

SOURADIP GHOSH

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EDUCATION

Carnegie Mellon University

Ph.D in Computer Science

Advisors: Brandon Lucia and Nathan Beckmann

Pittsburgh, PA

Aug '21 – Present

Northwestern University

B.A. in Computer Science

Advisors: Peter Dinda and Simone Campanoni

Evanston, IL

Sep '17 – Jun '21

HONORS AND AWARDS

Department of Energy Computational Science Graduate Fellowship (DOE CSGF)

Sep '21 – Present

NSF REU Fellowship, Northwestern University

Jun '19 – Aug '21

Outstanding Senior in CS, Weinberg School of Arts and Sciences

Jun '21

Outstanding Undergraduate Researcher – Honorable Mention, CRA

Dec '20

PUBLICATIONS

1. **Pipestitch: An Energy-Minimal Dataflow Architecture With Lightweight Threads** 2023
Under review.
 2. **RipTide: A Programmable, Energy-Minimal Dataflow Compiler and Architecture** MICRO '22
Graham Gobieski, **Souradip Ghosh**, Marijn Heule, Todd C. Mowry, Tony Nowatzki, Nathan Beckmann, Brandon Lucia.
 3. **FPVM: Towards a Floating Point Virtual Machine** HPDC '22
Peter Dinda, Nick Wanninger, Jiacheng Ma, Alex Bernat, Charles Bernat, **Souradip Ghosh**, Christopher Kraemer, Yehya Elmasry.
 4. **WARio: Efficient Code Generation for Intermittent Computing** PLDI '22
Vito Kortbeek, **Souradip Ghosh**, Josiah Hester, Simone Campanoni, Przemysław Pawełczak.
 5. **CARAT CAKE: Replacing Paging via Compiler/Kernel Cooperation** ASPLOS '22
Brian Suchy, **Souradip Ghosh**, Drew Kersnar, Siyuan Chai, Zhen Huang, Aaron Nelson, Michael Cuevas, Gaurav Chaudhary, Alex Bernat, Nikos Hardavellas, Simone Campanoni, Peter Dinda.
 6. **NOELLE Offers Empowering LLVM Extensions** CGO '22
Angelo Matni, Enrico Armenio Deiana, Yian Su, Lukas Gross, **Souradip Ghosh**, Sotiris Apostolakis, Ziyang Xu, Zujun Tan, Ishita Chaturvedi, Brian Homerding, Tommy McMichen, David I. August, Simone Campanoni.
 7. **Compiler-Based Timing For Extremely Fine-Grain Preemptive Parallelism** SC '20
Souradip Ghosh, Michael Cuevas, Simone Campanoni, Peter Dinda.
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TALKS AND POSTERS

1. **RipTide: A Programmable, Energy-Minimal Dataflow Compiler and Architecture**
SRC Artificial Intelligence and Hardware Annual Review, August '22. San Diego, CA.
 2. **RipTide: A Programmable, Energy-Minimal Dataflow Compiler and Architecture**
DOE CSGF Program Review, July '22. Arlington, VA.
 3. **Compiler-Based Timing For Extremely Fine-Grain Preemptive Parallelism**
SC, November '20. Virtual.
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PROFESSIONAL EXPERIENCE

Graduate Research Assistant

Computer Science Department, Carnegie Mellon University

Aug '21 – Present
Pittsburgh, PA

- Researching programming models, optimizing compilers, and spatial dataflow architectures (e.g. coarse-grained reconfigurable arrays) for energy-efficient devices at the “extreme edge”.

Visiting Researcher

Pacific Northwest National Lab (PNNL)

Jun '23 – Sep '23
Richland, WA

- Working on the SODA-OPT framework and HLS toolchains for high-performance graph analytics.
- Supervised by Antonino Tumeo.

Undergraduate Researcher

Department of Computer Science, Northwestern University

Jun '19 – Aug '21
Evanston, IL

- Worked on optimizing compilers co-designed with operating systems and embedded devices.
- Contributed to the Interweaving Project, Nautilus, Noelle, TimeSqueezer, and more.

Lead Software Developer, IT Manager

Karen Lynn + Associates Inc.

Nov '18 – Sep '21
Evanston, IL

Programming Aide

Office of Graduate Studies, Department of Computer Science, Northwestern University

Mar '21 – Jun '21
Evanston, IL

Front-End Web Developer

Lurie Medical Research Center

Mar '19 – Sep '19
Chicago, IL

Technical Computing Aide

IT Department, Kellogg School of Management, Northwestern University

Mar '19 – Jun '19
Evanston, IL

TEACHING EXPERIENCE

Student Instructor

Department of Computer Science, Northwestern University

Winter '21
Evanston, IL

- Student-led course – “Crash Course on UNIX and Systems Tools”

Peer Mentor

Department of Computer Science, Northwestern University

Jan '20 – Present
Evanston, IL

- CS 322 – Compiler Construction, Winter '21
- CS 323 – Code Analysis and Transformation, Fall '20

- CS 343 – Operating Systems, Winter '20

Academic Mentor – Project Excite

School of Education, Northwestern University / Evanston Township High School

Oct '17 – Jun '19

Evanston, IL

Private Tutor

Greater Chicago and St. Louis Area

Jun '16 – Present