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Department of Computer Science, National Tsing Hua University
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EDUCATION

Ph.D., Information Science, Faculty of Computing and Information Science (CIS), Cornell University
(August 2008 – July 2011)
Committee: Dr. Susan Fussell (co-chair), Dr. Daniel Cosley (co-chair), Dr. Claire Cardie, Dr. Jeffrey Hancock
Dissertation: *From Cultural Diversity to Group Creativity: Using Language-Retrieved Pictures to Support Computer-Mediated Intercultural Brainstorming*

Ph.D. student, Language Technologies Institute, Carnegie Mellon University
(August 2006 – May 2008. Transferred to Cornell University)
Advisor: Dr. Susan Fussell

M.S., Computer Science, National Chengchi University
(Sept. 2002 – July 2004)

B.S., Earth Sciences, National Taiwan Normal University
(Sept. 1995 – June 1999)

RESEARCH INTERESTS

Human-computer interaction (HCI), social computing, computer supported cooperative work (CSCW)
Educational technology, computer supported collaborative learning (CSCL), intelligent tutoring system
Applied machine learning and language technology
Cultural factors in HCI/CSCW, intercultural communication, computer-mediated communication (CMC)
Language use, group creativity, social and cognitive processes in collaboration

PROFESSIONAL EXPERIENCE

Assistant Professor (February, 2012—)
Department of Computer Science &
Institute of Information Systems and Applications,
National Tsing Hua University (國立清華大學), Hsinchu, Taiwan

Postdoctoral Associate (August, 2011 – December, 2011)
Department of Information Science, Cornell University, Ithaca NY

Assistantships for full-time PhD study at Cornell University:

Graduate Research Assistant (January, 2011 – August, 2011)
Department of Communication, Cornell University, Ithaca NY

Teaching Assistant (Course: INFO 3450 Human-Computer Interaction Design, Instructor: Dr. Dan Cosley)
(August 2010 – December 2010)
Department of Information Science, Cornell University, Ithaca NY

Graduate Research Assistant (January, 2010 – May, 2010)
Department of Computer Science, Cornell University, Ithaca NY

Graduate Research Assistant (January, 2009 – December, 2009)
Department of Communication, Cornell University, Ithaca NY

Teaching Assistant (Course: PSYCH/COGST/INFO 2140/6140 Cognitive Psychology, Instructor: Dr. Shimon Edelman)
(August 2008 – December 2008)
Department of Psychology, Cornell University, Ithaca NY

Assistantships for full-time PhD study at Carnegie Mellon University:

Graduate Research Assistant (January 2008 – May 2008)
Human-Computer Interaction Institute, Carnegie Mellon University, Pittsburgh PA

Graduate Research Assistant (September 2006 – May 2007)
Language Technologies Institute, Carnegie Mellon University, Pittsburgh PA

Visiting Researcher (June-July, 2010)
Institute of Information Science, Academia Sinica, Taipei, Taiwan

Visiting Researcher (April 2006 – June 2006)
Language Technologies Institute, Carnegie Mellon University, Pittsburgh PA

Research Assistant (October 2005 – March 2006)
Science Education Center, National Taiwan Normal University, Taipei, Taiwan

Research Assistant (April 2004 – September 2005)
Institute of Information Science, Academia Sinica, Taipei, Taiwan

PUBLICATIONS

Conference Proceedings and Journal Papers

†journal

*top conference (ranked top 3% in Microsoft Academic Search, <http://academic.research.microsoft.com/>)

* Gao, G., Wang, H-C., Cosley, D, & Fussell, S. R. (2013). Same translation but different experience: the effects of highlighting on machine-translated conversations. *Proceedings of ACM Conference on Human Factors in Computing Systems (CHI) 2013*.

* Wang, H-C., Fussell, S. R., & Cosley, D. (2013). Machine translation vs. common language: Effects on idea exchange in cross-lingual groups. *Proceedings of ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW) 2013*.

†Wang, H-C., Rosé, C. P., Chang, C-Y. (2011). Agent-based dynamic support for learning from collaborative brainstorming in scientific inquiry. *International Journal of Computer Supported Collaborative Learning (ijCSCL)*. <http://www.springerlink.com/content/j1k1j774q8357365/>

*Wang, H-C., Fussell, S. R., & Cosley, D. (2011). From diversity to creativity: Stimulating group brainstorming with cultural differences and conversationally-retrieved pictures. *Proceedings of ACM CSCW 2011*. [Acceptance rate: 58/268 ~ 21.6%]

Pessapati, S. T., Wang, H-C., & Cosley, D. (2010). Intercultural human-photo encounters: How cultural similarity affects perceiving and tagging photographs. *Proceedings of ACM International Conference on Intercultural Collaboration (ICIC 2010)*. (short paper)

*Wang, H-C., & Fussell, S. R. (2010). Groups in groups: Conversational similarity in online multicultural multiparty brainstorming. *Proceedings of ACM CSCW 2010*. [Acceptance rate: 58/288 ~ 20.1%]

*Wang, H-C., Cosley, D., & Fussell, S. R. (2010). Idea expander: Supporting group brainstorming with conversationally triggered visual thinking stimuli. *Proceedings of ACM CSCW 2010*. (note) [Acceptance rate: 58/288 ~ 20.1%]

*Wang, H-C., Fussell, S. R., & Setlock, L. D. (2009). Cultural difference and adaptation of communication styles in computer-mediated group brainstorming. *Proceedings of ACM CHI 2009*. [Acceptance rate: 277/1130 ~ 24.5%]
(Honorable Mention Paper a.k.a. Best Paper Award Nominee)

Wang, H-C. (2008). Modeling idea generation sequences using Hidden Markov Models. *Proceedings of the 30th Annual Meeting of the Cognitive Science Society (CogSci 2008)* (pp. 107-112). Austin, TX: Cognitive Science Society. [Acceptance rate for oral presentation papers: 166/515 ~ 32.3%]

†Wang, H-C., Chang, C-Y., & Li, T-Y. (2008). Assessing creative problem solving with automated text grading. *Computers & Education*, 51, 1450-1466.

†Chang, C-Y., & Wang, H-C. (2008). Issues of inquiry learning in digital learning environments. *British Journal of Educational Technologies*, 40, 169-173.

Wang, H-C., & Rosé, C.P. (2007). A process analysis of idea generation and failure. *Proceedings of the 29th Annual Meeting of the Cognitive Science Society (CogSci 2007)* (pp. 1629-1634). Austin, TX: Cognitive Science Society.

Wang, H-C., Rosé, C.P., Cue, Y., Chang, C-Y. Huang, C-C., & Li, T-Y. (2007). Thinking hard together: The long and short of collaborative idea generation in scientific inquiry. *Proceedings of Computer Supported Collaborative Learning 2007 (CSCL 2007)*. [Acceptance rate: 30%] **(nominated to Best Student Paper Award)**

Wang, H-C., Rosé, C.P. (2007). Supporting collaborative idea generation: A closer look using statistical process analysis techniques. *Proceedings of 13th International Conference on Artificial Intelligence in Education (AIED 2007)*. (short paper)

*Wang, H-C., Kumar, R., Rosé, C.P., Li, T-Y., & Chang, C-Y. (2007). A hybrid ontology directed feedback selection algorithm for supporting creative problem solving dialogues. *Proceedings of 20th International Joint Conference on Artificial Intelligence (IJCAI 2007)*. [Acceptance rate: 470/1353 ~ 35%]

Huang, C-C., Li, T-Y., Wang, H-C., & Chang, C-Y. (2007). A collaborative support tool for creativity learning: Idea Storming Cube. *Proceedings of the 7th IEEE International Conference on Advanced Learning Technologies (ICALT 2007)*, NY: IEEE Computer Society.

†Wang, H-C., Chang, C-Y., & Li, T-Y. (2007). The comparative efficacy of 2D- versus 3D-based media design for influencing spatial visualization skills. *Computers in Human Behavior*, 23, 1943-1957.

Wang, H-C., Li, T-Y., Rosé, C. P., Huang, C-C., & Chang, C-Y. (2006). VIBRANT: A brainstorming agent for computer supported creative problem solving. *Proceedings of 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*, *Lecture Notes of Computer Science*, Springer. (short paper) **(Best Poster Award)**

†Wang, H-C., Li, T-Y., & Chang, C-Y. (2006). A web-based tutoring system with styles-matching strategy for spatial geometric transformation. *Interacting with Computers*, 18, 331-355

Wang, H-C., Chang, C-Y., & Li, T-Y (2005). Automated scoring for creative problem-solving ability with ideation-explanation modeling. *Proceedings of 13th International Conference on Computers in Education (ICCE 2005)*, *Frontiers in Artificial Intelligence and Applications*, 133, pp. 522-529, The Netherlands: IOS Press.

Wang, H-C., Li, T-Y., & Chang, C-Y. (2005). A user modeling framework for exploring creative problem-solving ability. *Proceedings of 12th International Conference on Artificial Intelligence in Education (AIED 2005), Frontiers in Artificial Intelligence and Applications, 125*, 941-943, The Netherlands: IOS Press. (short paper)

Wang, H-C., Lu, C-H., Yang, J-Y., Hu, H-W., Chiou, G-F., Chiang, Y-T., & Hsu, W-L. (2005). An empirical exploration of using Wiki in an English as a second language course. *Proceedings of 5th IEEE International Conference on Advanced Learning Technologies (ICALT 2005)*, 155-157, NY: IEEE Computer Society. (short paper)

Chang, Y-H., Chuang, T-R., & Wang, H-C. (2004). Adaptive level-of-detail in SVG. *Proceedings of the 3rd Annual Conference on Scalable Vector Graphics (SVG Open 2004)*, Keio University, Tokyo, Japan.

Wang, H-C., Li, T-Y., & Chang, C-Y.(2004). Adaptive presentation for effective web-based learning of 3D content. *Proceedings of 4th IEEE International Conference on Advanced Learning Technologies (ICALT 2004)*, 136-140, NY: IEEE Computer Society.

Conference and Workshop Presentations (Non-Archival)

Wang, H-C. & Lai, C-T. (2013). Understanding and Supporting Computer-Mediated Gesture Use with Active Communication Channels. Presentation at *Chinese CHI 2013* (<http://chchi2013.icachi.org>).

Wang, H-C., Fussell, S. R., & Cosley, D. (2011). Using language-retrieved pictures to support multi-lingual brainstorming. Demonstration in *ACM CSCW 2011*.

Wang, H-C. (2010-2011). Using language-retrieved pictures to support intercultural group brainstorming. Doctoral Consortiums in *ACM Group 2010, CSCW 2011, & CHI 2011*.

Wang, H-C., Fussell, S. R., & Cosley, D. (2010). Effects of visual stimuli on idea generation and discourse coherence in conversational brainstorming, *Annual Meeting of the Society for Text & Discourse*. (poster).

Wang, H-C., Cosley, D., & Fussell, S. R. (2010). Idea expander: agent-augmented online brainstorming. Demonstration in *ACM CSCW 2010*.

Wang, H-C. & Fussell, S. R. (2009). Cultural adaptation of conversational style in intercultural computer-mediated group brainstorming. *ACM International Workshop on Intercultural Collaboration (IWIC 2009)*.

Chou, T-Y., Wang, H-C., Yeh, T-K., & Chang, C-Y. (2009). Measuring students' implicit attitudes toward environmental protection. *Annual Conference of the National Association for Research in Science Teaching (NARST 2009)*.

Wang, H-C., Fussell, S. R., & Setlock, L. D. (2008). Effects of cultural background and communication medium on group brainstorming conversations. *Annual Meeting of the Society for Text & Discourse*. (poster)

Huang, C-C., Li, T-Y., Wang, H-C., & Chang, C-Y. (2007). Idea Storming Cube: a game-based system to support creative thinking. *The First IEEE International Workshop on Digital Game and Intelligent Toy Enhanced Learning (DIGITEL 2007)*, Jungli, Taiwan. (nominated to Best Poster Award)

Wang, H-C., Rosé, C.P., Li, T-Y., & Chang, C-Y. (2006). Providing support for creative group brainstorming: taxonomy and technologies. *Workshop on Intelligent Tutoring Systems for Ill-Defined Domains, the 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*.

Lu, C-H., Wang, H-C., Yang, J-Y., Hu, H-W., Chiou, G-F., Chiang, Y-T., & Hsu, W-L. (2005). On using Wiki in an English as a second language course: An empirical study. *International Conference on Computer Supported Collaborative Learning (CSCL 2005)*, Taipei, Taiwan (poster)

Magazine Articles (Non-Refereed)

王浩全. 人機互動導向線上社群研究之概貌. *網路通訊國家型科技計劃簡訊*, 第 38 期, 2012.

王浩全. 創用 CC 之用—輔助創意我們需要什麼? *創用 CC 電子報*, 第 67 期, 台灣創用 CC 計劃, 中央研究院資訊科技創新研究中心, 2011.

張俊彥, 王浩全. 科學學習成就測驗之國際現況與未來展望. *教育研究月刊*, 152 期, 第 133 頁至第 147 頁, 2006.

Wang, H-C., Li, T-Y., & Chang, C-Y., "Analyzing empirical evaluation of advanced learning environments: complex systems and confounding factors," *Learning Technology Newsletter*, Vol. 6, pp. 39-41, IEEE Technical Committee on Learning Technology, 2004.

Wang, H-C., Li, T-Y., "Considering model-based adaptivity for learning objects," *Learning Technology Newsletter*, Vol. 6, pp. 9-11, 2004.

王浩全. 回溯一大霹靂與宇宙誕生. *天文通訊報導雜誌*, 第 274 期, 第 4 頁到第 10 頁, 台北市立天文科學教育館, 1997.

UNPUBLISHED THESES

Wang, H-C. (2011). Using Language-Retrieved Pictures to Support Computer-Mediated Intercultural Brainstorming. Ph.D. Dissertation. Department of Information Science, Cornell University, Ithaca, NY, USA.

Wang, H-C. (2004). A web-based tutoring system with intelligent media: spatial geometric transformation as an example. Master's Thesis. Department of Computer Science, National Chengchi University, Taipei, Taiwan.

Wang, H-C. (1999). Estimating parameters of galactic rotation from Hipparcos proper motions. Bachelor's Thesis. Department of Earth Sciences, National Taiwan Normal University, Taipei, Taiwan.

INVITED TALKS & COLLOQUIA

Wang, H. C. (2012). *Interaction Beyond the Individual: A Lecture on HCI-Oriented Collaborative and Social Computing*. Institute of Information Science, Academia Sinica, July 17, 2012; Department of Computer Science and Information Engineering, National Taiwan University, October 12, 2012.

Wang, H. C. (2012). *Using Language-based Interaction as the Basis for Collaborative Learning: What Technologies Can Do for Us?* Invited panel presentation, The first Taiwan CSCL & AIED Workshop, April 13, 2012. (sponsored by National Science Council, Science Education Division)

Wang, H. C. (2012). *Computer-Augmented Human-Human Collaboration*. Institute of Information Systems and Applications, National Tsing Hua University, March 28, 2012.

Wang, H.-C. (2012). *Active Computer-Mediated Communication: A Social Computing Approach to Support Online Group Work*. Department of Communication & Technology, National Chiao-Tung University, March 7, 2012.

Wang, H.-C. (2011-2012). *Active Computer-Mediated Communication: Designing Activity-Aware Communication Channels for Supporting Online Groups*. Department of Computer Science, National Tsing Hua University, March 29, 2011; Department of Computer Science and Information Engineering, National Taiwan University, March 25, 2011; Institute of Information Science, Academia Sinica, March 31, 2011; College of Computer Science, National Chiao-Tung University, May 17, 2012.

Wang, H.-C. (2010). *Idea Expander: Supporting brainstorming with conversationally triggered visual stimuli*. Ishida & Matsubara Lab, Department of Social Informatics, Kyoto University, Kyoto, Japan, June 21, 2010.

Wang, H.-C. (2010). *Understanding and designing for group brainstorming: The socio-cognitive approach to collective*

intelligence. Institute of Information Science, Academia Sinica, June 11, 2010; Network Learning Institute, National Central University, July 7, 2010.

Wang, H-C. (2010). *On Human-Computer Interaction*. Science Education Center, National Taiwan Normal University, July 5, 2010.

Wang, H-C. (2010). *Groups in groups: conversational similarity in online multicultural multiparty brainstorming*. Information Science Breakfast Series, Cornell University, January 29, 2010; Communication Colloquium Series, February 2, 2010.

Wang, H-C. (2010). *Idea expander: supporting group brainstorming with conversationally triggered visual thinking stimuli*. Information Science Breakfast Series, Cornell University, January 29, 2010.

Wang, H-C. (2009). *Toward Understanding and Unleashing Cultural Diversity in Computer-Mediated Intercultural Group Brainstorming*. Information Science Breakfast Series, Cornell University, February 13, 2009.

Wang, H-C. (2009). *Doing Behavioral and Cognitive Sciences for HCI Design: My Recent Work on Computer-Mediated Group Creativity*. Department of Computer Science & College of Communication, National Chengchi University, January 12, 2009; Also at the Department of Computer Science and Information Engineering, National Taiwan University, January 14, 2009.

Wang, H-C. (2007). *Practical Automated Scoring for e-Learning*. Science Education Center, National Taiwan Normal University, May 22, 2007.

Wang, H-C., & Rosé, C. P. (2006). *Thinking Hard Together: the Long and Short of Collaborative Idea Generation*. Pittsburgh Science of Learning Center Seminar Series, Carnegie Mellon University, November 27, 2006.

HONORS

Invited Attendee, Microsoft Research Asia Faculty Summit 2012.

<http://research.microsoft.com/en-us/events/asiafacsum2012/>

Travel Grant, Doctoral Consortium, ACM CHI 2011

Travel Grant, Doctoral Colloquium, ACM CSCW 2011

Travel Grant, Doctoral Colloquium, ACM Group 2010

ACM CHI Honorable Mention Paper (Best Paper Award Nomination) (Top 5% paper in CHI), ACM CHI 2009

Science 50 Achievement, National Science Council, Taiwan (November, 2008)

A special recognition to the project, *Automated Assessment for Creative Problem Solving in Science Learning* as one of the 50 most significant application-oriented projects among all projects funded by National Science Council in the past 50 years. Researchers: Prof. Chun-Yen Chang (National Taiwan Normal University), Hao-Chuan Wang and Prof. Tsai-Yen Li (National Chengchi University).

Project description & video- <http://www.nsc.gov.tw/scicircus/ct.asp?xItem=17523&ctNode=1976>

Nominee for Best Student Paper Award, International Conf. on Computer Supported Collaborative Learning (CSCL 2007)

Nominee for Best Poster Award, IEEE International Conference on Digital Game and Intelligent Toy Enhanced Learning (DIGITEL 2007)

Best Poster Award, International Conference on Intelligent Tutoring Systems (ITS 2006)

Graduate Academic Outstanding Award, College of Science, National Chengchi University, Taipei Taiwan (November 2003 and April, 2004)

Graduate Research Outstanding Award, College of Science, National Chengchi University, Taipei Taiwan (April, 2004)

NSC Undergraduate Research Grant, National Science Council, Taiwan R.O.C. (November 1998, Project Number NSC88-2815-C-003-45M, Area: Physics)

PROFESSIONAL SERVICES

Demonstrations Co-Chair, ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW), 2014.

Program Committee, International Conference on Computers in Education (ICCE 2013)

Program Committee, Global Chinese Conference on Computers in Education (GCCCE 2013).

Program Committee (also known as Associate Chair or Meta Reviewer) & Audio/Video Co-Chair, ACM CSCW, 2013

http://cscw.acm.org/committee_pc.html

<http://cscw.acm.org/committee.html>

Program Committee, International Conference on Computers in Education (ICCE 2012)

<http://www.lsl.nie.edu.sg/icce2012/call-for-papers/>

[c2-icce-conference-on-computer-supported-collaborative-learning-cscl-and-learning-sciences/](http://www.lsl.nie.edu.sg/icce2012/c2-icce-conference-on-computer-supported-collaborative-learning-cscl-and-learning-sciences/)

Program Committee and Panelist, The First Taiwan CSCL & AIED Workshop

<http://sites.google.com/site/csclaied2012/ca>

Program Committee, Global Chinese Conference on Computers in Education (GCCCE 2012).

<http://www.gccce2012.org/C1.html>

Program Committee, NCS 2011 Workshop on Artificial Intelligence, Fuzzy Systems and U-Learning, National Computer Symposium 2011, Chiayi, Taiwan.

PhD Admission Committee, Department of Information Science, Cornell University (Spring 2010).

Conference Reviewer for *ACM CHI* (2009-2013), *ACM CSCW* (2010-2013), *ACM ICIC* (2009-2011), *ACM UbiComp* (2009-2011), *ACM DocEng* (2005, 2006, 2008, 2009), *ACM IUI* (2006, 2007), *Cognitive Science* (2008, 2009), *CSCL* (2007, 2009), *AIED* (2007), *ICLS* (2008, 2010), *APSCE ICCE* (2009,2012), *IEEE/WIC/ACM Web Intelligence* (2007), *IEEE CIS-RAM* (2008).

Journal Reviewer for *Human-Computer Interaction (Taylor & Francis)* (2012), *Journal of the Chinese Institute of Engineering* (2012), *User Modeling and User-Adapted Interaction (Springer)*(2011), *IEEE Transactions on Education* (2004—2007), *Computers & Education (Elsevier)* (2008—), *Journal of Virtual Reality (Springer)*(2006).

RESEARCH PROJECTS

Principle Investigator (2012—)

National Tsing Hua University

Project: Developing and Evaluating Concept Expansion Methods for Supporting Creative Idea Generation Tasks

Idea generation is a fundamental cognitive activity that people routinely perform for pursuing creative work (e.g., group brainstorming) and solving problems. People can think more creatively or “out-side-of-the-box” if messages they perceive from the external environment or other people is conceptually dissimilar to existing thoughts. What’s challenging is that people do not always have access to this sort of beneficial stimulation. Even when people collaborate with one another in groups, sociological and social psychological processes such as homophily (the tendency to associate with similar others), assimilation and accommodation (the tendency for people to imitate one another in groups), and conformity (the tendency for people to follow majority opinions) etc. can foster the convergence of thoughts.

In this proposal, I propose to develop computational methods that automatically generate thinking stimuli by expanding concepts of existing ideas. I identify that one approach to support idea generation is to expand contributed ideas into associated concepts and then use them as the basis of stimulating feedback to trigger further creative thinking. I propose to explore two general approaches for automatic concept expansion, one using structured concept databases (e.g., WordNet) and one using statistical analyses of unstructured data (e.g., Latent Semantic Analysis and Probabilistic Topic Modeling) to expand concepts.

Independent Research (August 2008 – 2011)
Cornell University

Project: Idea Expander: Agent-Augmented Online Brainstorming (with Susan R. Fussell & Dan Cosley)

Group brainstorming is a commonly practiced technique to enhance creative outcomes. A close observation of the social and cognitive processes of group brainstorming suggests that ensuring the abundance and diversity of stimuli available in the brainstorming session is critical. We propose to support group brainstorming by presenting pictures related to the conversation that are retrieved and chosen by a computer agent. Communicative, perceptual and cognitive processes are orchestrated to form a socio-technical system that may help produce more and better ideas.

Project: Culture in Computer-mediated Group Brainstorming (with Susan R. Fussell)

Continuing our prior work in developing the laboratory experiment for examining the effects of communication media and cultural backgrounds on computer-mediated group brainstorming, at this stage, we aim to apply a mixture of qualitative and quantitative content analysis techniques to explore the dataset and to test cultural and media hypotheses derived from the theories of intergroup and interpersonal communication and earlier literature of computer-mediated communication. Sequential and temporal analysis and machine learning techniques are applied to analyze language uses and conversational processes to gain insights and implications for technology adoption and design.

Directed Research (July 2007 – June 2008)
Carnegie Mellon University

Project: Culture in Computer-mediated Group Brainstorming (with Susan R. Fussell)

The increasing needs of international and cross-cultural collaboration raise questions about whether theoretical models and supportive technologies for group work originally developed in the West may generalize well in other cultural contexts. This is an empirical question that can be tested using various group tasks. In this project, we aim to investigate the influence of cultural variety on group brainstorming, with the goal to better understand the interaction between culture and group processes in brainstorming and discover implications for the design of cross-cultural creativity support tools. In particular, we investigate whether lean media like Instant Messaging rather than rich media will better reduce negative social processes such as social loafing and communication apprehension that were suggested to be more popular in one culture than another. Also, we wish to explore the role of culture in perceptual and cognitive aspects by manipulating the availability of peripheral information displayed on the computer monitor.

Project: StepGreen—Using technology to motivate energy-saving behavior (with Susan R. Fussell & Jennifer Mankoff)

This project leverages online social network sites to motivate behavior change. I applied sequential analysis and machine learning techniques to analyze online users' website usage patterns. The goal is to use the analysis as a basis for recommending online users energy saving actions.

Graduate Research Assistant (September 2006 – May 2007)
Carnegie Mellon University

Project: Applying Text Classification to Analyze Collaborative Learning Discourses (with Carolyn Rosé)

In this project, text classification and machine learning techniques were leveraged to automate the coding of verbal data in behavioral research. I have been extensively involved in the design and development of a special purpose machine learning-based text analysis tool, TagHelper (<http://www.cs.cmu.edu/~cprose/TagHelper.html>), which is designed for behavioral scientists, psychologists and educational researchers to analyze conversational data. I also studied group processes of collaborative learning and idea generation in this project. An empirical study investigating the effect of system feedback and peer collaboration on collaborative idea generation and domain learning was

nominated for the Best Student Paper Award in the 2007 Computer Supported Collaborative Learning conference.

Visiting Researcher (April 2006 – June 2006)
Carnegie Mellon University

Project: Idea Generation-based Tutoring for Conceptual Learning in Complex Sciences (with Carolyn Rosé, Chun-Yen Chang & Tsai-Yen Li)

I pioneered a tutoring system for conceptual learning in scientific domains characterized by complex socio-scientific interactions, like the topic of environmental sustainability that deals with the factors and prevention of natural hazards. The process of generating creative solutions on this topic can be modeled as an idea generation activity. A conversational agent aims to support students' creative idea generation by providing comments and guidance of idea generation was developed and evaluated. This work also served as one of the bases for future works on the analysis of collaboration and idea generation processes. A paper described the design and preliminary evaluation of the system won the Best Poster Award in the 2006 Intelligent Tutoring System conference.

Research Assistant (October 2005 – March 2006)
National Taiwan Normal University, Taipei Taiwan

Project: Automated Assessment for Creative Problem Solving in Science Learning (with Chun-Yen Chang, & Tsai-Yen Li)

Open-ended assessments that require students to actively construct ideas and provide explanations are considered to possess higher validity and reliability in terms of assessing higher-order science ability in education. But the grading and analysis of constructed responses were also labor-intensive and thus becomes a hurdle of using them in practices. In this project, I worked on the design, development and evaluation of an automated scoring scheme for open-ended assessments in the context of science learning by casting the issues as a user modeling problem. Preliminary evaluation showed potential utility of this approach.

Research Assistant (August 2004 – September 2005)
Institute of Information Science, Academia Sinica, Taipei Taiwan

Project: Taiwan Social Map: Socio-Geographical Visualization and Analysis of Demographic Data (with Tyng-Ruey Chuang)

I worked on analyzing a Taiwanese demographic dataset, and developing a design for a novel visualization approach to aid in understanding the patterns found in that data. We developed a new technique to enable adjustable level-of-detail visualization of geographical data based on W3C's specification of Scalable Vector Graphics (SVG).

Master's Thesis Research (June 2003 – July 2004)
National Chengchi University, Taipei Taiwan

Project: Interactive 3D User Interface and Adaptive Recommendation for Computer Graphics Education (Advisors: Tsai-Yen Li, & Chun-Yen Chang)

Topics like spatial geometric transformation were typically hard for students to comprehend in computer graphics or mechanical engineering-related classes. We designed a 3D user interface as a visualization tool for students to better understand meanings underlying mathematical manipulations like scaling and rotating. By measuring students' spatial ability using psychometric instruments, we attempted to adapt the presentation based on spatial ability and other traits.

Undergraduate Thesis Research (June 1998 – June 1999)
National Taiwan Normal University, Taipei Taiwan

Project: Astronomical Data Mining— Estimating Parameters of Galactic Rotation using Hipparcos Star Catalogue (Advisors: Hsieh-Hai Fu, & Yi-Jehng Kuan)

In this undergraduate thesis project, I worked on processing and analyzing stellar motion data observed and recorded by European Space Agency's astronomical satellite, Hipparcos. Fundamental parameters essential to describe characteristics of Galactic rotation were estimated through the analysis. The estimation was consistent with the suggestion by the International Astronomical Union. The project proposal awarded a scholarship for undergraduate

research from the National Science Council of Taiwan.

OTHER WORK EXPERIENCE

Compulsory Military Service (rank: second lieutenant) (July 2000 – March 2002)
ARMY, Taiwan (R.O.C.)

Practice Science Teacher (July 1999 – June 2000)
Taipei Municipal Jen-Ai Junior High School, Taipei, Taiwan

Summer Internship (July – August, 1998)
Institute of Astronomy, National Central University, Jhongli, Taiwan

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

Association for Computing Machinery (ACM), SIGCHI
Society for Text and Discourse

CITIZENSHIP

TAIWAN (R.O.C.)