Ritwiz SARMA

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SUMMARY: Versatile economics postgrad with policy research experience involving techniques like NLP and geospatial analysis. Passionate about firms, climate, and infrastructure.

EDUCATION

Master of Arts, *General Economics*   2023 - 2025
Madras School of Economics, Chennai

Includes courses in Applied Microeconometrics (panel data methods, causal inference), Industrial Organization, Intermediate Macroeconomics, Mathematical Statistics, and Mathematical Methods (multivariable calculus, differential equations).

MASTER'S THESIS: *Does One District One Product Deliver? Evidence from Uttar Pradesh's Industries.* I evaluate the impact of a subnational industrial policy on informal manufacturing firms using a difference-in-differences approach that exploits district-level variation in supported products. I build a novel dataset derived from government surveys to enable inter-industry comparisons and robust fixed effects analysis over time.

Bachelor of Arts (Honours), *Humanities and Social Sciences*   2018 - 2021
Cluster Innovation Centre, University of Delhi, New Delhi

Meta-College structure. Undertook papers in Economics (at Shri Ram College of Commerce), English Literature (at Hindu College) and foundational courses in political science, sociology, and philosophy. Ranked 24th nationally in entrance exam.

WORK EXPERIENCE

Research Associate at CAFRAL*, a research institute at the Reserve Bank of India*   JUN 2025 - PRESENT

- Contributing to climate change, household credit, agri markets, and monetary policy research using geospatial data and cutting-edge causal inference methods.

Data Consultant at ENERGY POLICY INSTITUTE AT CHICAGO, UNIVERSITY OF CHICAGO   MAR 2025 - JUN 2025

- Built and analysed large geospatial datasets on ozone, air quality, and similar indicators using R and Google Earth Engine.

Summer Intern - Data Science at xKDR FORUM with *Prof Ajay Shah*   MAY 2024 - JUL 2024

- Developed and implemented deep-learning models for text classification on legal data, achieving F1-scores of over 85%.
- Contributed to ETL pipeline with *novel pre-processing pipeline* for text data using spaCy & domain-specific parsers.
- Used Linux-based virtual machines and version control systems like Git and Subversion to manage codebases.

Research Assistant for *Ankit Bhatia, PhD Candidate at Johns Hopkins SAIS*   JAN 2023 - DEC 2023

- Constructed **first-of-its-kind geospatial database of over 2,200 Indian bridges** for difference-in-differences study on the economic impact of public infrastructure investment. Used *QGIS, Google Earth, and R.*
- Developed multithreading strategies and architecture for building a **high-resolution database of market values across over 6,40,00,000 plots** in 5 states.
- Building technical resources for *scraping and textual analysis* of **over 6,00,000 issues** of Central and State Gazettes.

Junior Associate (Tech and Data Initiatives) at MOOLYA FOUNDATION   JUL 2022 - DEC 2022

- Geospatial and alt data specialist, led team of 5 in dataset-building initiatives.
- Leveraged **data scraping and HTML parsing techniques** in Python to create datasets on over 18,00,000 Lok Sabha and Rajya Sabha debates, 1500+ CAG Audit Reports and 400+ MOSPI statistics.

Editorial Assistant at SOCIAL POLICY RESEARCH FOUNDATION   MAR 2022 - JUL 2022

- Authored **qualitative case study** on language endangerment in Arunachal Pradesh, Northeast India. Published here.

SKILLS

Python Webscraping, NLP with `TensorFlow`, `PyTorch`	**QGIS** Geospatial manipulation, building chloropleth maps
R Geospatial analysis, econometric modelling, `ggplot`	**C++** Understanding of algorithms and data structures
Stata Econometric modelling, extracting unit-level data	**LaTeX** Papers, `tikz` graphics, and `beamer` presentations
SQL Database manipulation, `sqlite3`	**Git/SVN CLI** Repository management

Working Papers

- **Who Lends When it Floods? NBFCs, Banks, and Household Liquidity in India**

  With Sankalp Mathur. Presented at the ESCP RCCC Workshop, Banco de Espana.

  SUMMARY: We study whether non-bank financial companies (NBFCs) fill the credit gap that opens when climate disasters strike. Exploiting floods in Uttar Pradesh and Bihar as an exogenous shock, we match georeferenced flood-extent imagery to a novel, near-universe panel of retail credit from TransUnion CIBIL. A difference-in-differences design comparing NBFCs with banks across flooded and unflooded PIN codes shows that NBFCs expand lending by 5.75%; despite this scaling-up, portfolio quality does not deteriorate.

- **The Himalayan Tightrope: Balancing Infrastructure-led Economic Growth against Ecological Costs in the Himalayas.**

  With Riju Garg. Presented at the Annual Conference of the Indian Econometric Society and Kautilya Colloquy.

  SUMMARY: Is there a trade-off between economic growth and environmental preservation? This study uses high-resolution data to analyse the new relationships emerging between environmental sustainability and growth in the specific context of infrastructure development. We focus on the ecologically-sensitive states of Himachal Pradesh and Uttarakhand, and build a novel dataset linking SHRUG and raw satellite data for five economic and environmental indicators for the two states over two decades.

- **Development at Crossroads: Lessons from Road Development in Afghanistan.**

  Coauthored with Ankit Bhatia. In progress.

  SUMMARY: Transport infrastructure assumed a strategic priority only next to defense and military expenditure in the Afghan reconstruction project post the collapse of the Taliban regime in 2001. We explore the political economy challenges of aid-funded development in fragile settings. We identify poor contracting mechanisms, the nexus among insurgents and middlemen, and weak state capacity as three primary political economy factors causing the collapse of strategic road infrastructure in Afghanistan.

Policy Publications

- **It Starts at Home: Community Involvement for Language Rejuvenation in Northeast India**

  Published by SPRF India. Presented at Kautilya Colloquy 2023 (won Best Presenter).

  SUMMARY: This study attempts to analyse the cultural impact of language loss in Tai Khamti speakers, an endangered language community native to North-Eastern India. Primary data is collected through interviews to assess cultural markers relating to linguistic maintenance, indigenous knowledge and documentation, linguistic cultural markers, and narrative forms.

Data Science Projects

- **Hawkishness Classification on FOMC Transcripts**

  With Bhanu Pratap and William English. Ongoing.

  SUMMARY: Applied advanced NLP techniques including transformer-based embeddings and fine-tuning strategies to extract monetary policy signals from Federal Open Market Committee communications. Multi-class classification task using numerous contextual embedding models.

- **Satellite Data for Economy-Ecology Tradeoff Research**

  Ongoing with Riju Garg. Hosted on GitHub here.

  SUMMARY: Leveraging recent advances in satellite data to build a dataset of economic and environmental indicators for India. Features harmonized night-lights enabling comparisons across DMSP-OLS and VIIRS data, built-up area from the Global Human Settlement Layer, and land surface temperature from MODIS.

- **BERT and Deep Learning for Classification on Administrative Data**

  Ongoing. Hosted on HuggingFace here.

  SUMMARY: NLP models classifying The Gazette of India documents by identifying the most probable issuing ministry; facilitating policy research by enabling the systematic analysis of administrative documents in India.

Academic Conferences

- ESCP RCCC Workshop, Banco de Espana, Madrid ES, 2025.
- Annual Conference of the Indian Econometric Society, Varanasi IN, 2025.
- Kautilya Colloquy, Kautilya School of Public Policy, Hyderabad IN, 2025 (won Best Paper).
- Kautilya Colloquy, Kautilya School of Public Policy, Hyderabad IN, 2024 (won Best Paper).

Invited Talks

- Sarma, R. (2024). Using deep learning to classify court hearings. *xKDR Forum.* July 22, 2024.
- Sarma, R. (2023). Understanding Language Endangerment and its Policy Implications. *Mahul Phul Dialogues.* Online by ST & SC Development, Minorities & Backward Classes Welfare Department, Government of Odisha. December 28, 2023.

Personal Ventures

Undergraduate Research Lead at Design Innovation Centre, Delhi University   Jan 2019 - Jul 2019

- Founded an initiative called "Loggerheads" to study political argumentation in Parliament, aided by the Design Innovation Centre.
- Led 5-member team which used content analysis techniques and BERT to assess 306 days of the 16th Lok Sabha's debates.
- Participated in Thomson Foundation's JournalismNow programme - completed courses on data journalism and online media.

Certifications

- Development Economics, by IZA G2LM-LIC and the London School of Economics
- Google Advanced Data Analytics Professional Certificate

Referees

Dr Gopal Krishna Roy	**Siddarth Raman**	**Ankit Bhatia**
Assistant Professor	Consultant, Janaagraha	PhD Candidate
Madras School of Economics	Researcher, XKDR Forum	Johns Hopkins SAIS,
Chennai, TN	Mumbai, MH	Washington DC, US
Email: gopal.roy@mse.ac.in	Email: raman.siddarth@gmail.com	Email: abhati17@jhu.edu

Interests and Activities

- Dedicated quizzer; Convenor at Quiz Society CIC, led organisation for two crowdfunded quiz events; multiple wins across Delhi and Chennai quiz circuit.
- Writer; served as Editor for literary magazines across school and college.
- Ran focus groups for a national political party in the East Delhi Lok Sabha constituency in preparation for the 2019 General Elections.