# Shashank Singh

RESEARCH PROFESSIONAL · STIGLER CENTER

*Booth School of Business, The University of Chicago*

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## Education

**Indian Institute of Technology Kharagpur**                                                    *Kharagpur, WB*

INTEGRATED B.SC AND M.SC, MAJORING IN ECONOMICS                                                  *2018 - 2023*

- Major GPA - **9.24/10.0**, Minor GPA - **9.18/10.0**, Micro-Specialisation GPA - **9.06/10.0**
- Minors in **Mathematics and Computing**
- Micro-Specialisation in **Artificial Intelligence and Applications**

## Research Experience

**Stigler Center, Booth School of Business, The University of Chicago**                           *Chicago, IL, USA*

RESEARCH PROFESSIONAL FOR PROF LUIGI ZINGALES                                                     *July 2023 - Present*

- Working on projects involving **regulatory capture** using advanced NLP applications, statistical analysis, surveys and experiments
- Collaborating with Economists from **Imperial College London**, **ETH Zurich** and **Washington University in St. Louis**

**The World Bank, RA (De-Jure, DIME)**                                                            *Washington D.C., USA*

INDIA - DR DANIEL LI CHEN, DR SHAREEN JOSHI                                                       *July 2020 - June 2023*

- Worked on **E-courts** and **Indian Kanoon** datasets involving millions of text files and performing **entity extraction** on them
- Constructed **D2V**, **LSA** and **LDA** algorithms based **instrumental variables** from text to represent writing styles of judges
- Contributed to **Mostly Harmless Machine Learning** code and replication with researchers at **Microsoft research**
- Ran **Event Studies**, **IV-2SLS**, **Difference-in-differences** and other econometric frameworks on multiple empirical projects
- Deployed various ML/DL models for classification and regression tasks ranging from **NNs**, **LSTMs**, **KNNs**, **Random Forests** etc.
- Built and maintained **fully replicable** code packages peer-reviewed by **DIME Analytics** and passing all replication standards
- Collaborated with Economists from **CERGE-EI**, **DECRG** for application-oriented research work in **environmental economics**

KENYA - DR DANIEL LI CHEN

- **Scraped**, **cleaned** and **extracted** metadata information from Kenya Law website involving 150,000+ text files
- Implemented text-based measures of **judicial implicit attitudes** and linked them to **disparities in judicial decision-making**
- Trained **GloVe** embeddings on the entire corpus and for each judge separately to create **slant measures** to assess bias
- Built a **Deep Learning** based binary classifier to predict the outcome of the judgements using their text with **92.83%** accuracy
- Worked on **Amazon AWS** for data creation, pre-processing and NLP based tasks, gaining advance-level proficiency
- Collaborated with researchers from **NYU** and **McGill University** to analyse impacts of interventions in judiciary using **RCTs**
- Built and maintained regression and pre-processing codes in **C, Python and STATA**, replicated by DIME Analytics successfully
- Presented the work to **government representatives** from **Kenya Judicial Training Institute** for potential collaboration

USA - DR DANIEL LI CHEN, DR HENRIK SIGSTAD

- Working on **causal memes and citations** project to study the **peer-effects** of contagion of legal ideas in US circuit courts
- Constructed a **dataset** of memes of n-grams from **800,000+ legal rulings**, leveraging big data processing techniques
- Trained judge-wise **word2vec** embeddings to create vectors for downstream regression tasks convergence in writing styles
- Collaborated with **mathematics post doctoral fellow** to create the **citation network** by using **applied linear algebra**
- Studied and implemented **IV framework** in peer-effects model to account for the **reflection problem in Manski (1993)**, made a research brief on applications of **De-Groot model** of social learning and **diffusion** analysis to gauge **peer-effects**

**Toulouse School of Economics**                                                                  *Toulouse, France (Remote)*

RESEARCH ASSISTANT TO DR DANIEL LI CHEN                                                           *April 2020 -June 2020*

- Used **image processing** to make automated code to break captchas for scraping tasks and deployed **scrapers** on **AWS**
- Processed data in **Spanish** to build metadata files from scratch for text-based **Implicit Association Test** tasks in Peru
- Leveraged ML and NLP skills for creating **text-based features** from legal rulings pertaining to research on Kenya Judiciary
- Reviewed literature on **representation of women in Kenyan Judiciary** over the years and the impact of the 2010 constitution
- Read applications of **athey-wager optimal policy learning** in a field experiment to learn **optimal survey design** for prediction

## Publications

### IN REVIEW

**Do judges favor their own ethnicity and gender : Evidence from Kenya**
D.L.Chen, J.Graham, M.R.Maqueda, S.Singh; **[PDF]**

**Environmental Justice? Activist Judges, Water Quality and Infant Mortality in India**
S.Bhupatiraju, D.L.Chen, S.Joshi, P.Neis, S.Singh; **[PDF]**, **[slides]**

## Presentations

### INVITED TALKS

**Political Economics Paper Review**. Departmental Seminar for 3rd year UGs, IIT Kharagpur, April 2021

**Indian Mediation Week, SAMA, Bengaluru**, How are Engineers innovating for 1.6 Billion Indians; Law, Economics and Technology , December 2021

### CONTRIBUTED PRESENTATIONS

**World Bank Lightning Seminar**, "Do Judges favor their own ethnicity and gender : Evidence from Kenya", November 2021

**16th Annual Conference on Economic Growth and Development ISI Delhi**, "Just Water? Environmental Jurisprudence, Water quality & Infant Mortality in India", December 2021

**9th Annual WADES Conference, University of Virginia**, "Just Water? Environmental Jurisprudence, Water quality & Infant Mortality in India", April 2022

## Certifications

### ACADEMIC

**University of Edinburgh and IIT Kharagpur -** Selected from Indian Institute of Technology Kharagpur to be a part of an inter-disciplinary global student cohort for research in issues and underlying dynamics of water-energy-food-public health relationships. Proposed an **RCT** based intervention to introduce **bioelectrochemical toilets** in **Indian villages** and presented the work in front of a panel of Professors from IIT and University of Edinburgh. Received a certificate for successful completion of summer school/mobility program.

### PROFESSIONAL

**The World Bank -** Manage Successful Impact Evaluation Surveys virtual training certificate by DIME, The World Bank

## Awards, Honours

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|---|---|---|
| 2018 | **AIR 3735, JEE Advanced (Amongst 0.23 Million Candidates)**, IIT Kanpur | |
| | **Top 0.006 percentile, JEE MAINS (Amongst 1.5 Million Candidates)**, CBSE | |
| 2016 | **National Talent Search Examination Scholar (Top 1000 across India)**, NCERT, Government of India | *INR 25,000 P.Y.* |

## Programming Languages and Libraries

**C | Python | STATA | R | Keras | Tensorflow | PyTorch | NetworkX | Scikit-learn | Pandas | Numpy | Gensim | HuggingFace**

## Extracurricular

**Student Welfare Group Mentor, IIT Kharagpur -** Mentored three First Year Economics UGs of the 2020 batch

**National Sports Organisation, IIT Kharagpur -** Volleyball Player (2018-20)