

Wen Wu

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Computer Science Department
Language Technologies Institute
School of Computer Science
Carnegie Mellon University
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Visa: F-1 Student, OPT (starting 11/15/2009)
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1. ACADEMIC EDUCATION

Carnegie Mellon University

PhD thesis: Multimedia Technologies for Landmark-Based Vehicle Navigation advisor: Jie Yang
PhD in Language and Information Technologies, Cumulative QPA: 3.71/4.0 11/2009
MS in Language Technologies, Cumulative QPA: 3.83/4.0 5/2005

National University of Singapore

MS in Computer Science (by research) advisors: Chin-Hui Lee and Tat-Seng Chua
MS Thesis: A Maximal-Figure-of-Merit Learning Approach to Text Categorization 1/2003

Tsinghua University, China

BE in Computer Science and Technology 7/2001

2. ACADEMIC POSITIONS

Post Doctoral Fellow 10/2009-present
Computer Science Department, School of Computer Science, Carnegie Mellon University
Working on automated methods to support the detection of depression in dementia
Working on a cognitive assistive system for coaching the use of home medical devices

Graduate Research Assistant 6/2003-11/2009
Language Technologies Institute, School of Computer Science, Carnegie Mellon University
Worked on vision-based multimedia technologies for landmark-based vehicle navigation
Worked on various text mining, information retrieval, machine learning, computer vision projects

Graduate Research Assistant 7/2001-4/2003
School of Computing, National University of Singapore
Worked on a performance-metric-driven framework for designing robust classifiers

Research Assistant 4/2000-6/2001
Institute of HCI and Media Integration, Dept. of Computer Science & Tech., Tsinghua University
Contributed to a web-based tool for remote education; worked on dissolve detection in MPEG video

3. INDUSTRY POSITIONS

Summer Intern, General Motors R&D Lab in Applied Minds Inc (AMI) 5/2006-8/2006
Applied the storytelling design idea to develop context-sensitive point of interest recommenders
Assisted the AMI next generation navigation and infotainment human machine interface project

Visiting Student, Microsoft Research Asia 3/2000-5/2000
Studied the problem of automatic generation of cartoon sketch from real images based on morphing

4. PUBLICATIONS

Refereed Journal Papers

- [J1] Wen Wu and Jie Yang. Semi-Automatically Labeling Objects in Images. In *IEEE Transactions on Image Processing (TIP)*, Volume 18, Issue 6, Pages 1340-1349, June 2009.
- [J2] Sheng Gao, Wen Wu, Chin-Hui Lee and Tat-Seng Chua. A Maximal Figure-of-Merit Learning Approach to Robust Classifier Design for Text Categorization. In *ACM Transactions on Information Systems (TOIS)*, Volume 24, Issue 2, Pages 190-218, April 2006.
- [J3] Wen Wu, Xilin Chen and Jie Yang. Detection of Text on Road Signs from Video. In *IEEE Transactions on Intelligent Transportation Systems (ITS)*, Volume 6, Issue 4, Pages 378-390, December 2005.

Refereed Conference and Workshop Papers

- [C1] Wen Wu, Fabian Blaiher, Jie Yang, Thomas Seder and Dehua Cui. A Prototype of Landmark-Based Car Navigation Using a Full-Windshield Head-Up Display System. In *ACM Intl. Conference on Multimedia - Workshop on Ambient Media Computing*, Beijing, China, October 2009.
- [C2] Mei Chen, Kapil Dev Dhingra, Wen Wu, Lei Yang, Rahul Sukthankar and Jie Yang. PFID: Pittsburgh Fast-Food Image Dataset. In *IEEE Intl. Conf. on Image Processing (ICIP)*, Cairo, Egypt, November 2009.
- [C3] Wen Wu and Jie Yang. Fast Food Recognition from Videos of Eating for Calorie Estimation. In *IEEE International Conference on Multimedia & Expo (ICME)*, New York City, USA, June 2009.
- [C4] Wen Wu and Jie Yang. Object Fingerprints for Content Analysis with Applications to Street Landmark Localization. In *ACM International Conference on Multimedia (ACM MM)*, Vancouver, Canada, October 2008.
- [C5] Wen Wu and Jie Yang. Semi-Supervised Learning of Object Categories from Paired Local Features. In *ACM Intl. Conf. on Image and Video Retrieval (CIVR)*, Niagara Falls, Can., July 2008.
- [C6] Vitor R. Carvalho, Wen Wu and William W. Cohen. Discovering Leadership Roles in Email Workgroups. In *Fourth Conference on Email and Anti-Spam (CEAS)*, CA, USA, August 2007.

- [C7] Wen Wu and Jie Yang. SmartLabel: An Object Labeling Tool Using Iterated Harmonic Energy Minimization. In *ACM International Conference on Multimedia (ACM MM)*, Santa Barbara, California USA, October 2006.
- [C8] Wen Wu, Jie Yang and Jing Zhang. A Multimedia System for Route Sharing and Video-based Navigation. In *IEEE Intl Conference on Multimedia & Expo (ICME)*, Toronto, Canada, July 2006.
- [C9] Wen Wu, Datong Chen and Jie Yang. Integrating Co-training and Recognition for Text Detection, In *IEEE International Conference on Multimedia & Expo (ICME)*, Amsterdam, The Netherlands, July 2005.
- [C10] Wen Wu, Xilin Chen and Jie Yang. Incremental Detection of Text on Road Signs from Video with Application to a Driving Assistant System. In *ACM International Conference on Multimedia (ACM MM)*, New York, USA, October 2004.
- [C11] Sheng Gao, Wen Wu, Chin-Hui Lee and Tat-Seng Chua. An MFoM Learning Approach to Robust Multiclass Multi-Label Text Categorization. In *21st International Conference on Machine Learning (ICML)*, Banff, Canada, July 2004.
- [C12] Sheng Gao, Wen Wu, Chin-Hui Lee and Tat-Seng Chua. A Maximal-Figure-of-Merit Learning Approach to Text Categorization. In *26th Annual International ACM SIGIR Conference*, Toronto, Canada, July 2003.

Theses

- [T1] Multimedia Technologies for Landmark-Based Vehicle Navigation, PhD thesis, CMU-LTI-09-014, Language Technologies Institute, School of Computer Science, Carnegie Mellon University, November 2009.
- [T2] A Maximal Figure-of-Merit Learning Approach to Text Categorization, Master's degree thesis, School of Computing, National University of Singapore, December 2002.
- [T3] Dissolve Detection in a MPEG Compressed Video Sequence, Bachelor degree thesis, Department of Computer Science and Technology, Tsinghua University, June 2001.

Submitted and Working Papers

- [W1] Wen Wu, Jie Yang and Xilin Chen. Intelligent Vision Systems for Landmark-based Vehicle Navigation. Submission being considered for publication in the book: *Computer Vision for Multimedia Applications: Methods and Solutions*, 2009.
- [W2] Wen Wu and Jie Yang. Recognition of City Buildings for Landmark-based Car Navigation. Submitted to *IEEE Transactions on Multimedia*, 2009.

5. SELECTED RESEARCH EXPERIENCES

Carnegie Mellon University

- a. Automated Methods to Support the Detection of Depression in Dementia 10/2009-present
Working on real-time continuous video/audio recordings in the non-private spaces of a nursing home special care dementia unit and sensor recordings (radiofrequency ID tags, motion, etc)
Working on machine learning algorithms that will automate the detection of potential activity and behavioral manifestations that distinguish depressed from non-depressed nursing home residents with cognitive impairment or dementia
- b. Recognizing City Buildings 10/2008-2009
Proposed a new method to recognize buildings via fingerprints, repeating patterns and context
- c. Landmark-Based Vehicle Navigation Using a Full-Windshield Display* 2008
Proposed an automated method for correcting non-planar distortion for a full-windshield display
- d. Fast Food Image Database Collection and Recognition for Obesity Research* 2008
Designed and implemented data collection of 101 foods from 9 food chains. Showed the benefits of this fast food database for obesity research by studying food recognition for calorie estimation.
- e. Object Fingerprints for Content Analysis and Street Landmark Recognition 2007, 2008
Proposed an approach to extract object fingerprints and applied it to street landmark localization
- f. Semi-Automatically Labeling Objects in Images 2005, 2006, 2008
Developed a semi-supervised learning-based approach for labeling objects in images
- g. Discovering Leadership Roles in Email Workgroups* 2005
Proposed an algorithm to infer leadership roles from emails exchanged among team members
- h. Detection of Text on Road Signs from Videos 2003, 2004
Developed a robust system for incrementally detecting text on road signs from video

National University of Singapore

- i. Text Categorization (TC)* 4/2002-12/2004
Proposed a new performance metric driven method to TC and published three papers.
- j. Word and Document Clustering via Latent Semantic Indexing (LSI) 1/2002-4/2002
Applied LSI to English word and document clustering and presented results in a department talk.

Tsinghua University

- k. Dissolve Detection in a MPEG Compressed Video Sequence 2/2001-6/2001
Implemented a dissolve detection method by examining DCT DC coefficients and motion vectors

6. SELECTED TEACHING EXPERIENCES

Teaching Assistant, 15-384 Robot Manipulation 8/2006-12/2006
 Carnegie Mellon University

Jobs (shared): office hours, grading HWs/exams, designing tournament projects, organizing demos.

Attended Carnegie Mellon University teaching seminars 2008-2009
 Overview of Student Motivation, Communicating across Cultures, Teaching Controversial Topics, etc

7. HONORS, MEMBERSHIPS, SERVICES

Carnegie Mellon University Research Fellowship 6/2003-11/2009

National University of Singapore Research Scholarship 7/2001-1/2003

Chinese Academy of Sciences Scholarship for Outstanding Science Student 1999

Tsinghua University Scholarship for Outstanding Undergraduates 1998

ShuRen Scholarship for Outstanding Graduates, NSFZ 1997

Award for Outstanding Student Leaders in Jiangsu Province, China 1997

Admitted by Tsinghua University exempt from National Higher Education Entrance Exam 1997

Membership:

Institute of Electrical and Electronics Engineers (IEEE)

Association for Computing Machinery (ACM)

Carnegie Mellon University Multicultural Book Club, LTI Student Activity Committee

Journal and Conference Reviewing:

Intl. Jour. of Computer Vision, Pattern Recognition, Neurocomputing, IEEE Trans. on Multimedia, IEEE Trans. on Intelligent Transportation Systems; Conf.: CVPR, ICCV, ICPR, ECCV, ACCV

8. SELECTED FUNDING PROPOSAL ACTIVITIES

Wrote a CMU V-Unit summer project proposal – *Fast Food Image Database Collection and Recognition for Obesity Research*, approved, 2008.

Contributed to a NSF 3-year project proposal – *Driving Distraction Management*, approved, 2008.

Helped write two sections in a National Geospatial Intelligence Agency (NGA) University Research Initiatives (NURI) FY08 proposal – *Object Recognition from Image Structure and Surroundings with Minimal Human Supervision*, selected but unfunded due to program change, 2008.

Helped write and revise a General Motors Research & Planning GATS 2007 proposal – *Game-Inspired Context Sensitive Visual Display*, approved, 2007.

Helped write and revise a General Motors Research & Planning GATS 2006 proposal – *Trip Planning and in-Vehicle Navigation*, approved, 2005.

9. SELECTED PROJECT EXPERIENCES

- a. RoomFinder - Dialogue Systems Lab*
Built a dialogue manager for giving directions between any two rooms in CMU SCS buildings using RavenClaw and natural language generation systems; ours performed best in the class.
- b. Are you for real? Distinguishing Real from Fake - Language & Statistics Project*
Built a robust classifier to distinguish real and fake articles using CMU language modeling toolkit; our classifier achieved 91.5% (hard metric) on the development set, which ranked first in the class.
- c. Blobworld and its Application to Image Retrieval - Computer Vision Project*
Studied and analyzed Blobworld tool and steered it to a new dataset of image retrieval and also a task of text detection from natural scene images
- d. Information Retrieval Project
Implemented several weighting schemes (including tf-idf) and ranking functions (including Okapi BM25) for large-scale text retrieval (1G) using the Lemur toolkit

10. SOME REGISTERED GRADUATE COURSES

Computer Vision, taught by Martial Hebert	Grade: A
Structure of Information Networks, taught by Jon Kleinberg	Grade: A
Information Retrieval, taught by Jamie Callan and Yiming Yang	Grade: A
Adv. Statistics Learning Seminar, taught by Yiming Yang	Grade: A-
Project Dialog Systems, taught by Alex Rudnicky and Alan W Black	Grade: A
Special Topic Information Retrieval, taught by Joemon M Jose	Grade: A
Language & Statistics, taught by Roni Rosenfeld	Grade: A
Software Engineering for IT, taught by Eric H. Nyberg	Grade: A

* Collaboration including other researchers and students.
References are available upon request.