Biswadip Maity

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Education

University of California, Irvine — Irvine, CA
Ph.D. in Computer Science; ***GPA: 3.97/4.00*** — *Sep 2019 – Jun 2023*
Dissertation: Self-aware Memory Management in Emerging Embedded Architectures

University of California, Irvine — Irvine, CA
M.S. in Computer Science; ***GPA: 3.9/4.00*** — *Sep 2017 – Jun 2019*

Jadavpur University — Kolkata, India
B.E. in Computer Science and Engineering ***GPA: 8.85/10*** — *Aug 2011 – May 2015*

Honors and Awards

Ph.D. Research Award, Facebook — *2021*
Offered by Facebook for for Studying Hyperscale Data Center Platform Power Management

DAAD Scholarship — *2019*
Offered by German Academic Exchange Service to serve as visiting researcher in Germany

Best All Round Graduate Award, Jadavpur University — *2015*
Awarded to the top student in the entire graduating cohort (including Faculties of Arts, Science and Engineering).

Charpak Scholarship — *2014*
Offered by the French government to undertake a research internship in France.

Indian National Olympiad in Informatics (INOI) — *2011*
Among the 18 students in India, invited to attend International Olympiad in Informatics (IOI) training camp.

INSPIRE Scholarship — *2011*
Selected for being in the top 1% out of 100,000 candidates (on completion of high school)

National Cyber Olympiad — *2010*
All India Rank: 58

Professional Experience

Zoox, Inc. — Foster City, CA
Software Engineer, Planner Frameworks — *July 2023 – Present*

- Instrumented, optimized, and forecasted the planner component for Zoox's AI driving software.
- Developed latency and memory tools to diagnose performance regressions.
- Collaborated across middleware, performance, and simulation teams to maximize operational efficiency.

Meta Platforms, Inc. — Menlo Park, CA
Part-time Student Researcher, Capacity Engineering and Analysis (CEA) Team — *Jun 2022 – Dec 2022*

- Optimized distributed hardware systems supporting Meta workloads (e.g., Instagram, Facebook).
- Conducted performance and power characterization experiments for workloads at varying turbo levels.
- Achieved 5% capacity gains by applying heuristics to select optimal turbo levels based on workload behavior.

Meta Platforms, Inc. — Menlo Park, CA
Research Intern, Capacity Engineering and Analysis (CEA) Team — *Jun 2020 – Sep 2020*

- Built a framework for collecting millisecond-level metrics at scale from many-core production servers.
- Integrated framework into the *dyno* telemetry daemon across all FB servers.
- Identified and mitigated x86 architectural bottlenecks in popular Facebook services (e.g., AdIndexer, ZippyDB).

Technische Universität München (TUM) — Munich, Germany
Visiting Researcher, Advisor: Prof. Dr. sc.techn. Andreas Herkersdorf — *Sep 2019 – Dec 2019*

- Implemented error-control mechanisms in the cache-hierarchy for memory accesses on the RISCV core (Ariane).
- Enabled user-space software control of error knobs for enhanced system reliability.
- Published findings in ACM Transactions on Embedded Computing Systems.

Tinder West Hollywood, CA
Cloud Infrastructure Engineering Intern *Jun 2019 – Sep 2019*

- Enhanced runtime performance monitoring for Tinder microservices with hierarchical rule evaluation.
- Created a Python-based parser for generating Abstract Syntax Trees (AST) from PromQL queries.
- Developed DFS algorithm to optimize rule evaluation, reducing computational resource usage by 60%.

Microsoft Hyderabad, India
Software Engineer *Jul 2015 – Aug 2017*

- Collaborated with app developers to instrument code, collect user logs, and optimize performance bottlenecks.
- Enhanced Bing, Bing for mobile, and Cortana's performance.
- Analyzed user logs to optimize resource delivery and improve client-side performance.

Laboratoire TIMA, Centre national de la recherche scientifique (CNRS) Grenoble, France
Research Intern, Advisor: Prof. Raoul Velazco *May 2014 – Jul 2014*

- Developed a platform to detect errors in advanced integrated circuits caused by atmospheric particles (mainly neutrons).
- Worked with memory devices built from CYPRESS commercial 90nm SRAM.

News Articles

Facebook Award for Studying Hyperscale Data Center Platform Power Management
UCI CS: In the News, July 2021

Welcoming Biswadip Maity from UCI as a Guest Scientist
TUM News, Sept 2019

Student Highlight
UCI CECS eNEWS, Summer 2018

Open Source Tools And Infrastructure

Chauffeur: Benchmark Suite for Design and End-to-End Analysis of Self-Driving Vehicles on Embedded Systems
Chauffeur enables researchers to evaluate different platform configurations and explore performance implications of the self-driving software pipeline on the underlying hardware.
Code available on GitHub

MARS framework: Middleware for Adaptive Reflective Systems
MARS is a cross-layer and multi-platform framework supporting the creation of resource managers for emerging heterogeneous manycore processing (HMP) platforms by composing system models and resource management policies in a flexible and coordinated manner.
Code available on GitHub

Teaching Experience

Coming from a family of very limited means, my entire journey has been designed around utilizing available resources to the utmost. My undergraduate University, Jadavpur University, being state-funded, required minimum tuition, and the financial support during graduate school at UCI has enabled me to fulfill my dream of earning a Ph.D. degree. As a member of the profession having faced financial hardships, I aim to make education more affordable for all economic and social classes.

Associate Instructor Irvine, CA
University of California, Irvine *March 2022 – June 2022*

- **CS 147: Internet of Things**
  I was the instructor of record for a class with 75 students. At the end of the quarter 96% of students recommended the instructor!.
  Course Homepage | Course Evaluation

Graduate Teaching Assistant Irvine, CA
University of California, Irvine *Sept 2017 – March 2022*

- **ICS 51: Introduction to Computer Organization**
- **ICS 53: Principles in System Design**
- **CS 143A: Principles of Operating Systems**
- **CS 132: Computer Networks**
- **CS 190: Internet of Things - Software and Systems**

Undergraduate Teaching Assistant Kolkata, India
Jadavpur University *Jan 2015 – May 2015*

- **Embedded Systems Lab**

Social Initiative for Underprivileged Students Kolkata, India
Jadavpur University *Jan 2015 – May 2015*

- Under my leadership, JUSC won INR 65k prize money at the State Science Fair. Being a dedicated volunteer of empowerment through education, we used this fund to support the tutoring of 30 underprivileged students attending sub-par government schools in the fundamentals of English and Maths.

Research Mentoring

YunJae Park, GREAT intern from Kookmin University *January 2022 - March 2022*
Dynamically Configuring GPUs to Reduce ML Energy Costs

Hyunae Cho, GREAT intern from Kookmin University *January 2022 - March 2022*
Chauffeur vs. Openpilot

HyunSung Shin, GREAT intern from Kookmin University *January 2022 - March 2022*
Chauffeur vs. Openpilot

Jiaming Liu, 2nd year Masters from University of California, Irvine *June 2021 - December 2021*
Energy-Efficiency at Scale in the Cloud

Langtian Tan, 2nd year Masters from University of California, Irvine *June 2021 - December 2021*
Energy-Efficiency at Scale in the Cloud

Shinyoung Kim, GREAT intern from Kookmin University *June 2021 - September 2021*
Characterizing ML Inference Workload

Hunjune Choo, GREAT intern from Kookmin University *June 2021 - December 2021*
Characterizing ML Inference Workloads

Omkar Joglekar, Summer Research intern from Tel Aviv University *June 2019 - October 2019*
A Fault Injection System In The Memory With RISC-V On Gem5

Nicolas Casilli, IOT-SITY intern from Northeastern University *July 2018 - August 2018*
Core Resource Allocation and Power Management Optimization Using PARSEC and MARS Framework

Invited Talks & Workshops

Keynote Speaker, Self-Awareness in Cyber-Physical Systems (SelPhyS), 2024
Host: Professor Bryan Donyanavard, San Diego State University
San Diego, CA, February 2024

MARS: A framework for runtime monitoring, modeling, and management of realtime systems
Tutorial, Embedded Systems Week
Hamburg, Germany September 2023

Self-optimizing Approximate Memories, Video Recording
12th IEEE CASS Rio Grande do Sul Workshop (CASSW), Porto Alegre
Brazil, November 2022

Workshop on Internet of Things (IoT)
Microsoft Research, Bangalore
India, June 2017

Microcontrollers and Embedded Systems
Government College of Engineering & Textile Technology (GCETT), Berhampur
India, November 2013

Introduction to Robotics
Gems Akademia International School (GAIS), Kolkata
India, September 2013

Community & Service

I have served as (Technical) Program Commitee member for:

CASES, ESWEEK 2025
IEEE MOST 2025
Symposium On Applied Computing (SAC) 2025
DATE Initiative on Autonomous Systems Design (ASD) 2024
CASES 2024
Symposium On Applied Computing (SAC) 2024
Compute Platforms for Autonomous Vehicles @ ASPLOS 2024

I have served as peer-reviewer for:

ASPLOS 2024
ESWEEK 2023
IEEE COINS 2023
SAC 2023
ACM TODAES 2021
ISVLSI-2020
IEEE TVLSI
Springer Mobile Networks and Applications (MONE)

I also have served as external/secondary reviewers for:

DATE 2022
ASP-DAC 2022
CODES+ISSS, ESWEEK 2021
GLSVLSI 2021
VLSID 2021
DATE 2021
ASP-DAC 2021
CODES+ISSS, ESWEEK 2020
ASP-DAC 2020
DATE 2020
DFTS 2020
NORCAS 2019
DATE 2019
CODES+ISSS, ESWEEK 2019
ISVLSI 2019
GLSVLSI 2019
DFTS 2018