Curriculum Vitae

ZENG Zhi, Ph.D

Research objectives

- Video analysis, administration and retrieval
- Pattern recognition and Machine learning

Skills

- Many years' experience in the field of audio/video analysis, administration and retrieval
- Many experience of doing research in pattern recognition and Machine learning.
- Excellence in algorithm and system architecture design and over 8 years C/C++ programming experience

Education

2006.9--2009.7

Ph.D. studies in Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China.

Advisor: Prof. Shuwu Zhang

Thesis: Research on Key Techniques of analyzing and cataloging for broadcast videos

2003.9--2006.7

M.S. studies in Computer Software and Theory, Chongqing University, Chongqing, China.

Advisor: Prof. Xiaofan Yang

Thesis: Research on the Dynamics Behaviors of Recurrent Neural Networks

1999.9--2003.7

B.S. studies in Computer Science, Chongqing University, Chongqing, China.

Academic Research Experience

2009-2010

Study on the similarity-based classification problem, which is to estimate the class label of a test sample based on the similarities between the test sample and a set of labeled training samples, and the pairwise similarities between the training samples. My idea is using sparse representation. Based on a proposed kernelized orthogonal matching pursuit algorithm, I have presented a novel kernelized similarity-based classification framework. Meanwhile, non-negative matrix factorization is also considered to solve the similarity-based classification problem. (Institute of Automation, CAS).

2008-2009

Study on the generic audio document categorization problem, which is to automatically assign a category label to a long audio signal based on its semantic content. Two cases of this generic problem are audio-based video classification and musical genre classification. I have given two kinds of pLSA (the probabilistic latent semantic analysis model) based methods to solve these two problems respectively, and also proposed a new hierarchical generative model to solve the generic problem. (Institute of Automation, CAS).

2007-2008

Study on the macro-segmentation problem of television streams, which is to precisely and automatically determine the start and the end of each broadcasted TV program. I have presented a novel macro-segmentation approach based on acoustic cues. This approach is mainly based on repetition detection; whish is quickly achieved by silence detection and robust audio hashing. (Institute of Automation, CAS).

2007-2008

Study on the news video story segmentation problem, which is to automatically segment the news video into small, single-story units and classify these units according to their semantics. I have proposed an unsupervised multimodal scheme to solve this problem, whish is mainly depended on anchor shots detection and

story-related subject caption recognition. This scheme can accurately detect most of the news story boundaries and also obtain the topics of detected news stories. (Institute of Automation, CAS).

2005-2006

Theoretical study on the dynamics behaviors of recurrent neural networks, which is included the estimation of the domains of attraction of equilibrium points for Hopfield neural networks with delays, and how to stabilize a class of time-delays neural networks via standard feedback control. (Chongqing University).

Work Experience

2009.7-

Assistant Researcher, Institute of Automation, Chinese Academy of Sciences

Project and duty

1. Research and Development on Online Advertising Monitoring Platform, supported by the National Scientific and Technical Supporting Programs. (2009.9 -)

- Design and implementation of a Web Crawler for a wide range of ads, including texts, images, videos and Flashes;
- Leading a research group to study three main techniques for this platform:

Logo detection and recognition, which is applied to analyze the owner of ads;

Optical character recognition (OCR) in image, video and flash, which is used to obtain the content of ads;

Text analysis, which is utilized to monitor the ads and help determine the ads' legitimacy

2. Researches on the Key Technology of Digital Media Content, supported by the National Scientific and Technical Supporting Programs. (2007,05 - 2009,12)

- Responsible for the overall distributed system architecture for managing large-scale multimedia materials;

- Independently finished a research mission for automatic segmenting and Classifying TV programs from recorded broadcast TV stream, and develop the corresponding modules. These modules all have been applied to our final system;
- Responsible for the development of News Video Editing System, mainly focused on the news video story segmentation function;
- Independently proposed an unsupervised multimodal scheme for news video story Segmentation, and develop the corresponding module.

3. Research and Development on Multimedia Materials Management System, supported by the National High Technology R&D Programs of China.
(2006,09 - 2006,12)

- Participated in the research of content-based video retrieval;
- Independently finished a research mission for detecting and locating the target audio clip in continuous audio stream, and developed the music search module by using modified robust audio hashing algorithm;
- Responsible for the development of a B/S architecture and Web-based multimedia search system.

4. Snatching Products Information from Web. (2006,10 - 2007,10)

- This is an intern project for NEC laboratory China;
- Responsible for Designing OWL schema to describe the logical structure of product information from web;
- Independently developed software for automatic snatching product information from web and using OWL to describe it.

Honors and Awards

2008 Excellent Student of Graduate School of the Chinese Academy of Sciences

Papers & Publications

1. Zhi Zeng, et al. “Similarity-based image classification via kernelized sparse representation”, submitted to *International Conference on Image Processing* (*ICIP*’2010),

2010

2. Zhi Zeng, et al. “A hierarchical generative model for generic audio document categorization”, in *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing* (*ICASSP*’2010), pp. 2418-2421, 2010.
3. Zhi Zeng, et al. “A novel approach to musical genre classification using probabilistic latent semantic analysis model”, in *Proceedings of the International Conference on Multimedia & Expo* (*ICME*’2009), pp. 486-489, 2009.
4. Zhi Zeng, et al. “A novel video classification method based on hybrid generative/discriminative models”, *Lecture Notes in Computer Science*, *Structural, Syntactic, and Statistical Pattern Recognition*(*S+SSPR*’2008), pp. 705-713, 2008.
5. Zhi Zeng, et al. “Program segmentation in a TV video stream using acoustic cues”, in *Proceedings of the International Conference on Audio, Language and Image Processing* (*ICALIP*’2008), pp. 748-751, 2008.