

Rohit Kumar

EXPERIENCE

- 15 years on research and development (R&D) of interactive systems and language technologies
- Over 60 peer-reviewed publications (with 900+ citations since 2002)
- Hands-on developmental approach to leading small and mid-sized R&D teams
- Technical proposal development and collaboration across business functions

EMPLOYMENT

Raytheon BBN Technologies (October 2011 – present)

Current position: Senior Scientist

- Leading an interdepartmental team to develop an **intelligent tutoring systems** (ITS) for robot-assisted surgical training
- Led a mid-sized team through a DARPA sponsored **speech translation** project. Achieved leading average score on primary metric (conversational goal achievement) across all system variations evaluated. Conceived, proposed and developed domain customization functionality that outperformed all evaluated systems
- Wrote a contract winning proposal to the US Navy; Directed a R&D team to develop an ITS which is being productized into an **online learning platform** for high school students
Press release: http://www.raytheon.com/news/feature/bbn_learning_platform.html
- Individual contributions to student behavior modeling (example tracing) and speech translation system (error detection & recovery, multimodal interaction)

Alelo (2008)

Research Internship

- Individual contributions to development and evaluation of authoring tools for training systems

Language Technologies Institute (LTI), Carnegie Mellon University (CMU) (2005-2011)

Graduate Research Assistant

- Individual contributions to conversational agents (reusable behavioral components), collaborative learning (social interaction) & dialog systems (trigger models)

Language Technologies Research Center (LTRC), IIIT Hyderabad (2003 – 2005)

Research Scientist

- Individual contribution to text-to-speech (TTS) engine, porting to mobile platform (unit pruning algorithms) and telephony-based infrastructure development for speech data collection

EDUCATION

Doctor of Philosophy in Language and Information Technologies (2011)

Language Technologies Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania

Dissertation: Socially Capable Conversational Agents for Multi-Party Interactive Situations

Advisor: Prof. Carolyn P. Rosé

Master of Science in Language Technologies (2007)

Language Technologies Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania

Bachelor of Engineering with Honors (2003)

Punjab Engineering College, Punjab University, Chandigarh, India

*Major: Computer Science and Engineering***PUBLICATIONS**

Publications span various artificial intelligence and language technology topics including: conversational agents, speech translation, intelligent tutoring, collaborative learning, error detection, behavior modeling, tutorial dialog, dialog systems, authoring tools and speech synthesis

Rohit Kumar, Sanjika Hewavitharana, Nina Zinovieva, Matthew E. Roy, Edward Pattison-Gordon, **Error-Tolerant Speech-to-Speech Translation**, MT Summit XV, 2015

Rohit Kumar, Carolyn P. Rosé, **Triggering Effective Social Support for Online Groups**, ACM Trans. on Interactive Intelligent Systems, 2014, vol. 3.4

Rohit Kumar, Matt Roy, R Bruce Roberts, John Makhoul, **Towards Automatically Building Example-Tracing Tutor Models**, Intelligent Tutoring Systems (ITS), 2014

Rohit Kumar, Rohit Prasad, Shankar Ananthakrishnan, Aravind Vembu, Dave Stallard, Stavros Tsakalidis, Prem Natarajan, **Detecting OOV Named Entities in Conversational Speech**, Interspeech, 2012

Rohit Kumar, Carolyn P. Rosé, **Architecture for building Conversational Agents that support Collaborative Learning**, IEEE Transactions on Learning Technologies, 2011, vol. 4.1

Rohit Kumar, Hua Ai, Jack Beuth, Carolyn P. Rosé, **Socially-capable Conversational Tutors can be Effective in Collaborative-Learning situations**, Intelligent Tutoring Systems (ITS), 2010

Rohit Kumar, Carolyn P. Rosé, Mahesh Joshi, Yi-Chia Wang, Yue Cui, Allen Robinson, **Tutorial Dialogue as Adaptive Collaborative Learning Support**, Intl. Conf. on AI in Education (AIED), 2007

Rohit Kumar, S. P. Kishore, **Automatic Pruning of Unit Selection Speech Databases for Synthesis without Loss of Naturalness**, Interspeech, 2004

Full listing as well as digital copies of publications available if required

SERVICE & RECOGNITION

Professional Society IEEE Senior Member (Elevated 2014), Richard E. Merwin Scholarship (2003)

Awards ELC Learning Champion (2016), BBN SDP Publication Award (2014, 2015), PEC Undergraduate Silver Medal (2003)

Guest Editor IJAIED Special Issue on Intelligent Support for Learning in Groups (ISLG) 2013

Invited Talks UCLA (2016), NATO-STO (2015), IIIT-H (2014), CMU (2010), PITT (2009)

SOFTWARE DEVELOPMENT

Current Projects Java, JavaScript, MySQL, Windows, Linux

Other C++, Perl, Bash script, Visual C++, PHP, JNI, Weka, SGE, Elasticsearch, Spark, SQLite, SVM-Light, OpenNLP, SRILM, CMU SLM Toolkit, Mallet, CRF++, Phoenix Parser, Stanford Parser, OpenNI for Kinect, OpenCV, JSpeex, CMU Flite, GraphViz, Dojo, SigmaJS, MathJax, Tomcat, JGit, Minitab