

SHOAIB AMJAD KHAN



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OBJECTIVE

Looking for an exciting internship opportunity involving R&D in the areas of Security, Privacy, Machine Learning and AI.

EDUCATION

- 2016–Present **Purdue University, Computer Science Department**, W Lafayette, IN
Ph.D Candidate, research focus on an intersection of *privacy, security, data analytics & machine learning*
Advisor: Prof. Mike Atallah
- 2007–2009 **University of South Florida, Mathematics Department**, Tampa, FL
M.A. Mathematics, research focus on design of *approximation algorithms for hypergraphs*
Advisor: Prof. Brendan Nagle
- 2001–2005 **National Univ. of Computer & Emerging Sciences, Computer Science Department**, Lahore, Pakistan
B.S. Computer Science with Honors, final year project on *OCR for Urdu using neural networks*

PROFESSIONAL EXPERIENCE

- Summer 2018 **Microsoft**, Redmond, WA
PhD. Student Intern
- 2016–Present **Purdue University, Computer Science Department**, W Lafayette, IN
Graduate Teaching & Research Assistant
- 2015 - 2016 **Information Technology University, Computer Science Department**, Lahore, Pakistan
Teaching Fellow
- 2012 - 2015 **National Univ. of Computer & Emerging Sciences, Computer Science Department**, Lahore, Pakistan
Assistant Professor
- 2009 – 2012 **National Univ. of Computer & Emerging Sciences, Computer Science Department**, Lahore, Pakistan
Lecturer

TECHNICAL SKILLS

Languages: C#, C++/C, Python, Java, JavaScript (ReactJs), SQL, UML, HTML, XML, Assembly Language (Intel x88, x386, Intel 8051/52 MC series), Verilog, Prolog, LaTeX.

Software Tools: Visual Studio, Eclipse, Microsoft .Net Platform, Git, Atom, Visio, Rational Rose, ERWin.

Data Science & ML Tools: Scikit-learn, NumPy, Pandas, Matplotlib.

Database & Client/Server Technologies: Oracle 8/8i, Microsoft Access, Microsoft SQL Server.

Operating Systems: Microsoft Windows, Linux/Unix, OS X, DOS, Android, iOS.

SELECT PROJECTS

- **Security & Privacy:**
 - **DNS Cache Poisoning:** Wrote an exploit to carry out Kaminsky's Attack against a local DNS server in a controlled (virtual) environment.
 - **Garbled Computer (in C):** Design & development of an open source tool for PFE using lightweight crypto primitives.

- **AI & ML:**
 - **Group Recommendation System (in Python):** Feature selection and implementation of a hybrid recommender system using ensemble learning techniques to suggest most relevant groups to a user in a toy social network.
 - **OCR for Urdu Script Using Neural Nets (in C#):** Studied problems hindering the development of a practical OCR system for Urdu and developed NN solutions to overcome these. I led a team of four.
- **Algorithms & Data Structures:**
 - **Search Engine (in C++):** A Local Search Engine that constituted two modules, i) indexing system and ii) querying system. The focus here was on design, implementation and testing of advanced data structures including B-Trees and Hash Tables to achieve the desired functionality efficiently.
 - **Compression Software in Assembly Language:** Compressor (encryption, decryption, compression & decompression) utility using Assembly Language.
- **Systems & Networks:**
 - **Download Manager using Sockets in C++:** A multithreaded desktop application that had features like accelerate download speed and pause or resume download from a web server on the internet.
 - **Compiler for C-v, a subset of C++ (in C++):** Individually wrote the complete compiler, which had three modules, i) Lexical analyzer, ii) Syntax analyzer, and iii) Intermediate code generator.
 - **Pipelined MIPS Architecture (Verilog):** Architecture design of pipelined MIPS processor in Verilog.
- **Software Engineering & DB:**
 - **Student Registration System (in C++):** An Objected Oriented Design that exclusively focused on issues of OOP e.g. data encapsulation and polymorphism. I led a team of five through the design, implementation & testing phases.
 - **Academic Records and Result Compilation System (Java, JScript, SQL):** Design & development of FE and BE of an online database to manage the records of students at The Punjab University. I was part of a team of five.
- **Embedded Systems:**
 - **Chip Programmer (C & Assembly):** Complete hardware & software of the flash code memory programmer for AT89S52 microcontroller, using PC parallel port interface.
 - **Sample projects using Atmel® 8051/52 microcontroller series (in C & Assembly):**
 - DC motor speed control using Pulse Width Modulation
 - Keypad & 7-Segment Decoder (x4) interface
 - Sine Wave Synthesis
 - Dual slope volt meter & A-D converter

PROJECTS MENTORED

- **Open Source iPhone to Android App Conversion Tool:** A formal language translation tool converting code written in Objective C to Java code. The tool is extensible and allows for updates in API mapping.
- **EmoTunes:** Using brain wave data from EEG to detect the present emotional state of the user and generating playlists to complement or supplement the emotional state of the user.
- **An Eye for Blind:** Using a simple VGA camera and a Depth Camera (e.g. Microsoft Kinect), helping the blind to navigate their way around by detecting and identifying obstacles. The project is extensible and aims to include navigation maps to guide the visually impaired.

RESEARCH TALKS & WORKSHOPS

- Workshop for MPhil students on “*Quantum Computing*”, Fall 2014, Kinnaird College for Women, Lahore, Pakistan.
- Research Talk: “*Quantum Computation: Its scope and limits*”, May 2014, Kinnaird College for Women, Lahore, Pakistan.
- Workshop for MPhil students on “*Computability and Complexity*”, Spring 2014, Kinnaird College for Women, Lahore, Pakistan.
- Research Talk: “*Soundness of Inprocessing in Clause Sharing SAT Solvers*” [N. Manthey, T. Philipp, C. Wernhard], August 2013, International Center for Computational Logic, TU Dresden, Germany.
- Research Talk: “*Research as a career path for graduating students*”, IT Conference SOFTEC, April 2013, National University of Computer & Emerging Sciences, Lahore, Pakistan.
- Research Talk: “*An Algorithmic Hypergraph Regularity Method*”, Theoretical Computer Science Workshop, Summer 2010, Forman Christian College University, Lahore, Pakistan.
- Workshop Lecture: “*Logic & Proofs*”, Theoretical Computer Science Workshop, Summer 2010, Forman Christian College University, Lahore, Pakistan.
- Workshop Lecture: “*Countability & Diagonalization*”, Theoretical Computer Science Workshop, Summer 2010, Forman Christian College University, Lahore, Pakistan.

PUBLICATIONS

- Shoaib A. Khan, B. Nagle, "A Hypergraph Regularity Method for Linear Hypergraphs, with Applications", LAP Lambert Academic Publishing, 2011.
- Shoaib A. Khan, "A Hypergraph Regularity Method for Linear Hypergraphs," Master's Thesis, University of South Florida, USA, 2009.

HONORS & AWARDS

2016 - Present	Graduate Assistantship by Purdue University.
2007 - 2009	Fulbright Scholarship by United States Education Foundation for Pakistan.
2001 - 2005	Outstanding Talent Scholarship by Punjab Information Technology Board.
2001 - 2005	Dean's Honor's List at National University of Computer & Emerging Sciences.
Fall 2001	University Scholarship for Batch Topper by National University of Computer & Emerging Sciences.

MENTORING & LEADERSHIP

2015 - 2016	Faculty Advisor for undergraduate students, advising them on courses to select for enrollment.
2012 - 2015	Student Counselor for undergraduate students on academic warning, mentoring them to avoid suspension.
2010 - 2015	Project Mentor for groups of senior students working on their final year projects towards BS(CS) degree.
2004 - 2005	Chairmanship of ACM - NUCES Lahore Chapter. We organized a Dynamic Programming Competition.
2000 - 2001	Team Captain for our high school cricket team in senior year. We won intramural tournament that year.

CO-CURRICULAR

- Participation and awards in several bi-lingual debate/declamation contests.
- SOFTEC Stage Secretary, 2003 – 2005.
- Cricket, Basket-Ball, Soccer, Squash.
- Trekking, Mountaineering, Paragliding, Sky-diving.
- Reading, Philosophizing.
- Family Time, Travelling.

REFERENCES

To be furnished on request.