Soumik Kumar Basu

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Education

- **IIT Hyderabad** — Kandi, Telengana
  *PhD in Computer Science and Engineering; CGPA: **9**/10* — *Aug 2021 - Present*
- **MCKV Institute of Engineering** — Kolkata, West Bengal
  *Bachelor of Technology in Computer Science and Engineering; CGPA: **9.2**/10* — *Aug 2017 - July 2021*
- **Sinthi Ramkrishna Sangha Vidyamandir** — Kolkata, West Bengal
  *Higher Secondary Examination; Percentage: **85.8**%* — *Aug 2015 - July 2017*
- **Sinthi Ramkrishna Sangha Vidyamandir** — Kolkata, West Bengal
  *Secondary Examination; Percentage: **91.9**%* — *Aug 2014 - July 2015*

Research Interests

Compilers, Program Analysis and Optimization, High-Performance Computing, Heterogeneous Computing

Publications

- Sayak Das, Nirvik Ranjan Das, **Soumik Kr. Basu**, Hriddhi Mondal, Avijit Bose, Page Replacement Technique on the basis of Frequency of Occurrence of Pages, COMSYS '20
- **Soumik Kr. Basu**, Jyothi Vedurada, GSOHC: Global Synchronization Optimization for Heterogeneous Computing, (Under Review)
- **Soumik Kr. Basu**, Jyothi Vedurada, Sync2Async: A Static Analysis-driven Solution for Automatic Stream Scheduling in CUDA, (Under Review)

Teaching Experience

- **Computer Architecture(CS2323)**: Teaching Assistant to Dr. Praveen Tammana (October '21 - Dec '21)
- **Operating Systems(CS3523)**: Teaching Assistant to Dr. Sathya Peri (Jan '22 - Jun '22)
- **Software Engineering(CS4443)**: Teaching Assistant to Dr. M.V. Panduranga Rao and Dr. Jyothi Vedurada (Jan '23 - Jun '23)
- **Compilers II(CS3423)**: Teaching Assistant to Dr. Jyothi Vedurada (Aug '23 - Dec '23)

Services

- Served as a Program Committee member for PPOPP '23 (CORE Rank A) Artifact Evaluation Committee
- Served as a Moderator for Systems Pannel in ACM IIT Hyderabad Student Chapter
- Served as a member of the Organizing Committee for CSI Regional Student Convention for Region - II '19

Honors and Awards

- Winner of Mathmania '18, an inter-college mathematics competition (Winner among 180 teams)
- Won Intra-School Science Acharya Medal for highest marks in Mathematics in Higher Secondary Exam
- Received "Certificate of Merit-2015" for "Excellent" performance in science subjects (99%) in Secondary Exam
- Received "Certificate of Merit-2017" for "Excellent" performance in Higher Secondary Exam

Relevant Academic Course works

- **Introduction to Compiler Optimization, IIT Hyderabad, Grade - 10/10 (A), Instructor: Dr. Jyothi Vedurada, Dr. Ramakrishna Upadrasta**: (Jan '22 - Jul '22)
- **Parallel and Concurrent Programming, IIT Hyderabad, Grade - 9/10 (A-), Instructor: Dr. Sathya Peri**: (Jan '22 - Jul '22)
- **Parallel Computing, IIT Hyderabad, Grade - 9/10 (A-), Instructor: Prof. C Siva Ram Murthy**: (Aug '22 - Nov '22)
- **Topics in Compiler Optimization, IIT Hyderabad, Grade - 10/10 (A), Instructor: Dr. Jyothi Vedurada and Dr. Ramakrishna Upadrasta**: (Aug '22 - Nov '22)

Skills

Languages/ APIs Known: Java, C++, Python, C, SQL, Unix scripting, POSIX Threads, CUDA, OpenCL, **Technical Tools:** LLVM, Clang, Postgres, **IDEs:** Visual Studio, Atom, Vim, **Other Tools:** Latex, Git, Gnuplot, DOT, Docker

Academic Projects

- **Concurrency Control in Transactional Systems, IIT Hyderabad, Instructor: Dr. Sathya Peri**: Topics Learned: Page and Object Models, Conflict Serializability, Linearizability, Concurrency Control. (Aug '21 - Dec '21)

  Projects: (1) Implemented two algorithms, BOCC-TS and ROMV-BOCC-TS from scratch using CPP Multithreading.

- **Parallel and Concurrent Programming, IIT Hyderabad, Instructor: Dr. Sathya Peri**: Topics Learned: Multi-Threading, Locking Protocols, Multi-Processing, Lock-free Systems, Mutex, Synchronization, Barrier Synchronization, MIMD programming paradigm, Parallel Algorithms (Jan '22 - Jul '22)

  Projects: (1) Developed a novel Parallel Kruskal's Algorithm using Naive Parallel (Static Thread Mapping) and Smart Parallel (Dynamic Thread Mapping) Approach.

Online Course works

- **GPU Architectures and Programming**:

  NPTEL, Instructor - Dr. Soumyajit De, IIT Kgp. (Jan' 22 - Apr' 22)
- **Fundamentals of Accelerated Computing with CUDA C/C++** :

  NVIDIA DLI Workshop. (Jun' 22)
- **Programming in JAVA**:

  NPTEL, Instructor - Dr. Debasis Samanta, IIT Kgp. (Jan' 19 - Apr' 19)
- **Programming, Data Structures and Algorithms using Python**:

  NPTEL, Instructor - Dr. Madhavan Mukund, IIT M. (Aug' 18 - Sep' 18)
- **Problem Solving through Programming in C**:

  NPTEL, Instructor - Prof. Anupam Basu, IIT Kgp. (Jan' 18 - Apr' 18)