RUPANSHU SOI

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EDUCATION

Birla Institute of Technology and Science, Pilani 2018–2022
Bachelor of Engineering in Computer Science ***CGPA: 8.99***

Banyan International School, Jammu 2016–2017
Class XII, Central Board of Secondary Education *92.6 %*

Heritage School, Jammu 2014–2015
Class X, Central Board of Secondary Education *CGPA: 10*

PROGRAMMING SKILLS

Languages C, Python, Lua, Go, Racket, Regent
Systems Flex, Bison, Linux, CUDA, MERN stack, LaTeX

RESEARCH EXPERIENCE

Dynamic Analysis for Index Launches *Fall 2020–Spring 2021*

- Wrote a dynamic analysis that allows a much larger class of loops to be safely index launched. [Code]
- Benchmarked it on the Piz Daint supercomputer.
- Supervised by Dr. Elliott Slaughter. Collaborated with Legion contributors.

Development of an Implicitly Parallel Meshfree Solver in Regent *Spring 2020*

- Implemented a high-performance CFD solver in the Regent programming language. [Code]
- Supervised by Dr. Anil Nemili.

REFEREED PUBLICATIONS

- **R. Soi**, M. Bauer, S. Treichler, M. Papadakis, W. Lee, P. McCormick, A. Aiken, and E. Slaughter
  Index Launches: Scalable, Flexible Representation of Parallel Task Groups
  Supercomputing (SC21), to appear
- **R. Soi**, N. R. Mamidi, E. Slaughter, K. Prasun, A. Nemili, and S. M. Deshpande
  An Implicitly Parallel Meshfree Solver in Regent [Abstract][Paper][Slides]
  2020 IEEE/ACM 3^{rd} Parallel Applications Workshop: Alternatives to MPI+X (PAW-ATM), USA
  In conjunction with Supercomputing (SC20)

OPEN-SOURCE CONTRIBUTIONS

Regent (a task-based language for distributed HPC) *2020*

- Added support for some bitwise operators, the `__future` keyword, and reported multiple bugs. [Pull Requests][Bug Reports]

SELECTED PROJECTS

Selective Repeat Inspired File Transfer Protocol in Racket *Spring 2021*

- Built reliability into the application layer over UDP sockets. [Code]

Misty: A Scheme Interpreter in Lua *Spring 2021*

- Implemented basic notions of types and lexical scoping. [Code]

Runi: Handwritten Lexer and Parser in Go *Spring 2021*

- Wrote a CFG, lexer and predictive recursive descent parser for a C-like language. [Code]

- Visualized the parse tree using Graphviz.

TEACHING ASSISTANTSHIPS

Operating Systems *Spring 2021*

Differential Equations (Math III) *Fall 2020*

Mechanics, Oscillations and Waves (Phy I) *Spring, Fall 2019*

SCHOLASTIC ACHIEVEMENTS

MITACS Globalink Research Internship *Summer 2021*

- A competitive 12-week research internship in Canada for international undergraduates.

10/10 Semester GPA *Fall 2018*

- Top 5 in 1100 students.

BITS Pilani Merit Scholarship *Spring, Fall 2019*

- Top 1-3% of the batch.

Sir CV Raman Prize *Spring 2019*

- Awarded once per semester for outstanding performance in physics.

SUMMER SCHOOLS

Programming Language Implementation Summer School (PLISS) *Summer 2021*

Oregon Programming Language Summer School (OPLSS) *Summer 2021*

Programming Language Analysis and Optimizations *Summer 2021*
ACM India's Summer School