SOURAV CHAKRABORTY (website) email: sourav.chakraborty@colorado.edu

Education

Doctor of Philosophy, *Computer Science*, University of Colorado Boulder, *USA*. **2022–Now**
- Research in the field of theoretical reinforcement learning. Advised by Prof Lijun Chen.

Master of Science, *Computer Science*, University of Colorado Boulder, *USA*. **2019–2022**
- Advisor: Prof Lijun Chen; GPA 4.0/4.0
- Thesis: Incentivized exploration in stochastic bandits. (document / slides)
- Coursework: Deep Learning, Convex Optimization, Algorithmic Game Theory, Algorithms, Natural Language Processing, Theory of Machine Learning, Learning and Sequential Decision Making, Probabilistic Models etc.

Work Experience

Software Engineer, *Flipkart*, Bangalore, India. **2016–2019**
- Related Searches and Shopping Ideas - The main purpose of this product is to recommend users to different search queries, in accordance with the typed query. Designed and implemented the entire pipeline in Java Cascading framework. This helped in boosting the query coverage by 3x.
- Predicted Search Ranking Signals - Implemented of a machine learnt model to predict the signals which would increase the coverage of the entire query space. This overall increased 4% of sales.
- Pluggable DataStore Backup Service - Developed an interface for the backup service where various datastores can plug there implementations of drivers for backing them up in Flipkart Cloud. Also, implemented the corresponding drivers for MySQL datastore
- Backup Recovery as a Service (BRaaS) - Contributed to the *new service* written for the backup of various forms of data into the in-house Flipkart Cloud. All services/apps were shifted to this service for backup.

Research

Graduate Student Researcher, *Chen Research Group*, University of Colorado Boulder. **2020-Now**
- I work with Prof Lijun Chen on developing algorithms with provable theoretical guarantees on sequential decision making under uncertainty. Currently exploring the area of reinforcement learning.
- **Manuscript Under Review**: Incentivized Exploration in Non-Stationary Stochastic Bandits, *Uncertainty In Artificial Intelligence 2022*

Awards & Honors

September 2022: Recipient of the Early Career Development Fellowship from the department of computer science.

May 2022: Recipient of the Lloyd Botway Award for Outstanding Master's Student for outstanding academics, teaching, research and service to the department of computer science.

April 2022: Recipient of the CU Research Expo Annual Award for the "work in progress" segment for the annual year 2021-2022.

May 2022: Selected for the departmental Lead Teaching Assistant for the annual year 2022-23.

Teaching

Instructor, University of Colorado. **Boulder, CO**
- FALL 2021: CSCI 1200 - Introduction to Computing with Python
- SUMMER 2020: CSCI 3022 - Introduction to Data Science with Probability and Statistics.
- *Responsibilities*: Taking lectures, developing homework assignments, projects and content materials along with conducting weekly office hours and managing a team of instructional staff of size 10, including TAs, Lecture Assistants and graders.

Graduate Teaching Assistant, University of Colorado. **Boulder, CO**
- SPRING 2022, FALL 2022: CSCI 2270 - Data Structures
- FALL 2020, SPRING 2021, SUMMER 2021: CSCI 1300 - Starting Computing
- *Responsibilities*: Taking lectures, developing homework assignments, projects and content materials. Doing interview grading along with conducting weekly office hours.

Selected Relevant Projects

Contextual vectorized representation of words, *NLP*, report, code. **Summer 2020**
- A word embedding model implementation based on the popular skipgram architecture. It involves alterations of the scoring algorithm to give more weightage to the context words that are closer to the target word in a skipgram sliding window.

Solving Games using Q-learning and Regret Matching Methods, *Reinforcement Learning*, report, code. **Spring 2020**
- This project aims to relax those constraints and use a local no-regret algorithm (LONR) by Kash et al, which internally uses a Q-learning like update rule to games which do not have terminal states or perfect recall.

Skills

Programming Languages: C, C++, Java, Python, Julia. **Frameworks**: Django, Flask, Cascading(Java), PySpark, pytest