Shouman Das

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EDUCATION

University of Rochester **Rochester, NY**
PhD in Mathematics *Anticipated 2020*
Relevant coursework: Machine Learning, Probability and Statistics, Data Mining, Linear Algebra, Calculus, Topology, Financial Math, Statistical Modeling, Intermediate Statistics

The University of Tokyo **Tokyo, Japan**
BSc in Mathematics *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://anumoshsad.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

EXTRACURICULAR 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.