

Agha Ali Raza

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EDUCATION	Carnegie Mellon University, Pittsburgh, PA, USA PhD Computer Science/Language Technologies	CGPA: 3.97	<i>Aug 2010 – May 2015</i>
	National University of Computer & Emerging Sciences - FAST, Lahore, Pakistan Master of Science in Computer Science (MS CS)	CGPA: 3.96	<i>Aug 2006 – Jul 2009</i>
	National University of Computer & Emerging Sciences - FAST, Lahore, Pakistan Bachelor of Science in Computer Science (BS CS)	CGPA: 3.45	<i>Aug 2001 - Jul 2005</i>

Biography and Research Profile

I am an Assistant Professor in the department of Computer Science at *Information Technology University (ITU)*, Punjab. I am also the founding director of the *Center for Speech and Language Technologies* at ITU. I am a Fulbright Scholar and did my PhD from the Language Technologies Institute, School of Computer Science at *Carnegie Mellon University*, Pittsburgh, USA. I received my Master of Computer Science and Bachelor of Computer Science degrees from *FAST - National University*, Lahore. My cumulative teaching experience as part of Computer Science faculty at FAST – NU and ITU spans eight years. My research interests include Speech and Natural Language Processing, Speech-based Human Computer Interfaces, telephone-based automated dialog systems and Information & Communication Technologies for Development (ICT4D). The aim of my research is to enable dissemination of speech-based, development-related information and communication services to under-connected populations (low-literate, poor, tech-novice, visually-impaired, marginalized) throughout the developing world. My work shows that speech-based entertainment services and social networks accessible over simple and feature mobile phones can be used as powerful motivators to induce self-training and viral spread among low-literate masses. Such services can further be used as vehicles for delivering core development services to disseminate development-related information, gather information in the form of real-time surveys and to perform randomized controlled trials and demographic studies. Such services also provide under-connected populations with a voice and a social identity. I have authored/co-authored 18 research papers published in peer-reviewed conferences. Over the last three years, the benefits of my research have directly impacted the lives of more than 250,000 people via various projects in Pakistan (Polly, Job-Audio Portal, Hello-Rozgar, Baang, Sawaal and Rah-e-Maa), India (Polly in collaboration with Babajob.com and Jharkhand Mobile Vaani) and West Africa (Polly-Message, Ebola-HealthLine). My novel approach to mass-disseminate information about job-opportunities to low-literate telephone users in Pakistan received the 2013 best paper award at the prestigious ACM CHI conference on Human Computer Interfaces. My research has been funded by prestigious organizations like Google (Technology and Gender Disparity, as PI), UNICEF (USD100,000, Rah e Maa: IVR services to disseminate birth preparedness awareness to expecting fathers, as PI) and GIZ (1 Million Euros, Hello Rozgar: Improving Access To Skills Training And Employment Opportunities For Marginalized People Using An Interactive Voice Response System, as Technical Lead). I have been the program committee chair for short papers for ICTD 2017. I am also a member of program committees for ICTD, ACM COMPASS (formerly ACM DEV) and a reviewer for CHI.

EXPERIENCE	1. Information Technology University, Punjab Assistant Professor, Computer Science Department	<i>Jun 2015 – now</i>
	2. Lahore University of Management Sciences (LUMS), Lahore, Pakistan Teaching Assistant of <i>Advanced Operating Systems</i>	<i>Sep 2011 – Dec 2011</i>
	3. Carnegie Mellon University, Pittsburgh, PA, USA Teaching Assistant of <i>Fundamental Data Structures and Algorithms</i>	<i>Dec 2010 – May 2011</i>
	4. FAST NU (National University of Computer & Emerging Sciences) Lahore, Pakistan Lecturer (permanent faculty), Computer Science department	<i>Aug 2009 – Jul 2010</i>
	5. FAST NU (National University of Computer & Emerging Sciences) Lahore, Pakistan Instructor (permanent faculty), Computer Science department	<i>Jul 2005 – Jul 2009</i>
	6. SSI (Strategic Systems International) LAHORE Integrated the blood and urine analysis system with the medical database using PC serial port.	<i>Feb 2005 – Sep 2005</i>
	7. FAST NU (National University of Computer & Emerging Sciences) LAHORE Lab Instructor for the undergraduate course of <i>Computer Logic and Design</i>	<i>Jan 2005 – Jun 2005</i>
	8. FAST NU (National University of Computer & Emerging Sciences) LAHORE Teaching Assistant for the under-graduate Course of <i>Physics-II</i>	<i>Jan 2004 – Jun 2004</i>

TEACHING EXPERIENCE

Courses

- Computational Linguistics (Grad)
- Natural Language Processing (Grad)
- Speech Processing (Grad)
- Data Structures & Algorithms (Undergrad)
- Computer Organization & Assembly Language (Undergrad)
- Computer Architecture (Undergrad)
- Advanced Computer Architecture (Grad)

Labs

- Embedded Systems
- Microprocessor Interfacing
- Computer Organization & Architecture
- Computer Logic & Design

Designed lab manuals for the Electrical Engineering Department at NUCES-FAST for the following courses:

- Computer Logic and Design
- Computer Organization and Architecture
- Microprocessor Interfacing
- Embedded Systems
- System Programming

- PUBLICATIONS**
- [1]. **Agha Ali Raza**, Bilal Saleem, Shan Randhawa, Zain Tariq, Awais Athar, Umar Saif, Roni Rosenfeld, *Baang: A Viral Speech-based Social Platform for Under-Connected Populations*. In Proceedings of the 2018 ACM SIGCHI Conference on Human Factors in Computing Systems, April 21-26, Montréal, Canada.
 - [2]. Haris Bin Zia, **Agha Ali Raza**, Awais Athar, *PronouncUR: An Urdu Pronunciation Lexicon Generator*. In 11th International Conference on Language Resources and Evaluation (LREC 2018), May 07-12, Miyazaki, Japan.
 - [3]. Waleed Riaz, Haris Durrani, Suleman Shahid, **Agha Ali Raza**, *ICT Intervention for Agriculture Development: Designing an IVR System for Farmers in Pakistan*. In Proceedings of the International Conference on Information and Communication Technologies and Development (ICTD '17), Nov 16-19, 2017, Lahore, Pakistan.
 - [4]. Sacha St-Onge Ahmad, Mustafa Naseem, **Agha Ali Raza**, *Maternal Awareness for Low-Literate Expecting Parents via Voice-Based Telephone Services*, In *HCI Across Borders Symposium* and Proceedings of the 2017 ACM SIGCHI Conference on Human Factors in Computing Systems. May 06-11, 2017, Denver, CO, USA.
 - [5]. Abdullah Kharal, Mustafa Naseem, Sacha St-Onge Ahmad, **Agha Ali Raza**, *Sustainable IVR-Based Social Media for the Developing World*, In *HCI Across Borders Symposium* and Proceedings of the 2017 ACM SIGCHI Conference on Human Factors in Computing Systems. May 06-11, 2017, Denver, CO, USA.
 - [6]. **Agha Ali Raza**, Rajat Kulshreshtha, Spandana Gella, Sean Blagsvedt, Maya Chandrasekaran, Bhiksha Raj, Roni Rosenfeld, *Viral Spread via Entertainment and Voice Messaging Among Telephone Users in India*. In Proceedings of the International Conference on Information and Communication Technologies and Development (ICTD '16), Jun 03-06, 2016, Ann Arbor, Michigan, USA.
 - [7]. Aditya Vashistha, **Agha Ali Raza**, Umar Saif, Roni Rosenfeld, Richard Anderson, *Changing Perceptions of Citizens of India and Pakistan*. In *Development Consortium: HCI Across Borders* and Proceedings of the 2016 ACM SIGCHI Conference on Human Factors in Computing Systems. May 07-12, 2016, San Jose, USA.
 - [8]. Nikolas Wolfe, Juneki Hong, **Agha Ali Raza**, Bhiksha Raj and Roni Rosenfeld, *Rapid Development of Public Health Education Systems in Low-Literacy Multilingual Environments: Combating Ebola Through Voice Messaging*, in SLaTE (Workshop on Speech and Language Technology in Education), Satellite Event of INTERSPEECH 2015, September 4-5, 2015, Leipzig, Germany.
 - [9]. Yibin Lin, **Agha Ali Raza**, Jay-Yoon Lee, Danai Koutra, Roni Rosenfeld and Christos Faloutsos, *Influence Propagation: Patterns, Model and a CaseStudy*, in PAKDD2014, the 18th Pacific-Asia Conference on Knowledge Discovery and Data Mining, May 13-16, 2014, Tainan, Taiwan.
 - [10]. Haohan Wang, **Agha Ali Raza**, Yibin Lin and Roni Rosenfeld, *Behavior Analysis of Low-literate Users of a Viral Speech-based Telephone Service*, in Proceedings of the 4th Annual Symposium on Computing for Development, ACM DEV-4. December 6-7, 2013, Cape Town, South Africa.
 - [11]. **(CHI Best Paper Award) Agha Ali Raza**, Farhan Ul Haq, Zain Tariq, Mansoor Pervaiz, Samia Razaq, Umar Saif and Roni Rosenfeld, *Job Opportunities through Entertainment: Virally Spread Speech-Based Services for Low-Literate Users*, in Proceedings of the 2013 ACM SIGCHI Conference on Human Factors in Computing Systems. April 27-May 2, 2013, Paris, France.
 - [12]. **Agha Ali Raza**, Farhan Ul Haq, Zain Tariq, Umar Saif and Roni Rosenfeld, *Spread and Sustainability: The Geography and Economics of Speech-Based Services*. In Proceedings of ACM DEV, January 11-12, 2013, Bangalore, India.
 - [13]. **Agha Ali Raza**, Mansoor Pervaiz, Christina Milo, Samia Razaq, Guy Alster, Jahanzeb Sherwani, Umar Saif, and Roni Rosenfeld. *Viral entertainment as a vehicle for disseminating speech-based services to low-literate users*. In Proceedings of the Fifth International Conference on Information and Communication Technologies and Development, March 12-15, 2012, Atlanta, Georgia, USA.
 - [14]. **Agha Ali Raza**, Sarmad Hussain, Huda Sarfraz, Inam Ullah, Zahid Sarfraz, *An ASR System for Spontaneous Urdu Speech*, in the Oriental COCOSDA 2010 conference, Nov. 24-25, 2010, Katmandu, Nepal.
 - [15]. Huda Sarfraz, Sarmad Hussain, Riffat Bokhari, **Agha Ali Raza**, Inam Ullah, Zahid Sarfraz, Sophia Pervez, Asad Mustafa, Iqra Javed, Rahila Parveen, *Speech Corpus Development for a Speaker Independent Spontaneous Urdu Speech Recognition System*, in the Oriental COCOSDA 2010 conference, Nov. 24-25, 2010, Katmandu, Nepal.
 - [16]. Huda Sarfraz, Sarmad Hussain, Riffat Bokhari, **Agha Ali Raza**, Inam Ullah, Zahid Sarfraz, Sophia Pervez, Asad Mustafa, Iqra Javed, Rahila Parveen, *Large Vocabulary Continuous Speech Recognition for Urdu*, in International conference on the Frontiers of Information Technologies, December 21-23, 2010, Islamabad, Pakistan.
 - [17]. **Agha Ali Raza**, Sarmad Hussain, Huda Sarfraz, Inam Ullah, Zahid Sarfraz, *An ASR System for Spontaneous Urdu Speech*, NU Graduate Colloquium on Computer Sciences (GCCS), 30 Jan 2010, Department of Computer Science, FAST National University, Lahore, Pakistan.
 - [18]. **Agha Ali Raza**, Master of Science (Computer Science) thesis on *Design and Development of an Automatic Speech Recognition System for Urdu*, June 2009.
 - [19]. **Agha Ali Raza**, Sarmad Hussain, Huda Sarfraz, Inam Ullah, Zahid Sarfraz, *Design and development of phonetically rich Urdu speech corpus*, Proceedings of O-COCOSDA'09 and IEEE Xplore; O-COCOSDA'09, 10-13 Aug 2009, School of Information Science and Engineering of Xinjiang University, Urumqi, China.
 - [20]. **Agha Ali Raza**, Awais Athar, and Sajid Nadeem, *N-GRAM Based Authorship Attribution in Urdu Poetry*, Proceedings of the Conference on Language and Technology 2009 (CLT09), Lahore, Pakistan, Jan 2009.
 - [21]. **Agha Ali Raza**, Zulfiqar Habib, Manabu Sakai *Interpolation with rational cubic spirals*, Proceedings of the 4th IEEE International Conference on Emerging Technologies (IEEE Catalog No. CFP08617, ISBN: 978-1-4244-2211-1, Library of Congress: 2008901427), Rawalpindi, Pakistan, Oct. 2008.
 - [22]. **Agha Ali Raza**, Asma Zaib, Sana Altaf, Zulfiqar Habib, *On a Special case of path planning*, Proceedings of the 7th CIIT Workshop on Research in Computing (ISBN: 978-969-8779-18-4), Lahore, Pakistan, June 2008.

LANGUAGES AND TOOLS C/C++, Java, Assembly Language (Intel x88, x386, Intel 8051/52 MC series, PIC MC series), PHP, LUA, VERILOG, PROLOG, CMU Sphinx, FreeSwitch, Voxeo Tropo, MATLAB, Mathematica, National Instruments' Multisim, LogicWorks, Proteus.

- HONOURS AND AWARDS**
- CHI 2013 Best Paper Award
 - Fulbright 2010 Doctoral scholarship
 - Highest CGPA of 3.96 in Master of Computer Science at NUCES FAST

- ACADEMIC SERVICES**
- *Program Committee Chair* for Short Papers (Notes) for ICTD 2017.
 - Organized ICTD 2017 in Pakistan at ITU. ICTD is the flagship conference in the domain of Information and Communication Technologies for Development.
 - Member of *Board of Studies* of Department of Applied Linguistics at Kinnaird College for Women University.
 - Member of *Technical Program Committee* (papers) for ICTD2016.
 - Member of *Technical Program Committee* (papers and posters) for ACM DEV2015 and ACM DEV2016.
 - *Publication Chair* and member of *Technical Program Committee* for CLT2016.
 - *Reviewer* for CHI 2015 – 2018.
 - Faculty Advisor to the SOFTEC student society of FAST-NU. Supervised the SOFTEC 2008 and SOFTEC 2009 events. SOFTEC (SOFTware Exhibition & Competition) is the largest international student-arranged IT extravaganza in Pakistan
 - Faculty Co-Advisor to the Interface society of FAST NU, which publishes the annual university magazine
 - Faculty Advisor to the DRAM@F society (dramatic society) of FAST-NU. The society arranged the annual drama festival 2008 under my supervision
 - Faculty Advisor to the CREATIVE society of FAST-NU, which arranges academic and recreational student events
- HARDWARE PROJECTS**
- **Chip Programmer/Burner:** Hardware and software of the flash code-memory programmer for AT89S52 microcontroller, using PC parallel port interface; compatible with other variants of 8051/52 series having SPI and Serial Programming facility
 - **Infrared Communication Protocol:** Implemented the receiver for the RC-5 Infrared Protocol (Philips) using AT89S52 and developed remote interface for home electrical appliances' control (lights, fans etc.)
 - **Various projects using Atmel® 8051/52 series and Microchip® PIC series of microcontrollers including:**
 - EEPROM (93C66, I²C mode programming) interface
 - Keypad and 7-segment decoder (x 4) interface
 - LCD (HD44780) interface
 - DC motor speed control using Pulse Width Modulation
 - *Triac* based AC voltage control
 - Sine wave Synthesis
 - Dual slope volt meter and A-D converter
 - Bipolar stepper motor control
 - SPI, I²C and USART based communication interfaces
- EXTRA CURRICULAR ACTIVITIES**
- Athletics
 - Debates
 - Pilot/Escort in 1998 Annual Parade of Garrison Academy