
OBJECTIVE

To conduct research in real-time systems, and extend ideas from the real-time systems research to general operating systems and cloud computing research.

EDUCATION

Boston University, USA **Sep '16 – Present**
PhD, Computer Science

- Advisor: Professor Richard West

University of Alberta, Canada **Sep '14 – Jun '16**
Master of Science, Computing Science

- Advisors: Professor Paul Lu and Professor Di Niu

Bengal Engineering and Science University (BESU), India **Jul '08 – Apr '12**
Bachelor of Engineering, Computer Science and Technology

- Advisor: Professor Manas Hira

PROGRAMMING SKILLS

Languages: C (2.5 yrs), C++ (3.5 yrs), Java (3 yrs), C# (1 yr), Python (0.5 yr), JavaScript (1.5 yrs)

Database: Microsoft SQL Server (1 yr)

INDUSTRIAL EXPERIENCE

Google Inc. **May '17 – Aug '17**
Software Engineering Intern, Mentor: Dr. Harvey Tuch

- Developed an open-source benchmarking package for the layer-7 proxy, Envoy. Available at: <https://github.com/lyft/envoy-perf>
- Written Python scripts to invoke Google Cloud Virtual Machines (VMs) and conduct benchmarking inside the VMs.
- Incorporated new functionality in the open-source benchmarking tool, h2load and contributed to the main repository.

Ericsson India Global Services Pvt. Ltd. **Aug '12 – Jun '14**
Solution Integrator

- Developed a web-application in C# language on .NET platform using the Model-View-Controller (MVC) architecture to manage time-sheet of nearly 2,000 employees.
- Improved performance of the web-application by reducing the rendering time of web-pages by 30% and by implementing caching on client-side.
- Developed two modules in JavaScript for displaying employee-hierarchy in tree-view and customized check-boxes.
- Developed one independent Windows application in C# to reduce the wastage of bandwidth by suspending unwanted processes. The application was nominated for Ericsson Innovations.

PUBLICATIONS

Sinha S.; Niu D.; Wang Z.; Lu P., *Mitigating Routing Inefficiencies to Cloud-Storage Providers: A Case Study*, IEEE Parallel and Distributed Processing Symposium Workshop (IPDPSW), 2016, Chicago, IL, USA

ACADEMIC EXPERIENCE**Teaching Assistant**

- Introduction to Computer Science (CS 101) - Fall 2016, Spring 2017 - Boston University
- Operating System Concepts (CMPUT 379) - Fall 2015, Winter 2016 - University of Alberta
- Introduction to Computing (CMPUT 101) - Winter 2015 - University of Alberta
- Practical Programming Methodology (CMPUT 201) - Fall 2014 - University of Alberta

External Reviewer

- *IEEE International Conference on Computer Communications (INFOCOM)* **2016**
- *IEEE INFOCOM SDP Workshop* **2016**
- *IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)* **2017**

SELECTED PROJECTS

Data Transfer Nodes for Cloud-storage Providers

May '15 – Jun '16

Supervised by Professor P. Lu and Professor D. Niu, **UAlberta**

- Improved the performance of cloud-storage services from the client's point of view, using throughput as a metric, by factors of over 3x from the baseline of existing mechanism to transfer files.
- Employed the idea of overlay network, Data Transfer Nodes and detour routing for performance improvement.
- Used file-transfer APIs of Dropbox, Google Drive and One Drive in Java for our experiments on the **PlanetLab** nodes in North America (e.g - University of Michigan, Purdue University, etc).

Improving accuracy of public-transit in digital maps

Feb '15 – Apr '15

Supervised by Professor M. A. Nascimento, **UAlberta**

- Introduced traffic-data (from *Here Maps*) into the public-route planning algorithm.
- Used Google Maps APIs in Java to obtain existing routing information for our solution and evaluation.
- Incorporated personalized walking-speed into public-routes.
- Observed that our solution can improve the accuracy of public-route planning in real-time, around the University of Alberta.

Implementation of Shapiro-Horwitz alias analysis in LLVM

Nov '14 – Dec '14

Supervised by Professor J. N. Amaral, **UAlberta**

- Developed a prototype-based version of the alias analysis proposed by M. Shapiro and S. Horwitz in LLVM (C++).
- Recognized intricate cases that may arise due to Static Single Assignments (SSA) of LLVM's intermediate representation and successfully proposed solutions to handle them.
- Developed prototype implementation that performs similarly to **basicaa** alias-analysis of LLVM. Also found that our results in LLVM are in accordance with the actual paper's results.

Development of a Circuit Editor Using Java

Aug '11 – May '12

Supervised by Professor M. Hira, **BESU**

- Proposed XML to represent logical circuits to make the circuit designing process convenient, to share the XML file as design documentation, etc.
- Designed the class-hierarchy, formats of XML files and different user-interactions for the Java application which realized our proposed idea.

SCHOLARSHIPS AND RANKS

- Merit Scholarship by Government of India between 2008 and 2012 for high marks in Higher Secondary Examination.
- **99.5 percentile** among more than **80,000** students in West Bengal Joint Entrance Examination (2008).

POSITIONS OF RESPONSIBILITY

President

2015 – 2016

- **Indian Students' Association**, University of Alberta

Coordinator of *Programista*, the Programming Competition

2011

- **Instruo**, the Annual Techno-management Festival of BESU

Executive Member of *Event Management Committee*

2011, 2012

- **REBECA**, the Annual Cultural Festival of BESU

Web and Technical Coordinator

2012

- **REBECA**, the Annual Cultural Festival of BESU

Cultural Secretary

2011 – 2012

- **COENSOBEC**, the Computer Engineers' Society of BESU