Learning Models | Bachelor's Thesis Project** ***Sept '23 - Apr '24***
  Prof. Piyush Kumar Singh, Indian Institute of Technology, Kharagpur
  – Executed **feature importance** analysis, multicollinearity tests and **causal solution** for impact estimation of key drivers of credit risk
  – Developed ML framework incorporating **Random Forest** & **Gradient Boosting** to analyze efficiency & credit risk across 21 banks

Relevant Coursework

- Big Data Analysis
- Probability & Statistics
- Linear Algebra
- Financial Mathematics
- Financial Econometrics
- Corporate Finance
- Regression Analysis
- Machine Learning
- Deep Learning
- Data Structures
- Algorithms I
- Operating Systems
- Derivatives & Risk Management
- Fixed Income Securities
- Market Microstructure

Technical Skills

- **Programming Languages** : C, C++, Python, HTML, SQL, CSS, ReactJS, MATLAB & Latex
- **Tools and Libraries**: PIL, Plotly, Keras, Matplotlib, Pytorch, Tensorflow, Pandas, Numpy, Streamlit & OpenCV