Karthik Raghunathan

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Research Interests Artificial Intelligence, Natural Language Processing, Human-Robot Interaction

Education

Stanford University, California — 2008 onwards
Master of Science in Computer Science — Current GPA: 3.91/4.00

National Institute of Technology (NIT), Calicut, India — 2004 - 2008
Bachelor of Technology in Computer Science and Engineering — CGPA: 9.14/10.00

Software Skills

Programming Languages: C, C++, Perl, Java, C#, MATLAB, Lisp, SQL, MDX, Intel x86 assembly

Speech / NLP / AI Tools: HMM Toolkit (HTK), CMU Sphinx Automatic Speech Recognition System, Festival Speech Synthesis System, VoiceXML, Berkeley Aligner, Giza++, Moses Statistical Machine Translation Toolkit, Robot Operating System (ROS)

Other Tools: LaTeX, LEX, YACC, Vim, Eclipse, Microsoft Visual Studio, Microsoft SQL Server Management Studio, TestNG Java Testing Platform, SVN

Operating Systems: Linux, Windows, DOS

Work Experience

Microsoft Corporation — **Software Development Engineer Intern**
Redmond, WA — June 2009 - Sept 2009
Worked with the Revenue & Relevance Team at Microsoft adCenter on the *adCenter Marketplace Scorecard* project, aimed at developing a standard reliable set of metrics that measure the company's performance in the online advertising marketplace and aid in making informed decisions to maximize the marketplace value. Also initiated the efforts on a statistical learning model that effectively predicts changes in the advertisers' bidding behavior with time.

Stanford Natural Language Processing Group — **Graduate Research Assistant**
Stanford University, CA — Sept 2008 onwards
Working on Stanford's statistical machine translation (SMT) system (as part of the DARPA GALE Program) under the guidance of Prof. Christopher Manning. Led Stanford's efforts for the GALE Phase 3 Chinese-English MT evaluation as part of the IBM-Rosetta team.

Microsoft Research (MSR) Lab India — **Research Intern**
Bangalore, India — Apr 2007 - Jul 2007
Investigated the tolerance of statistical machine translation systems to noise in the training corpus, particularly the kind of noise that accompanies automatic extraction of parallel corpora from comparable corpora. Also worked on the design of an online game for NLP data acquisition.

International Institute of Information Technology (IIIT) — **Summer Intern**
Hyderabad, India — Apr 2006 - Jun 2006
Worked on the rapid prototyping of restricted domain spoken dialog systems (SDS) for Indian languages. Developed the *IIIT Receptionist*, a SDS in Tamil, Telugu and English languages, which functioned as an automatic receptionist for IIIT.

Course Projects

Normalization of text in SMS messages using an SMT system — Apr 2009 - Jun 2009
Developed a system for converting textspeak (language used in SMS communication) to proper English using the Moses statistical machine translation system.

STAIR spoken dialog project — Jan 2009 - Apr 2009
Developed a spoken dialog interface to the Stanford AI Robot (STAIR) for giving instructions for fetching tasks, under the guidance of Prof. Dan Jurafsky and Prof. Andrew Ng.

TagEz: Flickr tag recommendation Sept 2008 - Dec 2008
Built an automatic tag prediction system for images on Flickr.com using machine learning on both linguistic and vision features, as part of the graduate course on Machine Learning.

Multi-lingual Spoken Dialog Systems (B.Tech Final Year Project) Jul 2007 - Mar 2008
Extended the work done at IIIT to develop a restricted domain multi-lingual spoken dialog system which automatically identifies the speaker's language at runtime and replies accordingly in the appropriate language. Implemented for English, Tamil and Telugu.

Bayesian Spam Filtering (B.Tech Pre-Final Year Mini Project) Dec 2006 - Apr 2007
Developed an intelligently learning, content-based, Bayesian text classifier for filtering spam.

More details about undergraduate projects at karthikshome.googlepages.com

Selected Course Work

At Stanford: Machine Learning, Natural Language Processing, Information Retrieval and Web Mining, Speech Recognition and Synthesis, Natural Language Understanding, Foundations of Cognition, Research Project in AI, Lexical Semantics of Space and Motion, Information-theoretical models of language and cognition, Designing casual learning software for iPhones

At NITC: Advanced Data Structures, Design and Analysis of Algorithms, Computer Architecture, Compiler Construction, Computer Networks, Database Management Systems, Operating Systems, Software Engineering, Communication and Information Theory, Computational Combinatorics and Graph Theory, Computer Hardware Design, Discrete Computational Structures, Theory of Computation, Data Structures and Algorithms, Probability and Statistics

Activities

Secretary, Computer Science and Engineering Association (CSEA) Jul 2007 - Apr 2008
Headed the CSEA (the official association of the Department of Computer Science and Engineering), which plans and organizes all computer science related activities at NIT Calicut.

Participant, MSR-IISc Summer School on NLP May 3, 2007 - May 18, 2007
Attended the summer school on Natural Language Processing at the Indian Institute of Science (IISc), Bangalore, conducted by Microsoft Research (MSR) India in collaboration with IISc and Department of Science and Technology, Government of India.

Speaker, Seminar-cum-workshop on Spoken Dialog Systems Oct 2006
Conducted a seminar-cum-hands-on workshop during Tathva '06, guiding the participants to implement restricted domain spoken dialog systems using open source speech tools.

Participant, Free Open Source Software (FOSS) Meet 2005 - 2008
Attended all the four editions of the annual FOSS Meet at NIT Calicut from 2005 to 2008.

Member of Organizing Committee, Tathva and Ragam 2005 - 2007
Have been the member of the organizing committee in various editions of NIT Calicut's annual all-India technical festival (Tathva) and cultural festival (Ragam).

Awards and Achievements

- Scored 1560/1600 (Verbal: 760/800, Quantitative: 800/800, Analytical Writing: 5.0/6.0) in the GRE General Test (2007)
- Academic proficiency awards for topping the department in 5th and 6th semester of B.Tech (2006, 2007)
- Certificate of Merit from Council of Scientific and Industrial Research (CSIR), India for featuring among the top 20 in the state in the AISSE exam, participated in the CSIR Program on Youth for Leadership in Science (2002)
- Winner of National Science Day Quiz Contest conducted by Physical Research Lab, Ahmedabad, India (2002)
- National Finalist, Indian National Cartographic Association's annual Geography and Map quiz (2002)
- Completed a one year course on playing the keyboard, performed at a concert