Sourbh Bhadane

CONTACT
INFORMATION

Email: snb62@cornell.edu
Website: sourbhbh.github.io
Scholar, GitHub

RESEARCH
INTERESTS

Causal Inference, Machine Learning, Data Compression, Information Theory, Statistical Inference.

EDUCATION

Cornell University

Ph.D. in Electrical and Computer Engineering (Ongoing)   2017 – 2023 (expected Aug)

- Advisors: Aaron B. Wagner and Jayadev Acharya.
- Thesis Committee: Aaron B. Wagner, Jayadev Acharya, Kilian Weinberger, Ziv Goldfeld.

Indian Institute of Technology Madras

B.Tech. and M.Tech in Electrical Engineering   2012 – 2017

- Thesis: "Locally Recoverable Codes With Availability".
- Advisor: Andrew Thangaraj.

PUBLICATIONS
AND PREPRINTS

- J. Acharya, **S. Bhadane**, A. Bhattacharya, S. Kandasamy, Z. Sun.
  SAMPLE COMPLEXITY OF DISTINGUISHING CAUSE FROM EFFECT.
  *To appear in Aritificial Intelligence and Statistics, **AISTATS 2023**.*

- **S. Bhadane**, A.B. Wagner, J. Ballé.
  DO NEURAL NETWORKS COMPRESS MANIFOLDS OPTIMALLY?
  *Information Theory Workshop, **ITW 2022**.* arXiv

- **S. Bhadane**, A.B. Wagner.
  ON ONE-BIT QUANTIZATION.
  *International Symposium on Information Theory, **ISIT 2022**.* arXiv

- **S. Bhadane**, A.B. Wagner, J. Acharya.
  PRINCIPAL BIT ANALYSIS: AUTOENCODING WITH SCHUR-CONCAVE LOSS.
  *International Conference on Machine Learning, **ICML 2021**.* arXiv

- A.B. Wagner, E.L. Hill, S.E. Ryan, Z. Sun, G. Deng, **S. Bhadane**, V.H. Martinez, P. Wu, D. Li, A. Anand, J. Acharya, D.S. Matteson.
  SOCIAL DISTANCING MERELY STABILIZED COVID-19 IN THE UNITED STATES.
  ***Stat 2020**.*

- J. Acharya, **S. Bhadane**, P. Indyk, Z. Sun.
  ENTROPY ESTIMATION OF DISTRIBUTIONS IN CONSTANT SPACE.
  *Conference on Neural Information Processing Systems, **NeurIPS 2019**.* arXiv

- **S. Bhadane**, A. Thangaraj.
  UNEQUAL LOCALITY AND RECOVERY FOR LOCALLY RECOVERABLE CODES WITH AVAILABILITY.
  *National Conference on Communications, **NCC 2017**.* arXiv

- A.K. Gulati, **S. Bhadane**, J. Samuel, H. Ramachandran, R.D. Koilpillai.
  IITMSAT: INNOVATIVE PACKET PROTOCOL AND CONCEPT OF OPERATIONS.
  *AIAA/USU Conference on Small Satellites, **SmallSat 2016**.*

- J. Mevada, J. Samuel, **S. Bhadane**, A.K. Gulati, R.D. Koilpillai.
  DESIGN AND IMPLEMENTATION OF A ROBUST DOWNLINK COMMUNICATION SYSTEM FOR NANOSATELLITES.
  *IEEE International Conference on Space Science and Communications, **IconSpace 2015**.*

TALKS AND POSTERS		
	• Talk: ITW, MUMBAI	2022
	• Talk: ISIT, FINLAND	2022
	• Talk: (recording) ICML (VIRTUAL)	2021
	• Poster: STANFORD COMPRESSION WORKSHOP (VIRTUAL)	2021
	• Talk: (recording) WORKSHOP ON LOCAL ALGORITHMS (VIRTUAL)	2020
	• Poster: INFORMATION THEORY AND APPLICATIONS (ITA), SAN DIEGO	2019

TEACHING EXPERIENCE

Instructor

CORNELL PRISON EDUCATION PROGRAM   Spring, Fall 2022
- Independent instructor of a community college mathematics course for incarcerated students at the Auburn and Five Points Correctional Facilities via the Cornell Prison Education Program.
- Designed course content including lectures, homeworks and exams.

Teaching Assistant

ECE 2720: DATA SCIENCE FOR ENGINEERS   Spring 2022, Fall 2019
- Produced course content including lecture notes used as primary reference for the course.
- Led discussion sections, conducted office hours and graded exams.

Grader

ECE 5620: FUNDAMENTALS OF DATA COMPRESSION   Spring 2021
ECE 4200 (4950): FUNDAMENTALS OF MACHINE LEARNING   Spring 2018-20, Fall 2020-21
- Designed four in-class Kaggle competitions: Spoken Digit-Pair Recognition, Font Recognition, Modulation Prediction, Guilty or Not Guilty?.

PROFESSIONAL SERVICE

Reviewer
- Conference on Neural Information Processing Systems (NeurIPS) 2021, 2022.
- International Conference on Machine Learning (ICML) 2022.
- International Conference on Learning Representations (ICLR) 2023, 2022.
- Artificial Intelligence and Statistics (AISTATS) 2023.
- International Symposium on Information Theory (ISIT) 2019-2022.
- Information Theory Workshop (ITW) 2021, 2022.
- Data Compression Conference (DCC) 2019, 2021, 2023.

TECHNICAL SKILLS

- **Programming Languages** - Python, C, C++.
- **Machine Learning Frameworks** - Tensorflow, Keras, PyTorch.

REFERENCES

Available upon request.