

Maaz Bin Safeer Ahmad

3800 E Stevens Way NE, Bill & Melinda Gates Center, Seattle, WA 98195, USA
maazsaf@cs.washington.edu • maazsafeer.com

RESEARCH INTERESTS

My research is focused on making it easier to write and maintain high-performance software, mostly using program synthesis, a technique for computer-aided construction of programs. I design compilation strategies that leverage formal methods and AI techniques to automatically discover complex code transformations, such as re-writing legacy software using new domain-specific languages.

EDUCATION

University of Washington, Seattle, Washington, USA

Doctor of Philosophy (Ph.D.) in Computer Science & Engineering Aug 2014 – Present

- Advised by Dr. Alvin Cheung
- Research areas: Programming Systems, Program Synthesis, and Compilers

National University of Computer & Emerging Sciences, Lahore, Punjab, Pakistan

Bachelor of Science (B.S.) *cum laude* in Computer Science Aug 2010 – Jul 2014

- Thesis adviser: Dr. Kashif Zafar
- Awarded the University Silver Medal

PUBLICATIONS

- [1] [M. B. S. Ahmad](#), J. Ragan-Kelley, A. Cheung and S. Kamil, “Automatically Translating Image Processing Libraries to Halide,” *SIGGRAPH Asia 2019*
- [2] [M. B. S. Ahmad](#) and A. Cheung, “Automatically Leveraging MapReduce Frameworks for Data-Intensive Applications,” *SIGMOD 2018*
- [3] [M. B. S. Ahmad](#) and A. Cheung, “Optimizing Data-Intensive Applications Automatically By Leveraging Parallel Data Processing Frameworks,” *SIGMOD 2017 (Demo) – Honourable Mention for Best Demo Award*
- [4] G. Fedyukovich, [M. B. S. Ahmad](#) and R. Bodik, “Gradual Synthesis for Static Parallelization of Single-Pass Array-Processing Programs,” *PLDI 2017*
- [5] [M. B. S. Ahmad](#) and A. Cheung, “Leveraging Parallel Data Processing Frameworks with Verified Lifting,” *SYNT 2016 (Co-located with CAV 2016) – Best Student Paper Award*
- [6] T. Ahmad, N. A. Rehman, F. Pervaiz, S. Kalyanaraman, [M. B. S. Ahmad](#), S. Chakraborty, L. Subramanian, U. Saif, “Characterizing dengue spread and severity using internet media sources,” *ACM DEV 2013*

WORK EXPERIENCE

Intel, Hillsboro, USA

Summer 2019

Research Intern, Software Path-finding Group

Supervised by Adam Herr and Dr. Justin Gottschlich

Developed a proof-of-concept compiler that uses program synthesis to automatically optimize *intentional* C++ code, i.e. code lacking any performance optimizations, by lifting the intentional code to domain-specific languages.

Adobe Research, Cambridge, USA

Jul 2017 – Dec 2017

Research Intern, Creative Technologies Lab

Supervised by Dr. Shoaib Kamil

Developed Dexter, a compiler that uses program synthesis and verification to rejuvenate legacy image-processing libraries by translating individual functions, written in C++, to the Halide DSL.

Tableau Software, Kirkland, USA

Summer 2015

Software Engineer Intern, Data Management Team

Supervised by Dr. Spiro Michaylov and Dr. Kate Morris

Implemented a new feature in the Tableau Data Engine to improve the incremental extract refresh process for time-window extracts.

Information Technology University, Lahore, Pakistan

Jun 2012 – Jul 2014

Undergraduate Research Assistant, NEWT Lab

Supervised by Dr. Umar Saif and Dr. Lakshminarayanan Subramanian

Contributed to the development of *DengueBreaks*, a system for early detection of dengue outbreaks through alternate data sources, such as social media.

**TEACHING
EXPERIENCE**

University of Washington, Seattle, USA

Teaching Assistant

- CSE 402: Design and Implementation of DSLs. Taught by Ras Bodik. Spring 2019
- CSE 401: Compiler Construction. Taught by Ras Bodik and Alvin Cheung. Winter 2016

Undergraduate Tutor (Volunteer)

- CSE 344: Database Systems. Taught by Alvin Cheung. Winter 2017

National University of Computer & Emerging Sciences, Lahore, Pakistan

Teaching Assistant

- CS 211: Discrete Structures. Taught by Sarfraz Raza. Fall 2013
- CS 103: Computer Programming. Taught by Sarim Baig. Spring 2013

**ACADEMIC
AWARDS**

Student Travel Award, SYNT 2016

Funding to attend and present our work at the SYNT' 16 Workshop.

University Silver Medal, NUCES

For achieving the second highest GPA over the four year B.S. program.

Dean's List, Fall 2010 through Spring 2014, NUCES

For attaining a semester GPA of at least 3.50.

Intra-FAST Annual Speed Programming Competition, NUCES

First prize in year 2011, 2012 and 2013.

SERVICE

OOPSLA

2020

Artifact Evaluation Committee

ASPLOS

2020

Artifact Evaluation Committee

VLDB

2020

Reviewer - Demo Track

ACM 5th Symposium on Computing for Development, San Jose, USA

2015

Student Volunteer

Pakistan-ICTD Workshop, Lahore, Pakistan

2014

Student Volunteer

SOFTEC, Lahore, Pakistan

2013

IT Team Head

LANGUAGES

English: Fluent (speaking, reading, writing).

Urdu: Fluent (speaking, reading, writing).

**OTHER
INTERESTS**

Mountaineering. I was fortunate enough to climb Mt. Adams, Mt. Baker and Sloan Peak last season.

Reading. Currently on book eight of ten of the Malazan Book of The Fallen series by Steven Erikson.

[CV compiled on 2020-10-21]