

# CURRICULUM VITAE

## CHIN-YEW LIN

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### EDUCATION

University of Southern California, August 1997: Ph.D. (Computer Engineering)  
University of Southern California, December 1991: M.S. (Computer Engineering)  
National Chiao Tung University, June 1987: B.Sc. (Electrical and Control Engineering)

### RESEARCH INTERESTS

I am a research manager of the Knowledge Mining group at Microsoft Research Asia. My research interests are knowledge mining, social computing, question answering, and automatic summarization.

Recently, my main research directions are: (1) developing a semantic computing framework for real world applications and services including automatic acquisition of semantic knowledge, machine reading for semantic indexing, and automatic understanding of user intents; and (2) developing big social data analytics platform and services – Soul. Building on experiences learned from the Soul project, my team is developing technologies to automatically learn social interaction knowledge from large-scale real world online data and transform unstructured and semi-structured web data into structured data to enable semantic computing. The goal is to enable rich and context-aware interactive client plus cloud computing applications powered by automatically distilled intelligent data.

I developed automatic evaluation technologies for summarization, QA, and MT. In particular, I created the ROUGE automatic summarization evaluation package. It has become the de facto standard in summarization evaluations. ROUGE has been chosen as the official automatic evaluation package for Document Understanding Conference since 2004.

Before joining Microsoft, I was a senior research scientist at the Information Sciences Institute at University of Southern California (USC/ISI) where I worked in the Natural

Language Processing and Machine Translation group since 1997. I was the program co-chair of ACL 2012 and program co-chair of AAAI 2011 AI & the Web Special Track.

Previously, I have developed technologies for summarization and machine translation. Basic Element (BE), a joint effort with E.H. Hovy, L. Zhou, J. Fukumoto from Ritsumeikan University, Japan, K. McKeown and A. Nenkova from Columbia University, was made freely available to the research community in April 2005 and it was used in Document Understanding Conference 2005 and 2006, a worldwide large-scale summarization evaluation effort sponsored by the US government. Before BE, I have created the ROUGE automatic summarization evaluation package. It was delivered to the research community in 2004. More than 150 research sites worldwide have downloaded this package so far. ROUGE has been chosen as the official automatic evaluation package for Document Understanding Conference 2004, 2005, and 2006.

My past projects include: *NeATS*, an automated multi-document text summarization system; *TextMap*, an intelligent question and answering assistant; *Webclopedia*, automated question answering systems; *SEE*, an environment written in Java in which assessors can evaluate the quality of one text (the peer text) as compared to an ideal (the model text). *SEE* has been used by the Document Understanding Conference to support its human evaluation protocol.

I am the architect of *NeATS*. *NeATS* is a multi-document summarization system that attempts to extract relevant or interesting portions from a set of documents about some topic and present them in coherent order. *NeATS* is one of the 2 top performers in the large scale summarization evaluation, Document Understanding Conference 2001 and 2002, sponsored by the US government.

I design the overall system architecture, the information retrieval front end, and the answer reranking module of *Webclopedia*. *Webclopedia* is one of the top 3 performers in the question answering track of the Text REtrieval Conference (TREC) in 2000 and 2001.

I am the principal designer of a multilingual information retrieval, summarization, and translation system, *MuST*. *MuST* integrates state-of-the-art off-the-shelf information retrieval engines, multilingual automated text summarization technologies from *SUMMARIST* project, and rapid-prototype shallow machine translation engine *QuTE*. *MuST* enables users to search Internet or local free text database of multiple languages (currently, English, Arabic, Bahasa Indonesia, Japanese, and Spanish), summarize documents to different lengths, and translate the full texts or summaries into English. I have demonstrated a prototype system to several government and private agencies and received very good reviews. Several sites have requested it for field testing and technology transfer.

I have been developing an automated text summarization system prototype, *SUMMARIST* (an overview paper describing the current status of *SUMMARIST* was presented at the ACL97/ECAL97 Intelligent Scalable Text Summarization Workshop), under the supervision of Dr. Hovy. The goal of *SUMMARIST* is to provide both extracts and abstracts for arbitrary (English, Arabic, Bahasa Indonesia, Japanese, Spanish, and later other languages) input text. *SUMMARIST* combines symbolic world knowledge (embodied in

WordNet, dictionaries, and similar resources) with robust natural language processing (using Information Retrieval and statistical techniques) to overcome the problems prevalent in either approach alone. SUMMARIST uses several key modules developed during my Ph.D. work at the University of Southern California.

My Ph.D. work focused on the development of a robust automated topic identification system. Topic identification is the task of identifying what is being talked about in a text. Although topic identification is a crucial step for many text processing tasks such as text summarization, text filtering, text routing, etc., it has not been studied as a stand-alone task. I investigated several topic identification methods and developed three major results: the Position Method, the Topic Signature Method, and the Concept Generalization Method. These methods used combinations of robust linguistic tools, an available knowledge base, and statistical techniques.

Prior to this, I was a research assistant for the SNAP project in the Parallel Knowledge Processing Laboratory under the supervision of Dr. Moldovan, then of USC. I was responsible for testing a 144-processor parallel processing machine prototype (SNAP), porting natural language processing software to the machine, and participating the fourth and fifth Message Understanding Conferences (MUC-4 and MUC-5).

## **Publications**

- Chin-Yew Lin. Question Answering of UGC, Book Chapter in Mining User Generated Content edited by Marie-Francine Moens, Juanzi Li, and Tat-Seng Chua.
- Baichuan Li, Jing Liu, Chin-Yew Lin, Irwin King, and Michael R. Lyu. A Hierarchical Entity-based Approach to Structuralize User Generated Content in Social Media: A Case of Yahoo! Answers, EMNLP 2013 (Long), Seattle, USA, October 18-21, 2013.
- Jing Liu, Quan Wang, and Chin-Yew Lin. Question Difficulty Estimation in Community Question Answering Services, EMNLP 2013 (Short), Seattle, USA, October 18-21, 2013.
- Wei Zhang, Yunbo Cao, Chin-Yew Lin, Jian Su, and Chew-Lim Tan. Learning a Replacement Model for Query Segmentation with Consistency in Search Logs, IJCNLP 2013, Nagoya, Japan, October 14-18, 2013.
- Wei Zhang, Yunbo Cao, Chin-Yew Lin, Jian Su, and Chew Lim Tan. An Error Driven Approach to Query Segmentation, WWW 2013 (Poster), Rio de Janeiro, Brazil, May 13-17, 2013.
- Jing Liu, Fan Zhang, Xinying Song, Young-In Song, Chin-Yew Lin, and Hsiao-Wuen Hon. What's in a name? An unsupervised approach to link Users across communities, in Proceedings of the 6th ACM International Conference on Web Search and Data Mining (WSDM 2013), Rome, Italy, February, 4-8, 2013.
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- Tom Chao Zhou, Chin-Yew Lin, Irwin King, Michael R. Lyu, Young-In Song, and Yunbo Cao. Learning to Suggest Questions in Online Forums. In Proceedings of AAI 2011 (AI and the Web Special Track), San Francisco, California, USA, August, 7-11, 2011.
- Jing Liu, Young-In Song, and Chin-Yew Lin. Competition-based User Expertise Level Estimation. In Proceedings of SIGIR 2011, Beijing, China, July 24-28, 2011.
- Tao Sun, Wei Chen, Zhenming Liu, Yajun Wang, Xiaorui Sun, Ming Zhang, and Chin-Yew Lin. Participation Maximization Based on Social Influence in Online Discussion Forums. In Proceedings of the Fifth International AAI Conference on Weblogs and Social Media (ICWSM 2011), Barcelona, Spain, July 17-21, 2011.
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- on Empirical Methods in Natural Language Processing (EMNLP-2006)*, Sydney, Australia, July 22 – 23, 2006.
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## **DEMONSTATION AND PRESENTATION**

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## TEACHING

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- Chin-Yew Lin. 2005. Automated Text Summarization. In *Tutorial of the 2<sup>nd</sup> International Joint Conference on Natural Language Processing (IJCNLP-05)*, Jeju Island, Korea, October 11-13, 2005.
- Chin-Yew Lin. 2005. Text Summarization. In *Microsoft Research Asia Summer School 2005 on Information Extraction Technologies*, Harbin, China, June 1 – 3, 2005.

- Hovy, E.H. and Chin-Yew Lin and Daniel Marcu. 1999. Automated Text Summarization. In *Tutorial of the 22<sup>nd</sup> International Conference on Research and Development in Information Retrieval*, Berkeley, CA, U.S.A, August 15-19, 1999.

## WORK EXPERIENCE

- March 2006 — present: Research Manager of Knowledge Mining Group  
Microsoft Research Asia  
13F, Microsoft Building No. 2, No. 15, Danling Street, Haidian District,  
Beijing 100080, P.R. China  
+86 (10) 5917-3481  
We aims to understand and serve the world through knowledge discovery and data mining. It consists of a team of interdisciplinary researchers spanning data mining, machine learning, natural language processing, information retrieval and social computing areas. In particular, the group is devoted to the following research directions: web-scale entity search and knowledge mining, semantic computing framework for real world applications and services, user understanding from large scale human behavior data. For more information, please see: <http://research.microsoft.com/en-us/groups/km/default.aspx>.
- August 1997 — February 2006: Senior Research Scientist  
Information Sciences Institute  
University of Southern California  
4676 Admiralty Way  
Marina del Rey, CA 90292-6695  
(310) 448-8711  
Developed new techniques for automatic learning knowledge from textbooks and automatic evaluations of summarization and machine translation, ROUGE and BE; Constructing prototypes for automated text summarization projects, SUMMARIST and NeATS; Integrating information retrieval, text summarization, and machine translation technologies in MuST; Conducting research to build targeted question and answering systems in WebClopedia and TextMap.
- June 1994 — July 1997: Graduate Research Assistant  
*Advisor:* Dr. Eduard H. Hovy  
Information Sciences Institute  
University of Southern California  
4676 Admiralty Way  
Marina del Rey, CA 90292-6695  
(310) 822-1511 ext. 711  
Developed topic identification modules for text processing tasks in the SUMMARIST project.
- January 1992 — May 1994: Research Assistant  
*Advisor:* Professor Dan Moldovan  
Department of Electrical Engineering — Systems

University of Southern California  
Hughes Aircraft Electrical Engineering Center  
EEB 100  
Los Angeles, CA 90089-2560

Joined the Parallel Knowledge Processing Laboratory (PKPL) at USC in January 1992. Maintained a 144-processor parallel processing machine prototype, SNAP I, and wrote system software for this machine. Participated in the fourth and fifth Message Understanding Conference (MUC-4 and MUC-5) with other PKPL team members using information extraction software developed for SNAP I.

- September 1991 — December 1991: Laboratory Assistant  
Department of Electrical Engineering — Systems  
University of Southern California  
Hughes Aircraft Electrical Engineering Center  
EEB 100  
Los Angeles, CA 90089-2560

Was appointed laboratory assistant of the VLSI laboratory course of the Department of Electrical Engineering (course number EE577L). Was responsible for helping students use VLSI layout tool, MAGIC, and simulation tools, SPICE, IRSIM, and CRYSTAL.

- September 1989 — June 1990 : Teaching Assistant  
Department of Electrical and Control Engineering  
National Chiao Tung University  
1001 Ta Hsueh Road  
Hsinchu, Taiwan 30050

Was appointed teaching assistant in the Department of the Electrical and Control Engineering. Designed and taught sophomore- and junior-level microcomputer system laboratory courses including x86 assembly language and hardware implementation.

- January 1986 — June 1987: Research Assistant  
*Advisor:* Professor Pei-Chong Tang  
Department of Electrical and Control Engineering  
National Chiao Tung University  
1001 Ta Hsueh Road  
Hsinchu, Taiwan 30050

Developed a graphical user interface package on DOS using C for a joint project between the Computer Vision and Pattern Recognition group of the Department of Electrical and Control Engineering and the Energy and Resources group of the Industrial Technology Research Institute (ITRI) in Hsinchu, Taiwan.

## **PROFESSIONAL ACTIVITIES**

- Area Chair of EACL 2014
- Area Chair of EMNLP 2013

- Action Editor Transactions of ACL (TACL) (<http://www.transacl.org/>)
- Associate Editor for the Journal of Information Science and Engineering (JISE)
- Member of the Editorial Board of Computational Linguistics (2013 – 2015)
- Program Committee Co-chair ACL 2012 ([acl2012.org](http://acl2012.org))
- Program Committee Co-chair AAAI 2011 AI & the Web Track (<http://www.aaai.org/Conferences/AAAI/2011/aaai11webcall.php>)
- Program Committee Co-chair AIRS-2009 ([www.kb.ist.hokudai.ac.jp/AIRS2009](http://www.kb.ist.hokudai.ac.jp/AIRS2009)).
- Area Chair of Summarization and Generation EMNLP-2009 (<http://conferences.inf.ed.ac.uk/emnlp09/>).
- Panelist of Social Network Mining and Search, Panel of 25<sup>th</sup> International Conference on Data Engineering (<http://i.cs.hku.hk/icde2009/panels.htm>).
- Program Committee Co-chair WWW 2009 Workshop on Web Search Result Summarization and Presentation (<http://www.wssp.info/2009.html>).
- Area Chair of Evaluation for ACL-2008 ([www.ling.ohio-state.edu/acl08](http://www.ling.ohio-state.edu/acl08)).
- Keynote speaker ROCLING 2008 ([forum.dmc.ntnu.edu.tw/~rocloing2008](http://forum.dmc.ntnu.edu.tw/~rocloing2008)).
- ACLIA Track Coordinator for NTCIR-7 ([ntcir.nii.ac.jp](http://ntcir.nii.ac.jp)).
- External Reviewer for the Research Grants Council (RGC) of Hong Kong. January 2006 – present.
- Member of the Program Committee for the Workshop on Analyzing Conversations in Text and Speech (ACTS, a HLT-NAACL-2006 workshop), June 8, 2006, New York City, USA.
- Co-coordinator of the Opinion Workshop in the NTCIR Workshop. November 2005 – present.
- Member of Advisory Board of the NTCIR Workshop. November 2005 – present.
- Member of the Editorial Board of the Journal of Computational Linguistics and Chinese Language Processing (CLCLP) May 2004 – April 2008.
- Area Chair of Question Answering and Summarization for ACL-2005.
- Co-chair of the Workshop on Intrinsic and Extrinsic Evaluation for MT and/or Summarization (MTSE) 2005.
- Member of the Program Committee for the Workshop on Crossing Barriers in Text Summarization Research, post-conference workshop of RANLP 2005.
- Member of the Program Committee for the 10<sup>th</sup> Conference on Artificial Intelligence and Applications (TAAI-2005).
- Guest Editor, ACM Transactions on Asian Language Information Processing (TALIP) – Special Issue: Recent Advances in Statistical Language Modeling – Beyond N-gram.
- Co-chair of the Workshop on Multilingual Summarization and Question Answering – Machine Learning and Beyond to be held from July 11 to 12, 2003, in conjunction with ACL-2003 in Sapporo, Japan.
- Member of the Program Committee for the Text Summarization Workshop to be held on May 31 and June 1, 2003, in conjunction with HLT-NAACL 2003 in Edmonton, Canada.
- Member of the Program Committee for the Special Track on Recent Advances in Natural Language Processing to be held with the 16<sup>th</sup> International FLAIRS Conference from May 11 to 15, 2003, in St. Augustine, Florida, U.S.A.

- Member of the Program Committee for the 13<sup>th</sup> International Workshop on Research Issues on Data Engineering: Multilingual Information Management (RIDE-MLIM'2003) to be held from March 10 to 11, 2003, in conjunction with International Conference on Data Engineering 2003 in Hyderabad, India.
- Co-chair of the Workshop on Multilingual Summarization and Question Answering held from August 31 to September 1, 2002, in conjunction with COLING-2002 in Taipei, Taiwan.
- Member of the Program Committee for the Workshop on Cross-Language Information Retrieval: A Research Roadmap held on August 15, 2002, in conjunction with the 25<sup>th</sup> International Conference on Research and Development in Information Retrieval (SIGIR-2002) in Tampere, Finland.
- Project affiliate of the CLSP Workshop 2001 on Automatic Summarization of Multiple (Multilingual) Documents held from June 25 to August 17, 2001, in the Center for Language and Speech Processing, John Hopkins University, Baltimore, MD, U.S.A.
- Co-chair of the Workshop on Automatic Summarization (WAS 2001) held in Pittsburgh, PA, U.S.A., on June 3, 2001.
- Member of the Question and Answering Roadmap Committee of DARPA TIDES program.
- Co-chair of the Workshop on Automatic Summarization (WAS 2000) held in Seattle, WA, U.S.A. on April 30, 2000.
- I have presented a tutorial, Automated Text Summarization, with Eduard Hovy and Daniel Marcu at the 22<sup>nd</sup> International Conference on Research and Development in Information Retrieval (SIGIR'99).
- I have reviewed papers for the ACM Transactions on Information Systems (TOIS), the ACM Transactions on Asian Language Information Processing (TALIP), the Journal of Information Processing and Management, the Journal of Information Retrieval, the Information Processing Letter (IPL), Fundamenta Informaticae, the Journal of Computational Linguistics and Chinese Language Processing (CLCLP), the South African Computer Journal, the International Joint Conference on Artificial Intelligence (IJCAI), the International Conference on Computational Linguistics (COLING), the Applied Natural Language Processing Conference (ANLP), the Annual Meeting of the Association for Computational Linguistics (ACL), the North American Association for Computational Linguistics conferences (NAACL), the Human Language Technology Conference (HLT), the International Joint Conference on Natural Language Processing (IJCNLP), Asia Information Retrieval Symposium (AIRS), and the Conference on Artificial Intelligence and Applications (TAAI).
- Member of the Association for Computational Linguistics (ACL), the ACL Special Interest Group on Chinese Language Processing (SIGHAN), and the Association for Computational Linguistics and Chinese Language Processing (ACLCLP).

## TALKS

I gave keynote speeches at the NTCIR Workshop 5, 2005, in Japan and the Workshop on Machine Translation Evaluation in Machine Translation Summit IX, 2003. I was also invited to give presentations at the 2<sup>nd</sup> Young Scholar Symposium on Natural Language Processing, (YSS-NLP'2005) in Harbin, China and NTCIR Workshop 4, 2003, in Japan. I have also delivered talks at a number of universities and organizations. These include the University of Southern California, Los Angeles; Information Sciences Institute, Marina del Rey; University of Maryland, College Park; Southern Methodist University, Dallas; Academia Sinica, Taipei, Taiwan; National Tsing-Hua University, Taiwan; National Taiwan University, Taiwan; National Chung Cheng University, Taiwan; National Cheng Kung University, Taiwan; National Taiwan Normal University, Taiwan; Behavior Design Corporation, Taiwan. I also presented papers at the Government's invitation-only TREC and TIPSTER conferences.

## **SOFTWARE PACKAGES**

- **BE – Basic Element Automatic Evaluation Package for Summarization**  
It will be used in Document Understanding Conference (DUC) 2005 and the Multilingual Summarization Evaluation (MSE) 2005 as the official automatic evaluation package. (<http://www.isi.edu/~cyl/BE>)
- **ROUGE – An Automatic Evaluation Package for Summarization**  
It was used by Document Understanding Conference (DUC) 2004 as the official automatic evaluation tool. Over 130 sites around the world have downloaded this package. It will also be used in DUC 2005 and the Multilingual Summarization Evaluation (MSE) 2005 as one of the two official automatic evaluation packages. (<http://www.isi.edu/~cyl/ROUGE>)
- **C\*ST\*RD (Clustering, Summarization, Translation, Retrieval, and Display)**  
Created with A. Leuski, L. Zhou, U. Germann, F.J. Och, and E.H. Hovy for DARPA TIDES Surprise Language Exercise to process Hindi language.
- **SEE – Summary Evaluation Environment**  
It is a graphical summary evaluation environment and has been used by NIST in DUC 2001, 2002, 2003 and 2004 to carry out manual evaluation. (<http://www.isi.edu/~cyl/SEE>)

## **PROGRAMMING LANGUAGES**

- C, C++, PERL, Ruby, Java, JavaScript, SQL, Tcl/Tk, LISP, PASCAL, FORTRAN, BASIC.

## **SYSTEM EXPERIENCE**

- UNIX, Linux, X Window System, Windows NT/2000, Windows 95/98/ME, Windows 3.x, OS/2, Mac OS X, DOS, Macintosh.

## **REFERENCES**

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