Muhammad Imran (PhD)

Research Scientist
Qatar Computing Research Institute, HBKU
Email: mimran@qf.org.qa - Homepage: http://mimran.me/
Cell:+974-55927185 — Work:+974-44541521

RESEARCH INTERESTS

I am interested in understanding the role of microblogging platforms such as Twitter during mass convergence events by using big data analysis techniques such as text classification, data mining, machine learning, and deep neural networks. Moreover, I'm interested in developing novel computational techniques and technologies that can help stakeholders gain situation awareness and actionable information which can improve their decision-making processes.

Keywords: *Social Computing, Crisis Informatics, Crowdsourcing, Web Engineering*

EDUCATION

Ph.D. Computer Science November 2009 – March 2013
University of Trento, Trento, Italy.
Concentration: Computer Science

M.Sc. Computer Science September 2005 – September 2007
Mohammad Ali Jinnah University, Islamabad, Pakistan.
Concentration: Computer Science

B.S. Computer Science January 2000 – December 2003
Allama Iqbal Open University, Islamabad, Pakistan.
Concentration: Computer Science

HONORS, GRANTS AND AWARDS

Best Paper Award (2013): Received the Best Paper Award at the 10th International Conference on Information Systems for Crisis Response and Management (ISCRAM) in 2013, Baden-Baden, Germany. (Role: First Author)

Grand Prize Winner in Open Source Software World Challenge (2015): AIDR[1] project awarded the Grand Prize in the Open Source Software World Challenge 2015 competition. (Role: Team Leader)

Start-up Grant Winner (2015): Qatar Science & Technology Park (QSTP) selected and granted our AINGEL project to be launched as a start-up. (Role: Team Leader)

PhD Scholarship Winner (2009-2013): awarded by the University of Trento for PhD studies (2009-2013).

Distinguished Position holder in MSc (2007): achieved 1st position in Master of Science (Computer Science) in 2007.

MEDIA, MAGAZINE, AND JOURNAL COVERAGE

WIRED Magazine[2] mentions various aspects of the deployment of our technologies (AIDR & MicroMappers) during the 2013 earthquake in Pakistan.

[1] http://aidr.qcri.org/
[2] http://www.wired.co.uk/news/archive/2013-09/30/digital-humanitarianism

Nature Journal[3] covers the use of our machine learning and crowdsourcing technologies (AIDR & MicroMappers) during the typhoon Haiyan in the Philippines.

Forbes[4] discusses about the research and development of our machine learning for humanitarian computing work at QCRI.

The Wall Street Journal (WSJ)[5] asks Patrick Meier (a former colleague) about how social mapping provides rescue teams with a detailed, data-driven map generated by our humanitarian technologies developed at QCRI during typhoons in the Philippines.

Mashable[6] highlights the successes of our humanitarian technologies (AIDR & MicroMappers) during various typhoons in the Philippines.

Gulf Times[7] publishes the news of the Grand prize award of our AIDR technology in the Open Source Software World Challenge.

Qatar News Agency[8] covers the news of the Grand prize award of our AIDR technology in the Open Source Software World Challenge.

SELECTED PUBLICATIONS

1. Muhammad Imran, Prasenjit Mitra, and Jaideep Srivastava: Cross-Language Domain Adaptation for Classifying Crisis-Related Short Messages. Accepted for publication at *the 13th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*, 2016, Rio de Janeiro, Brazil.
2. Muhammad Imran, Patrick Meier, Carlos Castillo, Andre Lesa, and Manuel Garcia Herranz: Enabling Digital Health by Automatic Classification of Short Messages. *Accepted for publication at the 6th ACM International Conference on Digital Health (DH)*, 2016, Montreal, Canada.
3. Koustav Rudra, Siddhartha Banerjee, Niloy Ganguly, Pawan Goyal, Muhammad Imran and Prasenjit Mitra. Summarizing Situational Tweets in Crisis Scenario. *Accepted for publication at the 27th ACM Conference on Hypertext and Social Media (HT)*, 2016, Halifax, Canada.
4. Ferda Ofli, Patrick Meier, Muhammad Imran, Carlos Castillo, Devis Tuia, Nicolas Rey, Julien Briant, Pauline Millet, and Stephane Joost: Combining Human Computing and Machine Learning to Make Sense of Big (Aerial) Data for Disaster Response. Accepted for publication at *Big Data Journal*, 2016.
5. Muhammad Imran, Carlos Castillo, Fernando Diaz, and Sarah Vieweg: Processing Social Media Messages in Mass Emergency: A Survey. *ACM Computing Surveys*. 47, 4, Article 67 (June 2015), DOI=10.1145/2771588

[3] http://www.nature.com/news/crowdsourcing-goes-mainstream-in-typhoon-response-1.14186

[4] http://www.forbes.com/sites/skollworldforum/2013/05/02/crisis-maps-harnessing-the-power-of-big-data-to-deliver-humanitarian-assistance/#4d2e3f111533

[5] http://www.wsj.com/video/social-mapping-helps-rescuers-in-philippines/F4510A7D-9040-4D89-8852-2F142A7827A2.html

[6] http://mashable.com/2015/02/06/digital-humanitarians/#6G78o2Z9xkqU

[7] http://www.gulf-times.com/story/465584/QCRI-wins-top-prize-for-its-technology

[8] http://www.qna.org.qa/en-us/News/15120700400062/QCRI-Humanitarian-Technology-Wins-the-Open-Source-Software-World-Challenge-Grand-Prize

6. Muhammad Imran, Carlos Castillo. Towards a Data-driven Approach to Identify Crisis-Related Topics in Social Media Streams. *Social Web for Disaster Management (SWDM'15)*, 2015, Florence, Italy.
7. Muhammad Imran, Carlos Castillo, Ji Lucas, Patrick Meier, and Jakob Rogstadius. Coordinating Human and Machine Intelligence to Classify Microblog Communications in Crises. *11th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*, 2014. Pennsylvania, USA.
8. Muhammad Imran, Carlos Castillo, Ji Lucas, Patrick Meier, and Sarah Vieweg. AIDR: Artificial Intelligence for Disaster Response. *In Proc. of the 23th International Conference on World Wide Web (WWW) Companion*, 2014, Seoul, Korea.
9. Muhammad Imran and Carlos Castillo. Volunteer-powered Automatic Classification of Social Media Messages for Public Health in AIDR. *Public Health in the Digital Age workshop in the 23th International Conference on World Wide Web (WWW)*, 2014, Seoul, Korea.
10. Sarah Vieweg, Carlos Castillo and Muhammad Imran. Integrating Social Media Communications into the Rapid Assessment of Sudden Onset Disasters. *In Proc. of the 6th International Conference on Social Informatics (SocInfo)*, 2014.
11. Muhammad Imran, Shady Elbassuoni, Carlos Castillo, Fernando Diaz and Patrick Meier. Extracting Information Nuggets from Disaster-Related Messages in Social Media. *In Proc. of the 10th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*, May 2013, Baden-Baden, Germany.
12. Muhammad Imran, Shady Elbassuoni, Carlos Castillo, Fernando Diaz and Patrick Meier. Practical Extraction of Disaster-Relevant Information from Social Media. *Social Web for Disaster Management (SWDM'13)*, 2013, Rio de Janeiro, Brazil.
13. Muhammad Moeen Uddin, Muhammad Imran, and Hassan Sajjad. Understanding Types of Users on Twitter. *SocialCom Standford Conference 2014*, May 2014, CA, USA.
14. Soudip Roy Chowdhury, Muhammad Imran, Muhammad Rizwan Asghar, Sihem Amer-Yahia and Carlos Castillo. Tweet4act: Using Incident-Specific Profiles for Classifying Crisis-Related Messages. *10th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*, May 2013, Baden-Baden, Germany.
15. Muhammad Imran, Syed Zeeshan Haider Gillani and Maurizio Marchese. A Real-time Heuristic-based Unsupervised Method for Name Disambiguation in Digital Libraries. *2nd Workshop on Mining Scientific Publications at the Joint Conferences on Digital Libraries (JCDL)*, July 2013, Indianapolis, USA.
16. Muhammad Imran, Stefano Soi, Felix Kling, Florian Daniel, Fabio Casati and Maurizio Marchese. On the Systematic Development of Domain-Specific Mashup Tools for End-Users. *In Proc. of the International Conference on Web Engineering (ICWE)*, July 2012, Berlin, Germany.
17. Florian Daniel, Muhammad Imran, Stefano Soi, Antonella De Angeli, Christopher R. Wilkinson, Fabio Casati and Maurizio Marchese. Developing Mashup Tools for End-Users: On the Importance of the Application Domain. *International Journal of Next-Generation Computing (IJNGC)*, 2012.

18. Muhammad Imran, Felix Kling, Stefano Soi, Florian Daniel, Fabio Casati and Maurizio Marchese. ResEval Mash: A Mashup Tool for Advanced Research Evaluation. *In Proc. of the 21th International Conference on World Wide Web (WWW) Companion*, 2012, France, Lyon.
19. Muhammad Imran, Florian Daniel, Fabio Casati, Maurizio Marchese. ResEval Mash: A Mashup Tool that Speaks the Language of the User. *In Proc. of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2012, Austin, USA.

(Full publications list at `http://mimran.me/publications`)

RESEARCH EXPERIENCE

Research Scientist December 2014 – Present
Qatar Computing Research Institute, Doha, Qatar
Responsibilities: Focusing on building computational methods and technologies for real-time mining of social media data streams such as Twitter data stream using hybrid approaches. I study novel ways to combine humans and machines intelligence to solve non-trivial problems. Currently, interested in providing solutions and technologies to help stakeholders gain situational awareness and actionable information during mass convergence events using social media data.

AINGEL Team Leader September 2015 – Present
Qatar Science & Technology Park, Doha, Qatar
AINGEL (Artificial INtelligent GEo-Location) Response is a start-up funded by Qatar Science and Technology Park. This project aims at combining human and machine intelligence to process social media data.

Post-doctoral Researcher April 2013 – December 2014
Qatar Computing Research Institute, Doha, Qatar
Responsibilities: Conducted research on the application of Social Media mining methods to problems in the humanitarian crises. Humanitarian crisis computing seeks to rapidly identify situational awareness, actionable and tactical information in the big crisis data available on Social Media. Currently, leading research and technical directions of AIDR (Artificial Intelligence for Disaster Response) project. The focus of this applied research project is to use Social Media microblogging platforms like Twitter during mass convergence events and humanitarian crises in an effort to mine and classify information that can help stakeholders gain situation awareness and in their decision making processes.

Research Associate June 2012 – September 2012
Qatar Computing Research Institute, Doha, Qatar
Responsibilities: Mainly worked on two different research projects. The first project focused on real-time analysis of Social Media platforms such as Twitter, to predict life span of NEWS articles. Analysis of various parameters associated with articles like social media exposure in terms of their spread, first few hours visits, discussion was conducted using time-series analysis techniques. The second project focused on classification and extraction of useful information using machine learning techniques from disaster-related messages posted on Twitter to assist stakeholders in disaster response.

PhD Candidate November 2009 – March 2013
University of Trento, Trento, Italy
Responsibilities: Worked on the research direction of end-user development. EUD research tries to bring programming closer to the needs of end users. My PhD dissertation introduced the concept of Domain-Specific Mashups in which

Web 2.0 technologies were employed to empower and enable non-programmers, non-technical users to develop ad-hoc and situational applications to perform complex data aggregation, processing and analysis tasks.

TECHNICAL EXPERIENCE

Database Administrator July 2007 – August 2008
National University of Science & Technology (NUST), Islamabad, Pakistan
Responsibilities: I was responsible for the installation, configuration, upgrading, administration, monitoring, maintenance, and security of Oracle database systems. Moreover, performance tuning, query execution, tuning execution plans, were among other important responsibilities.

Java Developer (Intern) February 2009 – May 2009
OKKAM, Trento, Italy
Responsibilities: Assisted OKKAM research team to analyze big log files of different servers to investigate how complex operations execute and behave under different circumstances. For example, this includes checking how much time a search query took to find an entity in the OKKAM entities database, or why certain part of a query failed.

TEACHING EXPERIENCE

- Service-Oriented Architecture and Applications – course held by Prof. Maurizio Marchese at the University of Trento, 2010 – 2011
- Laboratory for Service Design and Engineering – course held by Prof. Maurizio Marchese at the University of Trento, 2011 – 2012

PROFESSIONAL ACTIVITIES

- **Track Co-chair:**
  - International Conference on Information Systems for Crisis Response and Management (ISCRAM 2015, 2016).

- **Program committee member:**
  - International AAAI Conference on Web And Social Media (ICWSM-2016)
  - International Conference on Digital Health (DH 2015)
  - International Workshop on Social Web for Disaster Management (SWDM 2015)
  - International Conference on Information Systems for Crisis Response and Management-Mediterranean (ISCRAM-Med 2014, 2015)
  - ICWSM Workshop on Standards and Practices in Large-Scale Social Media Research (2015)
  - International Conference on Emerging Technologies (ICET 2014)
  - Computational Social Science Winter Symposium (CSSWS 2014)

- **Reviewer:**
  - ACM Transactions on Information Systems (2015)
  - Computer Networks Journal (2014)
  - International Conference on Web Information System Engineering (WISE 2014)
  - International Conference on Information Systems for Crisis Response and Management (ISCRAM 2014, 2015)
  - ACM Web Science Conference (WebSci 2014)
  - International Conference on Web Engineering (ICWE 2012)

- **Invited talks:**
  - Machine Learning and Data Analytics Symposium (MLDA 2014)
  - Global Entrepreneurship Week at Qatar Science and Technology Park (2015)

- SeCO Workshop on Search Computing, Como, Milan, Italy, May 25-31, 2010

- **Professional member:**
  - Association for Computing Machinery (ACM) professional member (since 2012)
  - ISCRAM community professional member (since 2012)

CERTIFICATIONS

- **Oracle Certified Professional (OCP)**
  Track: Database Administration
  California, USA

TECHNICAL SKILLS

- **Programming languages:**
  - JAVA— SE, EE, EJBs (expert level)
  - Web Services (RESTFul, SOAP), Hibernate, SAX, JAXB (expert level)
  - Python (advance level)
  - R (beginner level)
  - Microsoft .NET Framework using C#, ASP.NET and ADO.Net (advance level)

- **Databases**:
  - Oracle 9i, 10g, 11g (expert level)
  - MySQL, MS-SQL Server (advance level)
  - Redis (expert level)

- **Misc. expertise**:
  - Weka: Data Mining Software (advance level)
  - Good hands on knowledge of OOP (Object Oriented Programming) and agile methodology
  - Experience designing and/or developing solutions for a Service Oriented Architecture (SOA)
  - Sound knowledge of 3-tier and N-tier layered architecture, and design patterns like Singleton, Factory and MVC
  - Experience using tools such as NetBeans, Eclipse, Visual Studio.Net
  - Experience using technologies such as Maven, BaseCamp, Pivotal Tracker, GIT

MENTORING

Students co-mentored:

- Michele Lunelli (2010)
  - Level: Master (Laurea Magistrale) at the University of Trento
  - Co-mentor: Prof. Maurizio Marchese
  - Topic: Web crawling of Google Scholar and Microsoft Academic to extract scholarly data and scholarly metrics (h-index, g-index).
- Felix Kling (2011)
  - Level: Master (Laurea Magistrale) at the University of Trento
  - Co-mentor: Prof. Maurizio Marchese
  - Topic: Building Mashups: implementation of the front-end of the ResEval Mash project.

- Massimo Pacher (2011)
  - Level: Master (Laurea Magistrale) at the University of Trento
  - Co-mentor: Prof. Fabio Casati
  - Topic: Computation of the scholarly metrics of group of people such as research groups at universities or a research lab.
- Simone Dalcastagne (2011)
  - Level: Master (Laurea Magistrale) at the University of Trento
  - Co-mentor: Prof. Fabio Casati
  - Topic: Self-citations and other scholarly group metrics (e.g. group h-index).
- Matteo Bertoni (2013)
  - Level: Master (Laurea Magistrale) at the University of Trento
  - Co-mentor: Prof. Maurizio Marchese
  - Topic: Visualization of scholarly data: Built components for the ResEval Mash project.

REFERENCES References available upon request.