Faria Kalim

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Interests

Distributed sytems, ubiquitous computing, parallel & high-performance computing

Education

Ph.D., Computer Science **08/2015 — present**
University of Illinois at Urbana-Champaign (UIUC), USA

- Sohaib and Sara Abbasi Fellow **08/2015 — 05/2016**
- Advisor: Prof. Indranil Gupta

B.E., Computer Software Engineering **08/2011 — 06/2015**
National University of Sciences & Technology (NUST), Pakistan

- C.GPA: 4.00/4.00; Class Standing: 1/76; Major: Computer Science

Research Experience

Graduate Research, DPRG, UIUC **Fall 2015**

- Assisting in developing an adaptive version of Stela which satisfies Cost and Throughput SLAs.
- Stela is originally a scheduler that provides on-demand elasticity in Storm.

Undergraduate Research Assistant, AN-DASH Laboratory, NUST **05/2014 – 06/2015**

- Developed classification methods to discover patterns in accelerometer readings from smartphones

Select Honors and Awards

- Sohaib and Sara Abbasi Fellowship, Fall 2015 – Spring 2016
- NUST-SEECS Open House Winner in Software Engineering, 2015
- Recipient of President's Gold Medal for academic excellence in undergraduate studies, 2015
- NUST Scholarship for all semesters since admission in undergraduate studies, Fall 2011 – Fall 2014
- Dawn National Spelling Bee champion, Pakistan (2008)

Select Undergraduate Projects

Crater: A crowd sensing application to estimate road conditions **Fall 2014 – Spring 2015**

- Service uses smartphones present in a moving vehicle to detect and measure sudden movements and locations without users' involvement
- Machine learning features using pattern classification are hosted as a high-performance-computing elements in the Azure cloud. Results are overlaid on Google Maps
- Crowdsourcing enables data collection and allows for pruning of measurements
- Project awarded grant through Microsoft Azure for Research (2014 – 2015)

Mazewar: A Multiplayer Game **Fall 2014**

- Implemented Mazewar, a distributed, multiplayer game, identical to the Stanford CS244B Mazewar project

Reliable UDP **Fall 2013**

- Added reliability checks at the application layer to form a sound version of UDP

Characterization of image comparison methods that use SSE instructions **Spring 2013**

- Implemented and compared the performance of the same image comparison algorithm in assembly, with and without SSE instructions. Empirical results showed that assembly with SSE instructions was on average, twice as fast as assembly alone.

Survey and analysis of the traveling salesman problem **Spring 2013**

- Analyzed a case study with emphasis on ant-colony optimisation. Results showed that the algorithm performs best on dynamic systems with changing topologies, such as in computer networks.

Front end compiler **Spring 2014**

- Implemented a lexical analyzer, parser and the semantic analyzer using C++

Conference manager **Fall 2012**

- Implemented a hash table of AVL trees to record conference attendees information
- Implemented Dijisktra's shortest path algorithm with heaps to enable navigation at the venue

Web portal digitizing public relations between blood donors and recipients **Fall 2014**

- Involved in the development of a web portal to facilitate matching of blood donors and recipients
- Portal enables recipients to contact local donors (rfusion.revolutionflame.com)

Web portal for tourists visiting Islamabad **Spring 2014**

- Used Knockout, Parallax, Node.JS, Bootstrap and MySQL to implement the web portal

Proofs of simple equations using HOL **Spring 2014**

- Used HOL, a proof assitant for higher order logic, to prove that all the sum of all elements in a list consisting of numbers greater than two, is less than their product

Bookstore app for Android OS **Spring 2013**

- Implemented prototype of a smartphone application for Android Systems that allowed users through the database of a bookstore and select books for order

Nutritional information app for Android OS **Spring 2013**

- Implemented a prototype of a smartphone application for Android Systems that allowed users to maintain a food log, and provided information on the food value of their meals, and the calories they had consumed

Restaurant inventory control **Fall 2012**

- Implemented the application to manage inventory and orders using C# forms and SQL.

LED board game **Spring 2012**

- Implemented a circuit board with a 12x12 LED matrix, with an additional row of 12 LEDs which sufficed as a platform on which the user moved a light to catch falling objects along the 12x12 matrix.

Privacy library **Fall 2011**

- Implemented seven simple encryption and decryption algorithms to be used as a library for application development.

Service and Activities

IEEE Xtreme **2012**

- 6th in Pakistan, IEEE Xtreme 24-hour programming competition

National Mathematics Talent Contest **2010**

- Was selected amongst the top fifty students from Pakistan to participate in the next rounds

Volunteer in a charity drive for Pakistan's earthquake victims **2011**

- Volunteered to man a stall in a food festival to raise funds for displaced earthquake victims of 2005

French language course **2013**

- Studied at the beginner level; Je peux lire et à écrire en français
- Secured 2^{nd} prize and received a scholarship at the end of the course

Best debater in impromptu debate competition **2011 & 2012**

- Received the "Best Debater" award for an impromptu inter-class debate competition for two years in a row

Participated in aero-modelling competition at Institute of Space Technology, Pakistan **2010**

- Built a miniature plane and flew it to test its aerodynamics

Hosted Urdu debate competition **2009**

- Worked in the role of an organizer and conducted the competition as the anchor person.

Founded college magazine and wrote for the newsletter Hamari Awaz **2008 – 2009**

- Worked as the editor of the paper to raise awareness in the youth about the socio-political conditions of the country

Systems and Software Skills

- Programming Languages: C, C++, Java, Python, Javascript
- Programming Models: OpenMP, Android fundamentals
- Miscellaneous: Pthreads, MySQL, Knockout, Parallax, NodeJS, Bootstrap, Javascript, CSS, HTML, XML, Git, LaTeX, RESTful APIs, HOL.

Affiliations

Student Member, Association for Computing Machinery (ACM)
Student Member, Institute of Electrical and Electronics Engineers (IEEE)