

Faisal Khan

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Education

December 2011 | Master of Science in Computer Science

University of Wisconsin–Madison, Madison, WI, USA

- Outreach activities introducing middle and high school students with the design of social robots through development of interactive demonstrations.

September 2005 | Bachelor of Information Technology

National University of Sciences and Technology, Islamabad, Pakistan

- President of the student chapter of IEEE (2004), leading efforts to introduce students to development in industry and research through technical workshops and seminars.

Work Experience

Feb 2012 – March 2014 | Software Engineering Specialist

Advanced Photon Source, Argonne National Laboratory, Lamont, IL, USA

- Developed parallel analysis software for XPCS (X-Ray Photon Correlation Spectroscopy) using MapReduce/Hadoop.
- Designing graphical frameworks using C++/QT for data acquisition and visualization.
- Developing an analysis pipeline backed by activeMQ for managing scientific workflow such as: data acquisition, analysis and storage.

June 2010 – Dec 2011 | Research Assistant

Human-Computer Interaction Lab, University of Wisconsin–Madison, Madison, WI, USA

- Implemented algorithms for doing vision and speech based analysis of human behavior in face-to-face communications such as non-verbal backchannel cues (e.g. head nods) during conversations.
- Developed machine learning models based on automatically extracted audio and visual features (e.g. speech intonation) to gain deeper understanding of human social behavior in conversations; enabling implementation of these models on socially interactive interfaces such as robots.
- Developed a system to track people moving between a hallway (30 ft long) using multiple Microsoft Kinect sensors.
- Designed and conducted user studies to empirically evaluate different interaction design for human-robot interaction.
- Participated and organized outreach activities including presentations and demonstrations of my work at National Robotics Week (2010), UW Eye Research Poster Sessions (2010), and Wisconsin Science Festival (2011).

Sep 2008 – May 2010 | Research Assistant

Condor Project, University of Wisconsin–Madison, WI, USA

- Implemented Hadoop based MapReduce and Storage features for an existing job scheduling system; enabling dynamic setup and teardown of Hadoop cluster; achieving more efficient sharing of computing resources among users.
- My work enabled assembly of whole human genome data by one of our collaborators (resulting in a university press release).

May 2006 - Nov 2007 | Software Engineer

Grid Analysis Environment Project, California Institute of Technology, Pasadena CA, USA

- Worked on the development of a Java based Web services Framework: added a peer-to-peer web service discovery feature, improved existing authentication mechanism, developed an Eclipse/SWT based user interface.
- Analyzed and fixed different bottlenecks related to disk, network, and software for achieving optimal data transfer rates.
- Contributed to Caltech bandwidth challenge at Supercomputing 2007 (Reno, Nevada); we demonstrated a sustained data transfer rate of 80Gbps over networks of fiber optics.

Oct 2005 – March 2006 | Software Engineer

CERN - European Organization for Nuclear Research, Geneva, Switzerland

- Developed an application to monitor file transfer capabilities between multiple remote sites.
- Implemented a web based interface, written in Perl, to generate reports for site administrators; presenting the monitoring statistics in a user friendly manner; facilitating troubleshooting of infrastructure related problems.

Awards and Honors

- 2013 Pacesetter Award - Presented by Argonne National Lab for leading efforts for design and development of the software for Transmission X-ray Microscopy (TXM) experiment.
- 2008 Award for Experimental/Developmental Applications presentee by CENIC (Corporation for Education Network Initiatives in California).
- Merit scholarship throughout undergraduate degree.

Skills

Advanced	Proficiency	Familiarity
Java/C++, QT, Hadoop, MySQL, Shell Scripting, Git, Distributed/Parallel systems.	Scala, Python, Databases, Networks, Processing, User studies, Matlab, Java web-services.	Objective-C, Perl, PHP, Spring framework.

Publications

- **Faisal Khan**, John Paul Hammonds, Suresh Narayanan, Alec Sandy, Nicholas Schwarz (2013). *Effective End-to-end Management of Data Acquisition and Analysis for X-ray Photon Correlation Spectroscopy*. (In *International Conference on Accelerator and Large Experimental Physics Control Systems (ICALPECS)*)
- **Faisal Khan**, Nicholas Schwarz, John Hammonds, Claude Saunders, Alec Sandy, Suresh Narayanan (2012). *Distributed X-ray Photon Correlation Spectroscopy Analysis using Hadoop*. (Poster presented at NOBUGS 2012).
- Nicholas Schwarz, **Faisal Khan**, John Hammonds, Claude Saunders (2012). *Workflow Pipeline for Scientific Data Analysis*. (NOBUGS 2012, RAL, UK, 24-26 Sep 2012)
- **Faisal Khan**, Xiaojin Zhu and Bilge Mutlu (2011). *How Do Humans Teach: On Curriculum Learning and Teaching Dimension*. (In *Advances in Neural Information Processing Systems (NIPS) 25*. 2011). [**Acceptance rate : 21%**]
- **Faisal Khan**, Bilge Mutlu, and Xiaojin Zhu (2010). *Modeling Social Behavior: Efficient Features for Predicting Listener Nods*. (In *Proceedings of the NIPS Workshop on Modeling Human Communication Dynamics*).
- Julian Bunn, Conrad Steenberg, **Faisal Khan**, Iosif Legrand, Harvey Newman, Michael Thomas, Frank van Lingen (2007). *Science Gateways: Progress using the Clarens Toolkit on TeraGrid*. (2007). (In *proceedings of Teragrid 2007. Madison Wisconsin, June 4-8 2007*)
- Arshad Ali, Ashiq Anjum, Julian J. Bunn, **Faisal Khan**, Richard McClatchey, Harvey B. Newman, Conrad Steenberg, Michael Thomas, Ian Willers (2006). *A Multi Interface Grid Discovery System* (GRID '06 Proceedings of the 7th IEEE/ACM