

# Pei-Yun (Sabrina) Hsueh

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## Education

OCT 2004 –  
2008

**University of Edinburgh** (Edinburgh, UK)  
**PhD Candidate in Informatics (Computer Science)**

**Member of the Human Communication Research Centre (HCRC)**  
**Member of the Institute of Computer and Collaborative Systems (ICCS)**  
**Associated Member of the Centre for Speech Technology Research (CSTR)**

Thesis: “Decision Detection and Tracking: Multimodal Information Fusion from Multiparty Discourse”

- Developing a machine learning framework to infer high-level human behaviors from low-level audio-visual signals. This framework has been successfully applied to extract information about group decisions and discourse segments from meeting archives.
- Areas: Statistical Methods (Machine Learning) in Natural Language Processing, Multimodal Search, Information Extraction, Interactive Systems, Spoken Language Technology

AUG 2000 –  
MAY 2002

**University of California – Berkeley** (California, USA)  
**Master’s degree in Information Management & Systems (MIMS)**

- Areas: Human-computer interaction (HCI), Computer-supportive collaborative work (CSCW)
- Includes Certificate of Management of Technology from HAAS Business School in 2002

SEP 1995 –  
JUN 1999

**National Taiwan University** (Taipei, Taiwan)  
**Bachelor in Engineering, Dept. of Computer Science and Information Engineering (CSIE)**

## Honors , Awards & Grants

2007 **GOOGLE European Anita Borg Scholar**

- Invited attendee of “Grace Hopper Celebration of Women in Computing”, Florida, Oct 2007

2005 – 2008 European Union 6th FWP IST Integrated Project: **AMIDA (Augmented Multi-party Interaction with Distant Access)+AMI (Augmented Multi-party Interaction)** (FP6-506811)

- Three-year research funding plus tuition waivers

2004 Winner of **Taiwan Merit Scholarship**

- From the joint program of the Ministry of Education and National Science Council

2003 **Top Scholar Award**, University of Washington

- Awards for recruiting top graduate students plus one-year research assistantship

2002 **Finalist, Innovators’ Challenge**, Univ. of California, Berkeley

- Business plan competition at the inter-departmental level (new sensor product design)

1993-1995 NSC-Sponsored Training Program for **Gifted Students in Science** (Physics Track)

## Research Interest

My research interests bring together artificial intelligence and human computer interaction, with a focus on integrating machine learning and empirical analysis methods for spoken language understanding in multimodal contexts. My recent research concerns the development of spoken language understanding applications. In particular, I have developed a learning framework to identify multimodal patterns characterizing a range of discourse phenomenon in spontaneous conversational speech. My current projects include automatic discovery of discourse structure (topic segmentation and labeling) and automatic decision detection.

The ultimate goal of my work is to provide interactive interfaces that enable users to find information from lengthy audio-video archives more efficiently and effectively. In future work, I would like to tackle the problems of generating multi-document multimedia summaries, deriving multimodal grammars to enhance multimodal interactive systems, and investigate how to incorporate multimedia summaries into search results (e.g., mobile, social, and enterprise search).

## References

- Prof. Johanna Moore, PhD supervisor, Univ. of Edinburgh ([J.Moore@ed.ac.uk](mailto:J.Moore@ed.ac.uk))
- Prof. Steve Renals, PhD 2<sup>nd</sup> supervisor, Univ. of Edinburgh ([s.renals@ed.ac.uk](mailto:s.renals@ed.ac.uk))
- Dr. Tilman Becker, DFKI ([German Research Center for Artificial Intelligence](http://www.german-research-center-for-artificial-intelligence.de)) ([becker@dfki.de](mailto:becker@dfki.de))
- More upon request

## Research Experience (By Topics)

### ● Multimedia Understanding/Statistical Methods in Computational Linguistics

- School of Informatics, University of Edinburgh**  
**Research Associate**
- OCT 04 – present**
- **AMI (Augmented Multi-party Interaction), 2004-2006**
  - **AMIDA (Augmented Multi-party Interaction with Distant Access), 06-present**
    - ① Contributed to this EU Information Society and Technology Integrated Project, collaborated with 11 partner sites across Europe from academia and industry.
  - Research projects: Automatic discourse segmentation, automatic decision detection, abstractive summary disambiguation, and task-based meeting browser evaluation.
- **Human Computer Interaction/Computer-Supported Collaborative Work**
- School of Information, University of Washington**  
**Research Assistant**
- SEP 03 – JUL 04**
- Prototype development and evaluation of personal information management (PIM) tools
- North American International Patent Office** (a boutique patent office, specializing in telecom/semiconductor industry in Taiwan)  
**Knowledge Engineer (Taipei office, Taiwan)**
- DEC 02 – SEP 03**
- Developed a knowledge management system for 80+ patent engineers and staff.
  - Patent engineer in training, certified.
- Accenture Technology Labs**  
**Summer Intern (Palo Alto Office, California)**
- JUN 01 – SEP 01**
- Research and prototype development: demonstrated the use of an emerging interactive technology in displaying real-time business information.
- **Medical Informatics**
- Health Sciences Libraries and Information Center, University of Washington**  
**Research Practicum**
- JAN 04 – JUL 04**
- Telemakus: Conceptual relation extraction from figure captions in PubMed articles
- Genentech Inc.**  
**Summer Intern, Information Technology (South San Francisco office)**
- JUL 02 – OCT 02**
- Collected researchers' requirements for collaborative knowledge management systems.
- **Digital Library/Online communication**
- School of Information, University of Washington**  
**Research Practicum**
- OCT 03 – JUL 04**
- The Web Searching of Greeks: A longitude study of user search experience in Alta Vista.
- School of Information, University of California at Berkeley**  
**Master's Project**
- JAN 02 – MAY 02**
- Weaving Searching into Browsing: A Perspective-Taking Collaborative Web Resource Mediator. (Supervisor: Dr. Warren Sack)
- Institute of Information Science (IIS), Academia SINICA** (the largest national central research center in computer science at Taiwan)  
**Research Assistant, National Digital Archives Project**
- JUN 99 – JUN 00**
- Digital Preservation project
  - Developed a search interface for users to find lexical information interactively.

## Teaching Experience

- Teaching Assistant**
- JAN 02 – MAY 02**
- Computer Science Division, UC Berkeley “CS61C: Machine Structure” (C, Lisp, Assembly)
- Reader (Marker)**
- SEP 00 – DEC 00**
- Computer Science Division, UC Berkeley “CS188: Artificial Intelligence” (Lisp)

## Volunteer Service

- Founded **Language Lunch Series** as a platform to showcase language research and encourage collaboration across disciplines in Edinburgh, 2005-2007.
- The **Grace Hopper group in Edinburgh University**, 2007.
- **Berkeley Taiwanese Student Association (TSA)**, Vice President, 2001-2002.
- Leadership role of **Aboriginal Kid Computer Literacy Program**, Taiwan, 1999.
- National Taiwan University (NTU) CSIE Student Council, Vice President, 1997-1998.
- NTU NEWS, editor, 1995-1996.

## Full-Length Publications and Peer-reviewed Conference Presentations

- Hsueh, P., Moore, J., and Renals, S. (In submission). Exploring Early and Late Fusion Strategy: A Case Study in Multiparty Discourse Understanding.
- Hsueh, P. (2008). Audio-based Unsupervised Segmentation of Meeting Dialogue. In Proceedings of the 33rd International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2008.
- Hsueh, P. and Moore, J. (2007). Automatic Decision Detection in Meeting Speech. Book Chapter in Popescu-Belis, Renals, Boulard (Eds.), *Lecture Notes in Computer Science*, Springer-Verlag, 2007.
- Hsueh, P. and Moore, J. (2007). Combining Multiple Knowledge Sources for Dialogue Segmentation in Multimedia Archives. In *Proceedings of the 45th Annual Meeting of the ACL*, Prague, 2007.
- Hsueh, P. and Moore, J. (2007). What Decisions Have You Made: Automatic Decision Detection in Conversational Speech. In *Proceedings of NAACL/HLT*, Rochester, 2007.
- Hsueh, P., Moore, J. and Renals, S. (2006). Automatic Segmentation of Multiparty Dialogue. In *the Proceedings of the 11th Conference of the EACL*, Trento, 2006.
- Hsueh, P. and Moore, J. (2006). Automatic Topic Segmentation and Labeling in Multiparty Dialogue. In the first *IEEE/ACM workshop on Spoken Language Technology (SLT)*, Aruba, 2006.
- Murray, G. and Hsueh, P. and Tucker, S. and Kilgour, J. and Carletta, J. and Moore, J. and Renals, S. (2007). Automatic Segmentation and Summarization of Meeting Speech. In *NAACL/HLT 2007*.
- Streiter, O. and Hsueh, P. (2000). A Case Study on Example-based Parser. In the *Proceedings of the International Chinese Computational Linguistics Conference*, Chicago.

## Technical Report and Talks

- AMIDA Annual Report D5.2 Report on Multimodal Content Abstraction (co-author), 2007.
- AMI/AMIDA State-Of-The-Art White Papers (co-author), 2007.
- AMI Annual Report D5.1 Report on Initial Work in Segmentation (co-author), 2006.
- Presentation in the Meeting Modeling Workshop, Leusden, Netherlands, May 2006.
- Presentation in the Meeting Modeling Workshop, Enschede, Netherlands, June 2007.

## Poster Presentations and Demos (Selected)

- Hsueh, P., Kilgour, J., Carletta J., Renals, S. and Moore, J. (2007) In the DEMO session of the 4<sup>th</sup> *Joint Workshop on Machine Learning and Multimodal Interaction (MLMI'07)*, Brno, Czech Republic.
- Murray, G. and Hsueh, P. and Tucker, S. and Kilgour, J. and Carletta, J. and Moore, J. and Renals, S. (2007). Automatic Segmentation and Summarization of Meeting Speech. DEMO of *NAACL/HLT'07*.
- Hsueh, P. (2007). Toward Multimodal Information Synthesis: Automatic Decision Detection from Audio and Video Recordings. Poster in the *MMKM Workshop (Multimedia Knowledge Management): Industry Meets Academia*.
- Hsueh, P. S. and Phuwanartnurak, A.J. (2004). AddToFavorites2 (ATF2): Prototype and Evaluation. In the poster session of the annual meeting of *the American Society for Information Science and Technology (ASIST)*, 2004.
- Efthimis N. Efthimiadis and Hsueh, P.S. (2004). The Web Searching of Greeks: An Exploratory Study. In the poster session of the annual meeting of *ASSIST 2004*.
- Hsueh, P. S., Lee, C., Xin, B. (2003). Weaving Searching into Browsing: A Perspective-Taking Collaborative Web Resource Mediator. The 12<sup>th</sup> *International World Wide Web Conference (WWW'03)*, Budapest, Hungary, 2003.

## Academic Activities

- Mobile Computing Day, Edinburgh, 2007
- Statistical Natural Language Processing Reading Group, 2006-2007
- Women in Machine Learning Workshop (WiML), Orlando, 2007
- EUROMASTERS Summer School in Speech Technology, Brno, 2007 (**BEST POSTER PRESENTATION**)
- IGK Summer School in Computational Linguistics and Psycholinguistics, University of Saarland, Germany, 2005
- European Summer School in Logic, Language, and Information (ESSLI) , Edinburgh, 2005
- Student Volunteer at UbiComp 2003

## Professional Membership

- Assoc. for Computational Linguistics (ACL), Association for Computer Machinery (ACM)
- IEEE, IEEE Management Society
- American Society for Information Science and Technology (ASIST)

## Practical Skills

- Problem-solving: Quantitative and qualitative analytical skills, machine learning models
- International project management and cross-functional communication
- Computer: Programming in Perl, JAVA, C; Scripting; Familiarity with Linux/UNIX/Windows
- Language: Fluent in English and Mandarin Chinese, basic Japanese.