Ayush Agarwal

+1-(510)-365-2499 | ayuag@berkeley.edu | [LinkedIn](#) | [Website](#)

EDUCATION

University of California, Berkeley - Haas School of Business	**Expected 03 2023**
Master of Financial Engineering	*Berkeley, CA*

Indian Institute of Technology, Kanpur	**06 2021**
BS, Mathematics and Scientific Computing, GPA: 8.9/10	*Kanpur, UP, India*

- Award: Top ten department rank in a class of 54 students | INSPIRE scholarship by DST, Govt of India
- Teaching Assistant: MTH511 (Statistical Simulation & Data Analysis) with Prof. Dootika Vats (Dept. of Stats)
- Harvard Summer School: Summer projects & courses in Financial Economics & Quantitative methods (2019)

SKILLS & CERTIFICATIONS

Programming: R, RCpp, Python, C, C++, Matlab, SQL, VBA, Markdown, LATEX, Git
Mathematics: Markov Chain Monte Carlo, Bayesian Analysis, Stochastic Processes, Time-Series Analysis, Statistical Simulations, Numerical Computing & Optimisation, Inference, Probability, Real & Complex Analysis, Linear Algebra
Languages: English (fluent), Punjabi (fluent), Hindi (native)
Online Certificates: ML Nanodegree (Udacity), Neural Networks & Deep Learning (Coursera), Macroeconomics (edX)

PROFESSIONAL EXPERIENCE

Zomato Ltd (A multinational restaurant aggregator & food delivery company with $500 MM+ revenue)	**Gurgaon, HR, India**
Technical APM, Delivery Charges | Serviceability | Locations	*06 2021 - 02 2022*

- Managed logistical demand optimization products; processed 1.5 MM+ daily orders at optimal GMV/Login-hr
- Developed algorithms for monetisation service (Delivery & Surge charges, MOVs); generating $100MM+ revenue
- Conceptualized an event-based notification service platform for demand management; serving 4MM+ daily users
- Managed technical development of Locations service tech stack; improved multiple address accuracy to < 10m

Fitso by Zomato	**Gurgaon, HR, India**
Technical Product Management Intern	*01 2021 - 05 2021*

- Coordinated development of customer acquisition handling product at Fitso; increased customer conversion by 8%

Google Summer of Code, 2020 [CRAN] [GitHub]	**Mountain View, CA**
Open Source Contributor, R Project for Statistical Computing	*05 2020 - 09 2020*

- Built C++ optimised R package for estimating hierarchical Bayesian Quantile Regression models in Longitudinal and Panel datasets with binary outcome developed in Rahman & Vossmeyer (2019)
- Published on CRAN; Support for Metropolis MCMC algorithm & 3 multivariate random samplers (GIG, TN, AL)
- Cited as: "Agarwal A., Vats D. (2020), Quantile Regression for Binary Longitudinal Data. R v1.0.3, IIT-Kanpur"

Nomura Structured Finance	**Mumbai, MH, India**
Global Markets Analyst Intern, Macro Structuring and Research	*04 2020 - 06 2020*

- Designed a custom systematic trading algorithm for index trading in Python using Options OI, PCR & MACD; backtested realising annualized returns of 16% over a 2 year volatile period on Nifty50 & Nikkei225 indices
- Built a cross-asset class portfolio allocator and optimizer in Python referencing Markowitz efficient frontier
- Conducted market research of Oil futures pricing, recommending a long exposure in Covid-19 hit Aviation sector

RESEARCH EXPERIENCE

Change-point algorithm for Markov Chains [Website]	**Kanpur, UP, India**
Mentor: Prof. Dootika Vats, Dept of Math & Stats, IIT-K	*08 2020 - 04 2021*

- Proposed a non-parametric change-point algorithm leveraging CUSUM statistic for Markov chains; extended it to identify burn-in periods in generalised α-mixing processes
- Verified methodology extension to parametric case with known sample distribution or logarithmic-posterior values
- Conducted literature review; developed tools to apply 2-sample Kolmogorov-Smirnov test to MCMC setup

Time series Analysis and Forecasting [Website]	**Kanpur, UP, India**
Mentor: Prof. Amit Mitra, Dept of Math & Stats, IIT-K	*08 2019 - 03 2019*

- Devised SARIMA model on Indian monthly rainfall data (114 yrs); used AR interpolation & stationarity transform
- Employed Box-Jenkins methodology for residual analysis, best fit model & predictive forecasting for next 2 months

INTERESTS

- Formula 1 Racing & Engineering | Cognitive Psychology | Amateur Guitar & Violin player | Mental Health