

Wei Chen

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Education

Carnegie Mellon University , Pittsburgh, PA Ph.D. in Computer Science - Language Technologies	expected: 02/2012
Carnegie Mellon University , Pittsburgh, PA M.S. in Computer Science - Language Technologies	08/2009
Johns Hopkins University , Baltimore, MD M.S.E. in Computer Science	05/2007
Peking University , Beijing, China B.S. in Computer Science	07/2005

Awards

CMU RESEARCH FELLOWSHIP	2008-2012
GOOGLE ANITA BORG SCHOLARSHIP FINALIST	2010
AAAI SCHOLARSHIP	2008

Computer Skills

Programming Languages: C/C++ (proficient), Perl (proficient), C# (experienced), Java (experienced), Lisp (experienced), Python (experienced), SQL (experienced).

Operating Systems: Windows (proficient), Linux (proficient), Sun Solaris (experienced).

Mathematical Tools: Matlab (experienced).

Selected Publications

Wei Chen, Jack Mostow, and Gregory Aist. 2011. Using Automatic Question Generation to Evaluate Questions Generated by Children. *AAAI 2011 Fall Symposium on Question Generation*. Arlington, VA.

Wei Chen, Jack Mostow. A Tale of Two Tasks: Detecting Children's Off-Task Speech in a Reading Tutor. 2011. In *INTERSPEECH: Proceedings of the 12th Annual Conference of the International Speech Communication Association*.

Wei Chen, Jack Mostow, and Gregory Aist. Exploiting Predictable Response Training to Improve Automatic Recognition of Children's Spoken Responses. 2010. In *ITS: Proceedings of the Tenth International conference on Intelligent Tutoring Systems: Bridges to Learning*. Pittsburgh, PA.

Wei Chen, Gregory Aist and Jack Mostow. Generate Questions Automatically from Informational Text. 2009. In *Proceedings of The 2nd Workshop on Question Generation*. Brighton, UK.

Jack Mostow and **Wei Chen**. Generating Instruction Automatically for the Reading Strategy of Self-Questioning. 2009. In *AIED: Proceedings of The International Conference on Artificial Intelligence in Education*. Brighton, UK.

Wei Chen. Understanding Mental States in Natural Language. 2009. In *Proceedings of The Eighth International Workshop on Computational Semantics (IWCS-8)*. Tilburg, the Netherlands.

Wei Chen and Scott E. Fahlman. Modeling Mental States and Their Interactions. 2008. *AAAI 2008 Fall Symposium on Biologically Inspired Cognitive Architectures*. Arlington, VA.

Wei Chen. Dimensions of Subjectivity in Natural Language (Short Paper). 2008. In *ACL: Proceedings of the Annual Meeting of the Association for Computational Linguistics - Human Language Technology Conference*. Columbus Ohio.

Unpublished Technical Reports

Wei Chen. A Constrained Language Model for Recognizing Children's Questions. *Speech Recognition Project Report*. Language Technologies Institute, Carnegie Mellon University, Dec 2009.

Wei Chen. Discriminative Word Alignment with Syntactic Features. *Machine Translation Lab Report*. Language Technologies Institute, Carnegie Mellon University, May 2008.

Wei Chen. Building Language Model on Continuous Space Using Gaussian Mixture Models. *Technical Report submitted to Center of Language and Speech Processing*, Johns Hopkins University, July 2007.

Vamshi Ambati and **Wei Chen.** Cross Lingual Syntax Projection for Resource-Poor Languages. 2007.

Research Experience

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute-Robotics Institute*, 12/2010-present
Automatic detection of children's off-task speech in tutorial dialogs.
- Extracted 1250 acoustic and 3 lexical features for off-task speech detection.
- Used AdaBoost algorithm to rank and select features on imbalanced training data.
- Trained support vector machines to detect off-task speech, yielding state-of-the-art 88% detection rate at 10% false positives.

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute-Robotics Institute*, 07/2009-11/2010
Exploiting Predictable Response Training to Improve Automatic Recognition of Children's Spoken Questions.
- Used automatic generation of questions to build a language model that predicts children's spoken questions.
- Compared performance of 8 language models on an automatic speech recognition task.
- Proposed 2 filtering models to post-process speech recognition output.
- The proposed language model yielded speech recognition accuracy 35% higher than baseline trigrams.

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute-Robotics Institute*, 08/2008-01/2009
Question generation and answering from children stories.
- Developed automatic question generation from deep text analysis.
- Implemented methods for automatic scoring of answers.
- Designed an automatic intervene scenario for Project LISTEN's reading tutor to scaffold children's learning of reading comprehension strategies.

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute*, 10/2007-10/2008
Understanding mental states in natural language.
- Developed a multi-mental-context network that represents various mental states expressed in English.
- Designed and implemented an inter-contextual inference mechanism which performs reasoning based on new information and a multi-modal memory.
- Implemented and modified anaphora resolution algorithm for children stories.
- Analyzed experimental results of the mental state understanding system on children stories.
- Implemented a package for mental state understanding from raw English text (runs on Linux machines).

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute*, 02/2008-05/2008
Applying syntactic features to discriminative word alignment.
- Designed and implemented three types of syntactic features for discriminative word alignment.
- Modified existing implementation of the belief prorogation algorithm to incorporate the new features.
- Analyzed experimental results on Chinese-English corpus.

JOHNS HOPKINS UNIVERSITY, *Center of Language and Speech Processing*, 02/2007-07/2007
Building a language model on continuous space using Gaussian Mixtures.
- Experimented on a new method for predicting infrequent words by borrowing information from frequent words that are close to them in a word vector space.
- Designed data structures and implemented Non-negative Matrix Factorization algorithm on large sparse matrices.
- Trained Gaussian mixture models on word vector space using the HTK toolkit.
- Trained MAP adaptation models to refine the language model.
- Analyzed experimental results.

JOHNS HOPKINS UNIVERSITY, Computer Science Department,

05/2006-08/2006

Morphology annotation.

- Generated training data files for fourteen different languages from the Germanic, Semitic, and Indo-European families for morphology analysis.
- Reported performance of Systran.

Teaching Experience

CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA

Spring 2010

Teaching Assistant: Machine Learning (10601, taught by Dr. Roni Rosenfeld)

- Designed homework problems.
- Graded homeworks.
- Held office hours.

CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA

Spring 2010

Teaching Assistant: LTI Colloquium (11700, taught by Dr. Teruko Mitamura)

- Created and maintained course website.
- Designed posters for each seminar.
- Scheduled student meetings with speakers.

JOHNS HOPKINS UNIVERSITY, Baltimore, MD

Fall 2006

Head Teaching Assistant: Introduction to Algorithms (600.363/463, taught by Dr. Baruch Awerbuch)

- Gave lectures to 37 graduate/undergraduate students.
- Held review sessions.
- Held office hours.
- Graded homeworks.

JOHNS HOPKINS UNIVERSITY, Baltimore, MD

Spring 2006

Course Assistant: Data Structures (600.226, taught by Dr. Peter Froehlich)

- Graded homeworks and final projects.
- Held office hours.

JOHNS HOPKINS UNIVERSITY, Baltimore, MD

Fall 2005

Course Assistant: Computer Systems Fundamental (600.333/433, taught by Dr. Gerald Masson)

- Graded homeworks and exams.
- Held office hours.

Intern Experience

ADVANCED SYSTEM DEVELOPMENT CORPORATION (Sponsored by IBM and Tsinghua University)

06/2004-08/2004

Website Designer and Head Sales Representative, Intern

- Added several search functions to the customer database for Asian Cup 2004 Ticket Website.
- Created advertisements for the ticket website.
- Supervised 5 other sales representatives.

Selected Presentations and Public Speech

AAAI 2008 FALL SYMPOSIUM ON BIOLOGICALLY INSPIRED ARTIFICIAL INTELLIGENCE

11/2008

Plenary Session Talk: summarized the BICA symposium to all the AAAI FSS-08 participants.

CMU-LTI STUDENT RESEARCH SYMPOSIUM

09/2008

Poster Presentation: the mental state understanding system.

Selected Implementations

Mental State Understanding Package (Python, Lisp), Carnegie Mellon University

03/2008-09/2008

Non-negative Matrix Factorization on Large Sparse Matrices (C), Johns Hopkins University

05/2007

Synchronous Multimedia Editing System (C++), HCI & Multimedia Lab, Peking University

05/2004-06/2005

Professional Activities

REVIEWER: IEEE Transaction on Learning Technologies, Journal of Dialogue & Discourse, the Third Workshop on Question Generation (QG 2010), AAAI 2009 Fall Symposium on Biologically Inspired Artificial Intelligence, AAAI 2008

Fall Symposium on Biologically Inspired Artificial Intelligence.

THE FREEBSD HANDBOOK PROJECT (CHINESE EDITION)
Bug Reporter

2004-present

Leadership and Volunteer Experiences

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute*, Pittsburgh, PA 2009-2010
CMU-LTI cluster maintenance committee member: maintain hardware for the LTI cluster.

WOMEN@SCS, *School of Computer Science, CMU*, Pittsburgh, PA 02/2009
Graduate student volunteer at Google's Day: joined lunch discussion with Pittsburgh local junior high school girls and Google Engineers; demonstrated and explained algorithms with card tricks to high school girls.

CARNEGIE MELLON UNIVERSITY, *Language Technologies Institute*, Pittsburgh, PA 2007-2010
CMU-LTI student activities committee member: organized LTI student winter skating events.

AAAI FSS-08, Arlington, VA 11/2008
Plenary Session Speaker: summarized the BICA symposium to all the AAAI FSS-08 participants.
Student Volunteer: assisted conference registration.

ACL/HLT-08, Columbus, OH 06/2008
Student Volunteer: assisted conference registration, provided help on setting up poster boards.

PEKING UNIVERSITY, *Dept. of Computer Science and Technology*, Beijing, China 09/2002-09/2003
Head of the Sports Department of Student Association