

Shouman Das

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EDUCATION

University of Rochester

PhD in Mathematics

Relevant coursework: Machine Learning, Probability and Statistics, Data Mining, Linear Algebra, Calculus, Topology, Financial Math, Statistical Modeling, Intermediate Statistics

Rochester, NY

Anticipated 2020

The University of Tokyo

BSc in Mathematics

Tokyo, Japan

2014

SKILLS

- **Programming Languages:** Competent in Python, R, Familiar with C, Java
- **Computing Toolkit:** MATLAB, Mathematica, Pytorch, Scikit
- **Foreign Language:** Fluent in Japanese, Bengali

SELECTED PROJECTS

Fair Rating Predictor for Ted Talk Data:

Fall 2019

Incorporated causal model and counterfactual fairness to a neural network on the Ted talk data whose prediction is counterfactually fair. We create our model using well-known toolkits pymc3 and pytorch.

Kaggle Data Science Competition:

Spring 2017

In a team of two, used feature engineering, LASSO, XGBoost to make prediction model on a “House Prices” dataset. Our prediction model had an error of 0.11676 which was in the top 300 teams among 2500.

Data Science Capstone Project:

Fall 2017

Developed a Shiny app for text prediction using R as part of a Data Science Specialization course offered by Coursera. Used a simplified version of Katz Back-off Model to predict the next word while typing. (Web: https://anumoshad.shinyapps.io/coursera_capstone_version1/)

Predicting Cognition Impairment in Parkinson's Disease: In a team of two, used Python (Scikit) and R to make different statistical models (KNN, LASSO, Ridge regression, gradient boosting method etc.) for cognition impairment of Parkinson's patients.

Data Analysis:

Fall 2016

Analyzing Correlation between Student Attitude and Success: Collected data from a freshman calculus class of 62 students. Preprocessed, cleaned and analyzed the raw data to find the correlation between attitude and success.

Publications/Manuscript

- **Das, S. (2018). Genus of Hypercube Graph and Real Moment Angle Complex,** Topology and its Applications, Volume 258, 2019, Pages 415-424, ISSN 0166-8641, <https://doi.org/10.1016/j.topol.2019.03.009>. **Fall 2018**
- **Shouman Das, S A Haque, R Acharyya, M. I Tanveer. Persistence Homology of TEDtalk: Do Sentence Embeddings Have a Topological Shape?** (under review). **Fall 2019**
- **R Acharyya, Shouman Das, A Chattoraj, M. I Tanveer. FairyTED: A Fair Rating Predictor for TED Talk Data.** (accepted at AAAI 2020 AI for Social Impact). **Fall 2019**
- **R. Acharyya*, Shouman Das*, A. Chattoraj, O. Sengupta and M. I. Tanveer. Social Bias in TED Talk Rating** (Under review). **Fall 2019**
- **R Acharyya, Shouman Das, K. Hasan, A. Chattoraj, M. I. Tanveer and E. Hoque. Fairness in Rating Prediction by Awareness of Verbal and Gesture Quality of Public Speeches** (Under review). **Spring 2019**

EXPERIENCE

Adjunct Math Instructor, University of Rochester

Summer 2016-19

- Organized the syllabus of multiple courses, and executed the lectures and class activities in a planned manner.
- Facilitated learning in classrooms with an average of 15 students.

Proctoring and Tutoring:

September 2017 - 2019

- Implement a safe and fair exam environment as a proctor for the disability and resources center
- Instruct students in a 1-on-1 setting as a tutor for the Center for Excellence in Teaching and Learning (CETL).

Workshop Leader:

Fall 2015

- Guided students to develop problem-solving abilities and conceptual understanding in undergraduate calculus classes.

PROFESSIONAL DEVELOPMENT

Actuarial Exam: Probability, Financial Mathematics, Models for Financial Economics

Online Courses:

- **Data Science Specialization** - 10 courses including machine learning, statistical inference, regression models etc.
- **Deep Learning Specialization** - Andrew Ng's 5-courses
- **Data Structures and Algorithms Specialization** - completed 5-courses

EXTRACURRICULAR ACTIVITIES/ AWARDS

Problem Solver at <https://projecteuler.net/> **2009-present**
Solved 225+ challenging computational problems (top 0.172% among 867,815 solvers).

University of Rochester, Badminton Club **Fall 2017-present**
Active member of the university badminton club. Took part in multiple badminton tournaments near Rochester, NY.

University of Tokyo Cricket Club **2011-2014**
Active member of the university cricket team. Participated in the inter-varsity cricket championship.

Japanese Govt. Scholarship (MEXT scholarship) **2009-2014**
Recipient of scholarship from Japanese government for my undergraduate studies.

High School Math Olympiads **2004-2007**
National High School Math Champion. Competed in the **International Math Olympiad** from Bangladesh.

Interests: Soccer, Table Tennis, Hiking, Running, Bicycling, Volunteering.