

# Debamitro Chakraborti

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## CONTACT

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Website: <https://debamitro.github.io>

## NOW

### Self-employed

At present I am figuring out how to solve real human problems using my tech skills.

- Building a child care web app for busy parents, as part of the Born to Thrive team
- Building a cross-platform email management tool in Rust
- Building small LLM-powered projects

## PROFESSIONAL EXPERIENCE

### Cadence Design Systems

#### Xcelium

This product simulates hardware by compiling gigabytes of high level source code. Even the most complex chips in the world use this product. It is best to describe this product as a compiler tool-chain for a complex high-level language which is only used to create massive codebases. Before you ask, yes this is how GPUs are designed.

#### Software Architect

August 2024 - December 2024

Paving the path for Xcelium runtime performance improvements for the next decade

#### Senior Principal Software Engineer

October 2020 - July 2024

- Leading a team of engineers working on Xcelium performance
- Technical lead for a brand new optimization engine for Xcelium
- Working to speed up Xcelium for faster verification of next-generation hardware designs

#### Principal Software Engineer

August 2010 - September 2020

- Optimized the runtime performance of the simulator by as much as 10x in various critical customer designs.
- Improved the peak memory usage of the compiler by as much as 30%.
- Wrote IR-based compiler optimizations including function inlining for the System Verilog language.
- Implemented new scheduling semantics in the simulator.
- Designed and developed various parts of the runtime library of the simulator.
- Refactored legacy code in a 10MLOC codebase.
- Started introducing modern C++ in the team and organized technical learning sessions.
- Took initiative for improving the build system to make it faster by parallelization.

#### Nusym Technology India Pvt Ltd

R&D Engineer

October 2008 - June 2010

- Developed various parts of the interpreted simulator.

#### Atrenta India Pvt Ltd

Senior Software Engineer

July 2005 - October 2008

- Worked on the core engine of a static analysis tool.

## TECHNICAL SKILLS

- Well-versed in modern web app stacks
- Extensive knowledge of C and C++
- Some experience with Rust and Clojure/ClojureScript

PUBLICATIONS	<ul style="list-style-type: none"> <li>• 'PRIVDAM: privacy violation detection and monitoring using data mining' by Jaijit Bhattacharya, Rajanish Dass, Vishal Kapoor, Debamitro Chakraborti, S.K. Gupta. (Working paper, IIM Ahmedabad, 2005)</li> </ul>
UNDERGRAD PROJECTS	<ul style="list-style-type: none"> <li>• Implemented a set of new real-time data mining algorithms and benchmarked them on standard datasets. Language: C++/STL. Advisor: Prof Rajanish Dass, IIM Ahmedabad.</li> <li>• Developed the Linux version of Indian Script Input System, a program that enables users to phonetically type Indic scripts on both Windows and Linux. The typing system was invented by Prof Gautam Sengupta, University of Hyderabad. Language: C/C++. GUI: GTK for gnome, Xlib for X.</li> <li>• Developed a MIDI file generator for programmatically generated music, and presented it at the Engineering and Technological Fair held at Birla Industrial and Technological Museum in February 2001. Language: C.</li> <li>• Developed the GUI for a gsm network simulation project. Language: C++ with Qt.</li> <li>• Wrote an evaluation engine for temporal logic formulae, as part of a project on Formal Verification of Security Protocols using Temporal Logic. Language: C++. Advisor: Prof Chandan Majumdar, CSE, Jadavpur University.</li> </ul>
EDUCATION AND AWARDS	<ul style="list-style-type: none"> <li>• Recurse Center, New York City (Mini batch, August 2018)</li> <li>• B.E. in Computer Science and Engineering (year: 2005) from Jadavpur University, Kolkata (percentage: 75)</li> <li>• 5th rank in West Bengal Joint Entrance Examination (2001)</li> <li>• Jagadis Bose National Science Talent Search scholar (batch of 2001)</li> </ul>