SOUMIK PURKAYASTHA

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Education

University of Michigan, Dept. of Biostatistics *Sep. 2019 - Apr. 2024 (expected)*

PhD in Biostatistics, Advisor: Peter X. K. Song

Rackham Predoctoral Fellowship awardee *2023-*

MS in Biostatistics *(Sep. 2019 - Apr. 2021)* **GPA 4.0/4.0**

Richard G. Cornell Fellowship awardee *2020-21*

Indian Statistical Institute *Jul. 2017 - Jun. 2019*

MS in Statistics, with specialization in Biostatistics. **GPA 4.0/4.0**

Government of India-funded scholarship awardee. *2017-19*

Sabyasachi Roy Gold Medal awardee. *2019*

St. Xavier's College, Kolkata *July 2014 - June 2017*

BS, Major: Statistics. Minors: Math and computer science. **GPA 4.0/4.0**

Standardized test scores

GRE	Score: 332/340 (V: 163, Q: 169, AWA: 5.0)	*Oct. 2018*
TOEFL	Score: 120/120 (R: 120, L: 120, S: 120, W: 120)	*Oct. 2018*
ISI-MS entrance exam	All-India rank: 11	*May 2017*
IIT-MS entrance exam	All-India rank: 10	*Feb. 2017*

Professional experience

Michigan Medicine, Ann Arbor, USA. **Research Assistant** *May 2020 -*

Perform **statistical analyses** in **SAS** and **R** for the NIH-funded Diabetes Foot Consortium. Built and presently maintain an **automated data-pooling and analysis pipeline** and an **RShiny**-based dashboard for faster dissemination of interactive **Plotly visualization** and **model-based** findings that is **accessible to clincians**.

Apple Inc., Cupertino, USA. **AI-ML intern for Siri Data** *May 2021 - Aug. 2021*

Developed **Pytorch**-based natural language models to analyze **user speech patterns**. Built multi-level predictors of **user search intent** in **Python** to improve data quality for algorithm training and evaluation. Built Siri Search products by implementing **semi-supervised language models** on partially labelled user data in **Python**.

Walmart Labs, Bangalore, IND. **Statistical analyst intern** *May 2018 - Jul. 2018*

Worked on data query and analysis of very large data sets and improved existing online grocery **forecasting models** in **R** and **C++**. Built real-time spike detection models using **state space models** and **ensemble classification models** to find unusual demand patterns in stores in **R**.

Language, programming and statistical skills

Language skills: Bengali and English (native), Hindi (proficient at speaking, reading and writing).

Programming languages and frameworks: Python, R, C++, SQL, SAS and Snakebite (for Hadoop).

Summary of statistical skills:

Handle large tracts of data (cleaning, processing and quality control) using **Hadoop** and **SQL**.

Provide insights on **experimental design** and perform **statistical analyses** in **R**, **Python**, **C++**, **SAS**.

Develop interactive visualization and tabulation tools using **RShiny**, **Plotly** and **Tableau**.

Professional and volunteer service

Manuscript review *May 2021 -*

– Annals of Applied Statistics, New England Journal of Statistics in Data Science and PLOS One.

Memberships *May 2021 -*

– International Biometric Society, Institute of Mathematical Statistics and American Statistical Association.

Statistics in the Community **Co-president** (*May 2022 -*), **Member** (*Sep. 2021 -*)
STATCOM is a community outreach program provided by graduate students in data organization, analysis, and interpretation. STATCOM provides free consulting services for multiple community partners such as:

– The Michigan Center for Youth Justice to understand the patterns of special investigations and violations occurring in juvenile justice facilities throughout the state.
– Poverty Solutions and the Detroit Housing Commission to reduce the number of evictions among families with children in Detroit by connecting people with financial assistance and case managers.

Selected publications

(h-index: 9 (Google scholar); † denotes equal contribution. Citations checked on 02/23/2023)

– **Purkayastha, S.** and Song, P.X.K. *fastMI: a fast and consistent copula-based estimator of mutual information.* 2022. **Under peer-review.**
– **Purkayastha, S.** and Song, P.X.K. *Asymmetric predictability in causal discovery: an information theoretic approach.* 2022. **Under peer-review.**
– Salvatore, M.†, **Purkayastha, S.**†, [12 authors] *Lessons from SARS-CoV-2 in India: A data-driven framework for pandemic resilience.* **Science Advances**, 8(24), 2022. ***Cited by 42 independent sources.***
– **Purkayastha, S.**, [7 authors] *Estimating the wave 1 and wave 2 infection fatality rates from SARS-CoV-2 in India.* **BMC Research Notes** 14(262), 2021. ***Cited by 25 independent sources.***
– **Purkayastha, S**, [9 authors] *A comparison of five epidemiological models for transmission of SARS-CoV-2 in India.* **BMC Infectious Diseases**, 533, 2021. ***Cited by 28 independent sources.***
– Salvatore, M., Basu, D., Ray, D., Kleinsasser, M., **Purkayastha, S** [7 authors] *Comprehensive public health evaluation of lockdown as a non-pharmaceutical intervention on COVID-19 spread in India: national trends masking state-level variations.* **BMJ Open**, 10(12), 2021. ***Cited by 42 independent sources.***
– Tang, L., Zhou, Y., Wang, L., **Purkayastha, S.**, ... [8 authors] *A Review of Multi-Compartment Infectious Disease Models.* **International Statistical Review** 88(2), 2020. ***Cited by 75 independent sources. Top Cited Article for 2020-21 in International Statistical Review.***
– **Purkayastha, S.**, Salvatore, M. and Mukherjee, B. *Are women leaders significantly better at controlling the contagion during the COVID-19 pandemic?* **Journal of Health and Social Sciences** 5(2), 2020. ***Cited by 29 independent sources.***
– Ray, D., Salvatore, M., Bhattacharyya, R., Wang, L., Du, J., Mohammed, S., **Purkayastha, S.**, [18 authors] *Predictions, Role of Interventions, and Effects of a Historic National Lockdown in India's Response to the COVID-19 Pandemic: Data Science Call to Arms.* **Harvard Data Science Review**, Special Issue 1, 2020. ***Cited by 148 independent sources.***