# RUPANSHU SOI

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## EDUCATION

**Birla Institute of Technology and Science, Pilani** 2018–2022
*Bachelor of Engineering in Computer Science* ***CGPA: 8.96***

**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 targeting a certain class of loops in the Regent compiler. [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*
  In submission
- **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)** *Mar 2020–Present*

- 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 & WORKSHOPS

**PLMW@PLDI** *Summer 2021*

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

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