Han Shu

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EDUCATION

Massachusetts Institute of Technology *Cambridge, MA*

Jan. '97 – Present Ph.D. candidate in Electrical Engineering and Computer Science.

Sept. '91 – Dec. '96 Bachelor of Science and Master of Engineering Degrees in Electrical Engineering and Computer Science. Relevant courses of study include: Continuous Speech Recognition; Digital Signal Processing; Detection, Estimation, and Stochastic Processes; Signals and System; Circuits and Electronics; Computation Structures; Analog Electronics Laboratory; Digital Electronics Laboratory; Probabilistic Systems Analysis; Structure and Interpretation of Computer Programs; Electromagnetic Fields and Energy; Electronic Devices and Circuits; Introduction to Communication, Control, and Signal Processing; Complex Variables with Applications; Linear Algebra; Differential Equations, Macroeconomics, Intermediate Macroeconomics.

Sept. '88 – June '91 **St. Johnsbury Academy** *St. Johnsbury, VT*

Graduated salutatorian in a class of 180. Grand prize winner of USA Mathematics Talent Search, Rensselaer Polytechnic Institute Mathematics and Science Medallist, Vermont's only delegate to DOE Supercomputer Honors Program at Lawrence Livermore Laboratory.

SKILLS

Programming experience in C, C++, Perl, shell scripting, Scheme, PASCAL, Tcl/Tk, and LISP. Working knowledge of MS-Windows, Linux, and UNIX.

EXPERIENCE

MIT Laboratory for Computer Science *Cambridge, MA*

Sept. '00 – Present *Spoken Language Systems Group, Dr. Jim Glass*

Investigating ways to improve acoustic modeling for speech recognition, currently focusing on combining frame-based and segment-based approaches.

Bolt, Beranek, and Newman, Inc. *Cambridge, MA*

Jan '99 – August '00 Applied HMM-based speech recognition technique to face recognition, achieved state-of-art performance on the standard FERET corpus within two months. Invented and developed a novel technique of information retrieval based call routing using speech recognition, met customer's requirements. Improved both English and Mandarin LVCSR system, and participated in the NIST Hub5 conversational speech recognition evaluation, the Mandarin system was the only.

June '95 – June '96 Researcher in On-line Cursive Handwriting Recognition. Developing a real-time handwriting recognition system, investigating and experimenting with different feature representations and different underlying mathematical models for handwriting to improve recognition, and actively prepared for UNIPEN, a worldwide on-line handwriting recognition competition organized by NIST.

June '94 – Aug. '94 Researcher in Continuous Speech Recognition (CSR). Worked with BYBLOS, one of world's best CSR systems to investigate possible usage of phoneme duration. Implemented a statistical phoneme duration model combining information such as surrounding phonemes, lexical stress, pre-pausal lengthening, and speaking rate. The improved BYBLOS system achieved a 10% reduction in error.

June '93 – Aug. '93 System Developer for commercial speech recognition group. Implemented a speech recognition system to automate phone directory assistance. The system successfully recognized all town names under area codes 617 and 508. It achieved a run time recognition accuracy of over 90%.

Jan. '95 – June. '95 **MIT Research Laboratory of Electronics** *Cambridge, MA*

Professor K. N. Stevens

Undergraduate researcher in Continuous Speech Recognition (CSR) using lexical access. Currently, designing and implementing an algorithm for locating vowels within spoken sentences. Then classifying the hypothesized vowels according to their features.

PERSONAL

US citizen. Fluent in English and Chinese. Born and raised in mainland China, received secondary and higher education in the US. Member of Chi Phi Fraternity. Interests include: Fishing and Soccer.

PUBLICATIONS

1. H. Shu, C. Wooters, O. Kimball, T. Colthurst, F. Richardson, S. Matsoukas, H. Gish, "The BBN Byblos 2000 Conversational Mandarin LVCSR System," 2000 Speech Transcription Workshop, 2000, College Park, Maryland.
2. T. Colthurst, O. Kimball, F. Richardson, H. Shu, C. Wooters, R. Iyer, H. Gish, "The 2000 BBN Byblos LVCSR System," 2000 Speech Transcription Workshop, 2000, College Park, Maryland.
3. H. Shu, "On-line handwriting recognition using Hidden Markov Models," Master Thesis, Massachusetts Institute of Technology, 1996.
4. A. Anastasakos, R. Schwartz, H. Shu, "Duration Modeling in Large Vocabulary Speech Recognition," IEEE International Conference on Acoustics, Speech, and Signal Processing, pp. 628-631, 1995.

PATENTS

1. C.-Q. Shu and H. Shu, "System and methods for implementing cepstra-based segmentation in speech recognition systems," patent pending, 2001.
2. R. Schwartz, H. Shu, L. Ng, J. Makhoul, "System and methods of information retrieval based call routing using automatic speech recognition," patent pending, 2000.