STANLEY CHEN

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EDUCATION

Ph.D., Computer Science, June 1996; M.S., June 1995; Harvard University, Cambridge, MA.
Dissertation: *Building Probabilistic Models of Natural Language*
Research in statistical natural language processing, including grammar induction and smoothing for language modeling.

B.S. with honors, Mathematics, June 1989; California Institute of Technology, Pasadena, CA.

EXPERIENCE

Postdoctoral fellow; August 1996–present; Carnegie Mellon University.
Research in language modeling for speech recognition. Language modeling for CMU for Hub 4 Broadcast News Evaluations for speech recognition, 1996–1998. Development of tools for building high-order n-gram models, class n-gram models, cache and trigger models; and tools for lattice rescoring with such models (~50,000 lines C++ code). Specialization in maximum entropy modeling techniques.

Researcher; May 1991–August 1991, May 1992–September 1992; IBM T.J. Watson Research Center.
Research in statistical machine translation and language modeling, including bilingual sentence alignment, word classing, decision-tree language modeling, and user interfaces for machine-aided translation. Development of a concurrent language for specifying batch jobs and a tool for running such jobs on a cluster of workstations.

Teaching assistant; January 1990–June 1990, September 1990–June 1991; Harvard University.
Introductory programming course in PASCAL; course on theory and construction of compilers.

Computer programmer; June 1989–August 1989; Microsoft.
Development work on a graphical database application for the IBM PC.

Computer programmer; June 1986–June 1989; California Institute of Technology.
Development of software to support concurrent computation on a network of personal computers, IBM PC or Macintosh. Development of a run-time linker for the IBM PC.

HONORS

Fellowships
IBM graduate fellowship, 1993–1994.
National Science Foundation graduate fellowship, 1989–1992.
Carnation Merit Scholarship from Caltech for general academic achievement, 1988–1989.
H.J. Ryser Scholarship from Caltech for mathematics achievement, 1988–1989.

Mathematics
W.L. Putnam Mathematical Competition; placed 30th (Honorable Mention), 1985.
USA Math Olympiad, placed 23rd, 1985.
National Calculus Contest, Continental Mathematics League, placed 1st, 1984.

Computer Programming
ACM International Programming Competition; Harvard team, placed 4th, 8th, 1990–1991.
National Individual Computer Contest, American Computer Science League, placed 4th, 1984.

PUBLICATIONS

Stanley F. Chen and Ronald Rosenfeld. A Gaussian prior for smoothing maximum entropy models. Technical Report CMU-CS-99-108, Computer Science Department, Carnegie Mellon University, 1999.

Stanley F. Chen and Ronald Rosenfeld. Efficient sampling and feature selection in whole sentence maximum entropy language models. In *ICASSP-99*, Phoenix, Arizona, 1999.

Adam Kalai, Stanley Chen, Avrim Blum, and Ronald Rosenfeld. On-line algorithms for combining language models. In *ICASSP-99*, Phoenix, Arizona, 1999.

X. Zhu, S.F. Chen, and R. Rosenfeld. Linguistic features for whole sentence maximum entropy language models. In *Proceedings of Eurospeech '99*, 1999.

J.M. Huerta, S.F. Chen, and R.M. Stern. The 1998 Carnegie Mellon University SPHINX-3 Spanish Broadcast News transcription system. In *Proceedings of the DARPA Broadcast News Workshop*, 1999.

Stanley F. Chen and Joshua Goodman. An empirical study of smoothing techniques for language modeling. Technical Report TR-10-98, Harvard University, 1998.

Stanley F. Chen, Kristie Seymore, and Ronald Rosenfeld. Topic adaptation for language modeling using unnormalized exponential models. In *ICASSP-98*, Seattle, Washington, 1998.

Stanley F. Chen, Douglas Beeferman, and Ronald Rosenfeld. Evaluation metrics for language models. In *DARPA Broadcast News Transcription and Understanding Workshop*, 1998.

Kristie Seymore, Stanley Chen, and Ronald Rosenfeld. Nonlinear interpolation of topic models for language model adaptation. In *Proceedings of ICSLP-98*, 1998.

K. Seymore, S. Chen, S.J. Doh, M. Eskenazi, E. Gouvea, B. Raj, M. Ravishankar, R. Rosenfeld, M. Siegler, R. Stern, and E. Thayer. The 1997 CMU Sphinx-3 English Broadcast News transcription system. In *Proceedings of the DARPA Speech Recognition Workshop*, 1998.

K. Seymore, S. Chen, M. Eskenazi, and R. Rosenfeld. Language and pronunciation modeling in the CMU 1996 Hub 4 evaluation. In *Proceedings of the DARPA Speech Recognition Workshop*, Washington, D.C., February 1997.

P. Placeway, S. Chen, M. Eskenazi, U. Jain, V. Parikh, B. Raj, M. Ravishankar, R. Rosenfeld, K. Seymore, M. Siegler, R. Stern, and E. Thayer. The 1996 Hub-4 Sphinx-3 system. In *Proceedings of the DARPA Speech Recognition Workshop*, February 1997.

Stanley F. Chen. *Building Probabilistic Models for Natural Language*. PhD thesis, Harvard University, June 1996.

Stanley F. Chen and Joshua T. Goodman. An empirical study of smoothing techniques for language modeling. In *Proceedings of the 34th Annual Meeting of the ACL*, pages 310–318, Santa Cruz, California, June 1996.

Stanley F. Chen. Bayesian grammar induction for language modeling. In *Proceedings of the 33rd Annual Meeting of the ACL*, pages 228–235, Cambridge, Massachusetts, June 1995.

Peter F. Brown, Stanley F. Chen, Stephen A. Della Pietra, Vincent J. Della Pietra, Andrew S. Kehler, and Robert L. Mercer. Automatic speech recognition in machine-aided translation. *Computers, Speech, and Language*, 8:177–187, 1994.

Stanley F. Chen. Aligning sentences in bilingual corpora using lexical information. In *Proceedings of the 31st Annual Meeting of the ACL*, pages 9–16, Columbus, Ohio, June 1993.

Peter F. Brown, Stanley Chen, Stephen A. Della Pietra, Vincent J. Della Pietra, Robert L. Mercer, and Philip Resnik. Speech recognition apparatus which predicts word classes from context and words from word classes, 1993. U.S. Patent.

A. Ho, G. Fox, D. Walker, S. Snyder, D. Chang, S. Chen, and M. Breaden. The PC-CUBE, an IBM PC-based hypercube. In *Proceedings of the Third Conference on Hypercube Concurrent Computers and Applications*, volume 1. ACM Press, 1988.

A. Ho, G. Fox, D. Walker, M. Breaden, S. Chen, A. Knutson, and S. Kuwamoto. The Mac-CUBE, a Macintosh-based hypercube. In *Proceedings of the Third Conference on Hypercube Concurrent Computers and Applications*, volume 1. ACM Press, 1988.

PROFESSIONAL ACTIVITIES

Johns Hopkins University summer workshop on speech recognition, 1999.

Invited talk: Smoothing for Maximum Entropy Models. Center for Language and Speech Processing, Johns Hopkins University, February 1997.

Reviewer: *IEEE Transactions on Neural Networks*, *IEEE Transactions on Speech and Audio Processing*, *Machine Learning*, *Proceedings of the Annual Meeting of the Association for Computation Linguistics*.

REFERENCES

Professor Stuart Shieber, (617) 495-2344, `shieber@deas.harvard.edu`
Division of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138

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