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 INTERESTS

- **Programming Languages**
- **High Performance Computing**

RESEARCH EXPERIENCE

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

- Implemented a precise dynamic analysis for optimizing task launches 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 CONFERENCE ARTICLES

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

REFEREED WORKSHOP ARTICLES

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*

- Contributed code and reported bugs in the Regent compiler. [PRs][Bug Reports]

WORK EXPERIENCE

Indira Gandhi Centre for Atomic Research, India *Remote Intern, May–June 2020*

- Created a MERN stack web-app for monitoring a WSN for detecting avalanches.

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 an interpreter for a subset of Scheme. [Code]

Runi: Hand-written lexer and parser for C in Go *Spring 2021*

- Visualized the parse tree using Graphviz. [Code]

TEACHING ASSISTANTSHIPS

- **Operating Systems** *Spring 2021*
- **Differential Equations (Math III)** *Fall 2020*
- **Mechanics, Oscillations and Waves (Phy I)** *Spring, Fall 2019*

SCHOLASTIC ACHIEVEMENTS

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 *Jan 2019*

- Awarded once per semester for outstanding performance in physics.

Joint Entrance Examination (Advanced) *May 2018*

- Ranked top 0.6 % in India.

LEADERSHIP & MANAGEMENT EXPERIENCE

Joint Secretary, Ad Astra (Astronomy and Science Club) *Aug 2019–July 2020*

- Managed and organized club activities including discussions, talks, quizzes and star-gazing sessions.
- Responsible for club events during our annual technical fest, ATMOS.