Sharjeel Khan

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📍 Klaus Advanced Computing Building 2337, Atlanta, Georgia 30332

🎓 EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY   **AUG 2018 - PRESENT**

PHD IN COMPUTER SCIENCE
Advisor: Dr. Santosh Pande
GPA: 4.0

CARNEGIE MELLON UNIVERSITY   **AUG 2013 - MAY 2017**

BACHELOR OF SCIENCE IN COMPUTER SCIENCE
Minor in Mathematical Sciences
University Honors
Dean's List (5 semesters) GPA: 3.57

📄 PUBLICATIONS

UNDER REVIEW

ON-THE-FLY CODE ACTIVATION FOR ATTACK SURFACE REDUCTION
Chris Porter*, Sharjeel Khan*, and Santosh Pande. (*denotes equal contribution)
[Paper]

A COMPILER DRIVEN PREDICTIVE SCHEDULING FRAMEWORK FOR PROACTIVE WORKLOAD MANAGEMENT
Girish Mururu, Sharjeel Khan, Bodhisatwa Chatterjee, Chao Chen, Chris Porter, Ada Gavrilovska and Santosh Pande.

EFFECTIVE CACHE APPORTIONING FOR PERFORMANCE ISOLATION UNDER COMPILER GUIDANCE
Bodhisatwa Chatterjee, Sharjeel Khan, Girish Mururu, and Santosh Pande.
[Paper]

BISCUIT: A COMPILER ASSISTED SCHEDULER FOR DETECTING AND MITIGATING CACHE-BASED SIDE CHANNEL ATTACKS
Sharjeel Khan, Girish Mururu, and Santosh Pande.
[Paper]

WORKSHOP PUBLICATIONS

FORMALIZATION OF AUTOMATED TRADING SYSTEMS IN A CONCURRENT LINEAR FRAMEWORK (CLF)
Iliano Cervesato, Sharjeel Khan, Giselle Reis, and Dragisa Zunic.
Linearity & TLLA @ FLOC'18: 5th International Workshop on Linearity and Trends in Linear Logic and Applications, Oxford, UK, 2018.
[Paper] [Code] [Slides]

💼 WORK EXPERIENCE

GRADUATE RESEARCH ASSISTANT   **AUG 2018 – PRESENT**

GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia
- Working with Santosh Pande on using machine learning and deep learning algorithms for program analysis

RESEARCH ASSISTANT   **MAY 2017 – JULY 2018**

CARNEGIE MELLON UNIVERSITY
Doha, Qatar
- Worked on Meta-CLF project with Iliano Cervesato and Giselle Reis to develop the meta-theory for the concurrent logical framework (CLF)
- Formalized Automated Trading Systems (ATS) in Celf
- Proved properties about the formalization of ATS like no crossed/locked market

SOFTWARE ENGINEERING INTERN   **JAN 2017 – APR 2017**

MEDDY

Doha, Qatar

- Moved Transaction Emails from Django's personal email system to Mandrill
- Created the dashboard to show Google analytics and Django analytics to clinic managers for them to track their doctors
- Worked on the interface for clinics to send bulk SMS messages to their clients

⬚ TEACHING EXPERIENCE

GRADUATE TEACHING ASSISTANT

GEORGIA INSTITUTE OF TECHNOLOGY

CS6241: Compiler Design and Optimizations	Jan 2020 - May 2020
CS4240: Compilers & Interpreters	Aug 2019 – Dec 2019

- Tutored students about material and concepts taught in the class during my office hours
- Taught during the recitations
- Answered questions on Piazza
- Graded the assignments

UNDERGRADUATE TEACHING ASSISTANT

CARNEGIE MELLON UNIVERSITY

36-217: Probability Theory and Random Processes	Jan 2017 - May 2017
15-210: Parallel and Sequential Data Structures and Algorithms	Jan 2017 - May 2017
21-241: Matrices and Linear Transformations	Aug 2015 - Dec 2015
15-150: Principles of Functional Programming	Aug 2015 - Dec 2015
15-122: Principles of Imperative Programming	Jan 2015 - May 2015

- Tutored students about material and concepts taught in the class during my office hours
- Taught during the recitations
- Answered questions on Piazza
- Graded the assignments
- Created the autograder for the coding courses on Autolab

👤 PROFESSIONAL ACTIVITIES

INSTITUTIONAL ACTIVITIES

GEORGIA INSTITUTE OF TECHNOLOGY

SCS Graduate Student Association Treasurer	Jan 2021 - Present
Grad Group Leader	Fall 2019 - Present
SCS PhD Visit Day Volunteer	Jan 2019, Mar 2020, Mar 2021
HackGT Mentor	Nov 2018, Nov 2019

CARNEGIE MELLON UNIVERSITY

Head Orientation Counselor	Mar 2016 - Aug 2016
Orientation Counselor	Aug 2014, Aug 2015
Student Academic Committee	Jan 2016 - May 2016

🏅 AWARDS/HONORS

INTERNAL AWARDS

CARNEGIE MELLON UNIVERSITY

Undergraduate Teaching in Computer Science Appreciation Award	May 2015, May 2017
Senior Student Leadership Award	May 2017

EXTERNAL AWARDS

CARNEGIEAPPS HACKATHON

EAA Award for Humanitarian Technology	Jan 2017
Best Technical Application	Jan 2015

</> PROJECTS

DYNAMIC DEPENDENCE GRAPH
- Built a LLVM application to create a graph showing both data dependence and control depndence
- Implemented based on approach 1 and 2 from Hiralal Agrawal and Joseph R. Horg's Dynamic Program Slicing paper
- Instrumented each function to check whether it got executed and piped it into the DG tool to create dependence graphs of only executed functions

RAPID RESPONSE
- Built a web application to provide information and place of attacks in rural countries to rescue workers
- Scraped information about attacks from social media and news websites using Beautiful Soup and Twitter's API
- Implemented using AngularJS and Django for frontend and backend respectively

KESA
- Built a web application to allow users to create and read stories with branching storylines
- Maintained the story as a D3 tree structure
- Created story sessions using PeerJS for authors to collaborate on these stories
- Implemented using AngularJS and Django for frontend and backend respectively

CONCURRENT DISTRIBUTED FILE SYSTEM
- Built a system containing multiple storage servers and the main naming server
- Implemented my own Java's Remote Method Invocation (RMI) library to allow communication between servers

SMART TEXT EDITOR
- Built a text editor web application in pure Javascript with basic functionalities
- Implemented a built-in thesaurus and Google Knowledge Base system into the editor to allow people to get information faster without leaving the editor

⚙ SKILLS

PROGRAMMING LANGUAGES
Python, C++, Javascript, OCaml, SML, Java, C, LaTeX, Processing, SQL

FRAMEWORKS/TOOLS
LLVM, Coq, Twelf, Celf, Django, AngularJS, Foundation, Bootstrap, MySQL, Git

LIBRARIES
Numpy, Pytorch, Scikit-Learn, Pandas, Tensorflow, PeerJS, jQuery, D3,

📇 REFERENCES

SANTOSH PANDE (ADVISOR)
Professor, Georgia Institute of Technology
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GISELLE REIS
Assistant Teaching Professor, Carnegie Mellon University
giselle@cmu.edu

ILIANO CERVESATO
Teaching Professor, Carnegie Mellon University
iliano@cmu.edu