

# Maaz Bin Safeer Ahmad

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## EDUCATION

**University of Washington**, Seattle, Washington, USA

Doctor of Philosophy (Ph.D.) in Computer Science & Engineering

Aug 2014 – Present

- Adviser: Dr. Alvin Cheung
- Research areas: Programming Languages, Databases

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

Bachelor of Science (B.S.) *cum laude* in Computer Science

Aug 2010 – Jul 2014

- Adviser: Dr. Kashif Zafar
- Awarded the University Silver Medal

## RESEARCH EXPERIENCE

**University of Washington**, Seattle, USA

Graduate Student in Computer Science & Engineering

Aug 2014 – Present

- Advised by Dr. Alvin Cheung
- Research areas: Program Synthesis, Compilers, Big-Data Management, Parallel Computing
- Projects:-
  - *MetaLift*: A framework for building compilers that target domain-specific languages (DSLs). Unlike traditional syntax-driven compilers, which rely on pre-defined rules, *MetaLift* uses *Verified Lifting* (a combination of program synthesis and verification) to search for possible candidate programs in the target language that the given input can be translated to.
  - *Casper*: A compiler that uses *Verified Lifting* (a combination of program synthesis and verification) to automatically expose data-parallelism in Java applications by lifting sequential loop nests to the high-level MapReduce framework Apache Spark.
  - *GraSSP*: A novel approach for automatic parallelization of single-pass array-processing programs with possible data-dependencies.

**Adobe Research**, Cambridge, USA

Jul 2017 – Present

Research Intern in Creative Technologies Lab

- Supervised by Dr. Shoaib Kamil
- Research areas: Program Synthesis, Compilers, Image Processing
- Projects:-
  - *HALO*: A compiler that uses *Verified Lifting* (a combination of synthesis and verification) to automatically retarget legacy image processing stencils to Halide.

**Information Technology University**, Lahore, Pakistan

Jun 2012 – Jul 2014

Research Assistant in NEWT Lab

- Advised by Dr. Umar Saif and Dr. Lakshminarayanan Subramanian
- Research areas: Computing for Development, Disease Surveillance
- Projects:-
  - Evaluated the feasibility of using alternate data sources, such as social media activity and news articles, for early disease outbreak prediction.
  - Worked in collaboration with the Punjab IT Board to develop and sustain a web based analytics module to track the spread of multiple diseases in the Punjab province.

## PUBLICATIONS

- [1] 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.**
- [2] G. Fedyukovich, M. B. S. Ahmad and R. Bodik, “Gradual Synthesis for Static Parallelization of Single-Pass Array-Processing Programs,” *PLDI 2017*.
- [3] 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.**
- [4] 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*.

<b>SOFTWARE DEVELOPMENT EXPERIENCE</b>	<p><b>Tableau Software</b>, Kirkland, USA  Software Engineer Intern in Data Management Team Summer 2015</p> <ul style="list-style-type: none"> <li>▪ Supervised by Dr. Spiro Michaylov and Dr. Kate Morris</li> <li>▪ Implemented a new feature in the Tableau Data Engine to improve the incremental extract refresh process for time-window extracts.</li> </ul> <p><b>Proton Labs</b>, Lahore, Pakistan  Web Development Intern Summer 2011</p> <ul style="list-style-type: none"> <li>▪ Supervised by Abid Mahmood</li> <li>▪ Worked as part of a small team to design, implement and deploy web-applications.</li> </ul>
<b>SKILLS</b>	<p><b>Programming Languages:</b> Fluent: Java, C++, Python, SQL; Functional: C, Scala, Javascript, Haskell, Dafny</p> <p><b>Tools:</b> Hadoop, Spark, SKETCH, z3, ANTLR, Polyglot, clang, Coq, AWS EC2 and EMR Services, Eclipse, Visual Studio</p>
<b>TEACHING EXPERIENCE</b>	<p><b>University of Washington</b>, Seattle, USA</p> <p>Teaching Assistant  <ul style="list-style-type: none"> <li>▪ CSE 401: Compiler Construction. Taught by Ras Bodik and Alvin Cheung. Winter 2016</li> </ul> Undergraduate Tutor (Volunteer)  <ul style="list-style-type: none"> <li>▪ CSE 344: Database Systems. Taught by Alvin Cheung. Winter 2017</li> </ul> <p><b>National University of Computer &amp; Emerging Sciences</b>, Lahore, Pakistan</p> <p>Teaching Assistant  <ul style="list-style-type: none"> <li>▪ CS 211: Discrete Structures. Taught by Sarfraz Raza. Fall 2013</li> <li>▪ CS 103: Computer Programming. Taught by Sarim Baig. Spring 2013</li> </ul> </p></p>
<b>PROFESSIONAL ACTIVITIES</b>	<p><b>ACM 5th Symposium on Computing for Development</b>, San Jose, USA 2015  Student Volunteer</p> <p><b>Pakistan-ICTD Workshop</b>, Lahore, Pakistan 2014  Student Volunteer</p> <p><b>SOFTEC</b>, Lahore, Pakistan 2013  IT Team Head</p>
<b>ACADEMIC AWARDS</b>	<p><b>Student Travel Award</b>, SYNT 2016  Funding to attend and present at the SYNT Workshop.</p> <p><b>University Silver Medal</b>, NUCES  For outstanding academic performance.</p> <p><b>Dean's List, Fall 2010 through Spring 2014</b>, NUCES  For attaining a semester GPA of at least 3.50.</p> <p><b>Intra-FAST Annual Speed Programming Competition</b>, NUCES  First prize in year 2011, 2012 and 2013</p>
<b>LANGUAGES</b>	<p><b>English:</b> Fluent (speaking, reading, writing).  <b>Urdu:</b> Fluent (speaking, reading, writing).  <b>Punjabi:</b> Intermediate (speaking); basic (reading, writing).</p>

[CV compiled on 2017-09-30]