

Nikhil Rajan

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EDUCATION

Madras School of Economics

Bachelor of Arts (Honours) in Economics

Chennai, India

August 2023 - Present

- **Cumulative Grade Point Average:** 9.66/10.0
- **Dean's List (Distinction):** Semester II (9.9 GPA), Semester III (10.0 GPA), Semester IV (9.77 GPA)
- **Coursework:** [Stochastic Processes](#), Real Analysis, Advanced Differential Equations, Linear Algebra, Time Series Analysis, Econometrics, [Statistics](#), Game Theory, Money and Banking, Data Science, [Python and MATLAB](#).

INTERNSHIP EXPERIENCE

Madras School of Economics

Research Intern (Advisor: Dr. Naveen Srinivasan)

Chennai, India

December 2024 - January 2025

- Studied horizontal innovation and knowledge spillovers within the Romer growth model using analytical and numerical methods.
- Developed micro-founded models and simulations to examine how innovation intensity affects long-run productivity.

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Finance Intern

Chennai, India

May 2024 - July 2024

- Built an automated tool to generate P&L statements, balance sheets, and schedules, improving reporting speed and accuracy.
- Analyzed MSME financial statements and evaluated bank/NBFC credit products to map documentation and risk requirements.
- Strengthened analytical and structuring skills by collaborating directly with clients on financial reports and automation.

RESEARCH PROJECTS

Impact of MGNREGA on India's Labour and Development Outcomes: An Econometric Analysis

Used OLS models to analyse how MGNREGA spending shapes rural wages, labour intensity, and women's participation.

Stochastic Welfare Analysis of Sin Taxation Under India's New GST Regime

Modelled cigarette taxation through a Markov-based behavioural transition model using NSSO microdata.

Liquidity Regimes as a Markov Chain and Optimal Execution as a Markov Decision Process

Proposed a DTMC-based regime-switching model and began developing continuous-time optimal execution using stochastic control.

Credit Rating Transitions and Markov Chains

Reconstructed Jarrow - Lando Turnbull (1997) from first principles; derived hedging strategies and risk-neutral transition matrices.

TEACHING ASSISTANTSHIPS

Foundations of Modern Finance I & II ([Course Link](#))

Conducted quizzes and weekly assignments; explained CAPM, Stochastic Discount Factors, and derivatives.

Sem IV

Stochastic Processes

Created detailed notes on martingales, Markov Decision Processes, and Brownian motion; led problem-solving sessions.

Sem V

Multivariable Calculus

Delivered concise revision lectures on multivariate calculus and series convergence; simplified key proofs for students.

Sem II

Multivariable Calculus (Junior Batch)

Held weekly tutorials and guided juniors through complex assignments and mathematical proofs.

Sem IV

Intermediate Microeconomics (Junior Batch)

Designed assignments and grading rubrics on monopoly, exchange, and externalities.

Sem V

Time Series Analysis

Currently working on weekly assignments, with the syllabus covering the first five chapters of Hamilton's Time Series Analysis.

Sem VI

Game Theory (Junior Batch)

Engaging with weekly assignments while working through core game theoretic concepts.

Sem VI

EXTRACURRICULAR ACHIEVEMENTS

App Development – Eminence Class Recognition

- Developed an education-tech application under India's first project-based learning program by IIT Madras, Rhapsody Plus, Intellect, and UC San Diego.

Chess (selected):

- Placed 13th on merit list in 1st SRM International Open FIDE Rapid Chess Tournament (2022)
- Captained the school team in CBSE Cluster Championships; scored 5.5/6 on Board 1 (2022)
- Placed 2nd in Under-15 category in Talent Chess Academy's 2nd FIDE-rated tournament (2019)
- Represented Chennai District in the Tamil Nadu State U-17 Open Tournament (2018)

SKILLS

- **Technical:** Python, MATLAB, Julia, Stata, Excel, LaTeX.
- **Economics & Modeling:** Econometrics, Macroeconomic Modeling, Public Policy, Game Theory, Asset Pricing.
- **Analytical:** Real Analysis, Statistics, Stochastic Processes, Differential Equations.
- **Extracurricular:** Chess, Keyboard, Creative App Development, Avid Volunteer.