

CHANDRANIL CHAKRABORTII

Assistant Professor

Department of Computer Science, Trinity College

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Education

University of California Santa Cruz, California September 2014 – June 2021

PhD in Computer Science

Advisor: Heiner Litz

Thesis title: Performance Improvement of Storage Systems using Machine learning

University of California Santa Cruz, California September 2014 – June 2017

Master of Science in Computer Science

Advisor: Jim Whitehead

Thesis title: Computational Generation of Surprise in Video Games

West Bengal University of Technology, India August 2007 – July 2011

Bachelor of Technology in Information Technology

Work Experience

Trinity College, Hartford, Connecticut July 2021 – Current

Assistant Professor

University of California Santa Cruz, California January 2017 – June 2021

Graduate Student Researcher

University of California Santa Cruz, California January 2015 – June 2019

Teaching Assistant

Summer Institutes, Stanford University, Palo Alto, California June –August 2015-2019

Instructor

Samsung Semiconductor Inc., San Jose, California June–August 2018-2020

Machine Learning Software Engineer Intern

Tata Consultancy Services March 2012 – August 2014

Systems Engineer

Research Interests

- Improving flash-based storage systems using machine learning,
- Anomaly detection in systems.
- Computational storage

Teaching Interests

- Deep learning, Data structures and algorithms, Computer systems

Courses Taught

- Data Structures and Algorithms (CPSC 215) Fall 2021
- Introduction to Computer Systems (CPSC 275) Fall 2021
- Deep Learning (CPSC 360) Spring 2021

Invited Talks

- **Improving response time, reliability, and lifetime of flash drives using machine learning**
IEEE CT Computer Society, May 2021
- **SSD QoS improvements through machine learning**
Stanford-UCSC Cloud Workshop, Industry Academia Board, Santa Clara, 2018
- **Learning storage I/O access patterns**
Graduate Research Symposium, University of California, Santa Cruz, 2019
- **Computational generation of surprise in games**
Expressive AI summit, Google Headquarters, Mountain View, 2018

Grants

- **Digital Health Course Development Grant**, Trinity College, June 2021

Professional Service

- **Program Committee Member**, ACM Symposium on Cloud Computing (SOCC) conference 2022
- **Journal Co-editor**, IEEE TC Special issue, 2021
- **Reviewer**, Entertainment Computing (Ent Com) Journal 2021-2022
- **Reviewer**, IEEE The Computer Journal, 2021
- **Reviewer**, ACM Transactions on Parallel and Distributed Systems
- **Reviewer**, IEEE Transactions on Computers
- **Reviewer**, ACM International Systems and Storage Conference (SYSTOR) conference 2020
- **Reviewer**, ACM Symposium on Cloud Computing (SOCC) conference 2019
- **Reviewer**, Entertainment Computing (Ent Com) Journal 2018
- **Reviewer**, Foundations of Digital Games conference 2017
- **Member of Master's Application Review Committee**, UC: Santa Cruz (2017 – 2019)

Student Research and Project Supervision

- *Jonas Boetnner (2023)*
Summer Research: Anomaly Detection in cyber-physical systems
- *Enock Niyonkuru (2024)*
Independent study: Natural language processing of biomedical information
- *Hanyang Luo (2023)*
Summer Research: Predicting SSD failures and replacements in data centers.
- *Emily Murphy (2022)*
Senior Project: Future U: Matching graduates to suitable careers
- *Robert Allen (2022)*
Senior Project: Music genres classification using convolutional neural networks.

College and Department Service

- Trinity Computer Science Club Advisor (2022 - Present)

Accepted Publications

- **Deep Learning based Prefetching for Flash**
Chakrabortii, C, and Heiner Litz. Nonvolatile Memory Workshop (NVMW). 2022.
- **Improving the accuracy, adaptability, and interpretability of SSD failure prediction models**
Chakrabortii, C., & Litz, H. (2020, October). Improving the accuracy, adaptability, and interpretability of SSD failure prediction models. In *Proceedings of the 11th ACM Symposium on Cloud Computing* (pp. 120-133).
- **Learning I/O access patterns to improve prefetching in SSDs**
Chakrabortii, C, and Heiner Litz. "Learning I/O Access Patterns to Improve Prefetching in SSDs.", Applied Data Science Track, *ECML-PKDD (2020). Joint European Conference on Machine Learning and Knowledge Discovery in Databases. Springer, Ghent, 2020*
- **SSD QoS improvements through machine learning**
Chakrabortii, C., Sinha, V., & Litz, H. (2018, October). SSD QoS Improvements Through Machine Learning. In *Proceedings of the ACM Symposium on Cloud Computing* (pp. 511-511).
- **Learning storage I/O access patterns to improve prefetching in SSDs**
Chakrabortii, C., Sinha, V., & Litz, H. (2018, October). *Industry-Academia Partnership | Flash Memory Summit 2018, <http://www.industry-academia.org/event-flash-memory-summit-2018.php> (poster)*
- **Talk to me about pong: On using conversational interfaces for mixed-initiative game design**
Afshin Mobramaein, Jim Whitehead, Chandranil Chakrabortii, *Proc. 2018 AAAI Spring Symposium Series, The Design of the User Experience for Artificial Intelligence (the UX of AI)*, Palo Alto, CA, March 26–28, 2018.
- **Towards generative emotions in games based on cognitive modeling**
Chandranil Chakrabortii, Lucas Ferreira and Jim Whitehead." *Proceedings of the Eighth Workshop on Procedural Content Generation (PCG 2017)*, Hyannis, MA, August 14, 2017. (*short paper*)
- **Design lessons from binary fission: A crowd sourced game for precondition discovery**
Compton, K., Logas, H., Osborn, J. C., Chakrabortii, C., Coffman, K., Fava, D., ... & Pagnutti, J. (2016). *Design Lessons From Binary Fission: A Crowd Sourced Game for Precondition Discovery. In DiGRA/FDG.*

Patents

- **Method for accelerating image storing and retrieving differential latency storage devices based on access rates (Patent ID: 16/708429)**
Inventors: Olarig, Paul, Schwaderer, David, Chakrabortii, Chandranil
- **A machine learning method for SSD based image processing targeting self-driving vehicles (Patent ID: 16/826066)**
Inventors: Olarig, Paul, Chakrabortii, Chandranil, Sharma, Manali