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*

TECHNICAL SKILLS

Fluent Languages	C, Python, Regent
Familiar Languages	Lua, Java, JavaScript
Programming Systems	React, CUDA, Swing, MySQL, Selenium, OpenGL, NuSMV, Linux, LaTeX

RESEARCH INTERESTS

- **Programming Language Design:** Task-based programming, Implicitly parallel languages
- **Compilers:** Optimizations, Program analysis
- **High Performance Computing:** Parallel hybrid solvers

RESEARCH WORK

Development of an Implicitly Parallel Meshfree Solver in Regent BITS Pilani
Dept of Computer Science & Dept of Mathematics *Spring 2020*

- **Description:** Implemented a high-performance, CFD solver in the Regent programming language and performed rigorous performance comparisons with corresponding in-house implementations in Fortran and Julia. [Code]
- **Mentor:** Prof. Anil Nemili, Department of Mathematics, BITS Pilani
- **Collaborators:**
  1. Dr. Elliott Slaughter, SLAC National Accelerator Laboratory, USA
  2. Prof. S.M. Deshpande, JNCASR, Bangalore, India

REFEREED WORKSHOP ARTICLES

Rupanshu Soi, Nischay Ram Mamidi, Elliott Slaughter, Kumar Prasun, Anil Nemili, S.M. Deshpande
An Implicitly Parallel Meshfree Solver in Regent [Abstract][Full Paper]
2020 IEEE/ACM 3^{rd} Parallel Applications Workshop: Alternatives to MPI+X (PAW-ATM)

OPEN-SOURCE CONTRIBUTIONS

Regent (a new programming language for HPC) GitHub
Part of the Legion Parallel Programming System *Mar 2020 - Present*

- **Description:** Working with Dr. Elliott Slaughter to make several improvements to the Regent compiler. Here are some of my contributions. Found and reported several bugs in the compiler, which are collected here.

WORK EXPERIENCE

Indira Gandhi Centre for Atomic Research (IGCAR) Remote Internship
Summer Intern *May - July 2020*

- **Description:** Worked on the remote outdoor deployment of a Wireless Sensor Network (WSN) for avalanche detection. Created a user-friendly web-app for network monitoring using the MERN stack.
- **Mentor:** Mr. T.S. Shri Krishnan, WSN Lab, IGCAR

SELECTED PROJECTS

Centre for Development of Advanced Computing's GPU Hackathon Virtual Event
Organized by OpenACC *Sep 2020*

- **Description:** Worked on optimizing and benchmarking our Regent CFD solver for multi-GPU clusters. Our team was among the only 8 selected throughout India.

A Cab Booking Application in Java With Swing BITS Pilani
OOP Course Project *Nov 2019*

- **Description:** Awarded the highest grade for implementing a user-friendly GUI application for booking cabs using Java's Swing, AWT and a MySQL backend.

Nonmonotonic Reasoning and its Applications in AI BITS Pilani
Artificial Intelligence Assignment *Sep 2020*

- **Description:** Performed a literature review of nonmonotonic reasoning and its applications to knowledge representation, commonsense reasoning and goal specification in AI.

TEACHING EXPERIENCE

Differential Equations (Math III) BITS Pilani
Teaching Assistant *Fall 2020*

- **Description:** Assisted in tutorials, assignments and preparing solutions for tests.

Mechanics, Oscillations and Waves BITS Pilani
Teaching Assistant *Jan - Dec 2019*

- **Description:** Created innovative new problems, ran several problem-solving sessions and wrote solutions for tests. Held the position for two consecutive semesters.

LEADERSHIP & MANAGEMENT EXPERIENCE

Ad Astra (Astronomy and Science Club) BITS Pilani
Joint Secretary *Aug 2019 - July 2020*

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

SCHOLASTIC ACHIEVEMENTS

10/10 Semester GPA BITS Pilani
Top 5 in 1100 students *Aug - Dec 2018*

Sir CV Raman Prize Department of Physics, BITS Pilani
Awarded once per semester for outstanding performance in physics *Jan 2019*

Merit Scholarship BITS Pilani
Top 1-3 % of the batch. Awarded twice *Jan, Aug 2019*

Joint Entrance Examination (Advanced) India
Ranked top 0.6 % in India *May 2018*

RELEVANT COURSE WORK

- **Completed:** Introduction to Computer Programming, Logic in Computer Science, Object Oriented Programming, Discrete Structures for Computer Science, Data Structures and Algorithms, Database Systems

- **Ongoing:** Theory of Computation, Principles of Programming Languages, Computer Architecture, Operating Systems, Artificial Intelligence

REFERENCES

Prof. Anil Nemili, Department of Mathematics, BITS Pilani