

Zhipeng Zhao, Ph. D

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OBJECTIVE

Looking for a full-time position in research-oriented company. Area of interest includes computer vision, object recognition, machine learning and data mining.

SUMMARY AND QUALIFICATIONS

- 6 years of experience in computer vision, machine learning and data mining research with six publications.
- Invited reviewer for the top level computer vision conferences, including ICCV and CVPR.
- M.S. degree in Computer Science and Statistics with specialization in Data Mining.
- Proven success in solving technically challenging, deadline-oriented, high-pressure problems demonstrated by two years of industrial experience using Java, C/C++ and various scripts.
- EAD card holder without need for H-1B sponsorship.

DOCTORAL RESEARCH

Focus:

- **Computer Vision:** Object recognition, Motion analysis and Feature selection.
- **Machine Learning and Data Mining:** Statistical modeling, Clustering analysis, Regression, Classification (Boosting, Support vector machine, Artificial neural network etc.), information retrieval, natural language processing.

Department of Computer Science, Rutgers University:

2003-2009

Research assistant under the supervision of Professor Ahmed Elgammal on general framework for object recognition and human motion analysis.

- **Integration of both spatial and temporal information for human facial and movement analysis:** Designed and built a system for activity recognition which modeled the human motions with the distribution of local motion features and their spatial-temporal arrangements from the discriminative key frames. Achieved an average 94.07% recognition rate over benchmark dataset of human facial expressions, hand gestures and general activities such as walking, running, boxing etc. This work was published in FG08, ICPR08 and BMVC08.
- **Applied both statistical and combinatorial methods for selecting informative parts to build statistical models for part-based object recognition:** Designed and implemented a general object recognition system featuring a two stage method for selecting local image features which characterized the target object class. The first stage used a combinatorial optimization formulation for clustering on a weighted multipartite graph. The following stage was a statistical method for selecting discriminative features from the positive images. The work was published in IWICPAS06, CVPR06 workshop and its extended journal version was published in IJCM 2007.
- **Entropy based vocabulary selection for local visual feature model:** Two entropy based methods for selecting informative vocabulary were implemented in the “bag-of-meaningful-words” model for human activity recognition. Both methods demonstrated significant performance improvement over the baseline algorithm. This work was submitted to WMVC 09.
- **Salient region detection for video sequence via spectrum analysis:** Applied energy re-distribution algorithm (e.g. logarithmic transformation) to the amplitude spectrum of the video sequence for saliency detection. This work was a generalization of previous published methods and could increase the recognition speed.

IBM Almaden Research Center: 2009- Present
Internship under the direction of Dr. Sandeep M Uttamchandani on Rx project, an intelligent storage management system.

- **User query recommendation tool using data mining technology:** Worked with a team of researchers in developing and implementing a Problem Ticket Natural Language framework which pre-processed the client's problems with regards to IT system management. Framework supported advanced features for learning-based auto-complete and corrective query recommendations.
- **Fuzzy signature matching based on system entity dependency:** Implemented a fuzzy signature matching algorithm which detected the system error signature from the diagnostic log. Fuzzy logic was applied in the signature matching algorithm which supported temporal and dependency constraints from the system dependency graph.

WORK EXPERIENCE

ADC Telecommunication, Inc	<i>Software Engineer</i>	2001-2002
DSET, Inc	<i>Software Engineer</i>	2000-2001

EDUCATION

Ph.D. Computer Science Dept. Rutgers University	GPA: 4.0/4.0	2003-2009
M.S. Statistics Dept. Rutgers University	GPA: 3.9/4.0	2004-2007
M.S. Computer Science Dept. Old Dominion University	GPA: 3.9/4.0	1998-2000
B.S. Computer Science Dept. Tsinghua University, Beijing, China	GPA: 85/100	1992-1997

TECHNICAL SKILLS:

- Proficient in Java, C/C++, Matlab, R
- Software package: Weka, Lucene, Matlab statistics, image processing package.
- Certification: Sun certified programmer for Java, Microsoft certificate system engineer

SELECTED PUBLICATIONS

[1] Zhipeng Zhao Akshay Vashist, Ahmed Elgammal, Ilya Muchnik and Casimir Kulikowski, "Combinatorial and Statistical Methods for Part Selection for Object Recognition," in *International Journal of Computer Mathematics*, volume 84 Issue 9, Sept. 2007.

[2] Zhipeng Zhao and Ahmed Elgammal, "Human Activity Recognition from Frames Spatiotemporal Representation," accepted for oral presentation in *International Conference on Pattern Recognition (ICPR08)*, December 2008.

[3] Zhipeng Zhao and Ahmed Elgammal, "Information Theoretic Key Frame Selection for Action Recognition," Accepted for oral presentation (12.5% accept rate) in *British Machine Vision Conference (BMVC08)*, September 2008.

[4] Zhipeng Zhao and Ahmed Elgammal, "Spatiotemporal Pyramid Representation for Recognition of Facial Expressions and Hand Gestures," in *International Conference on Automatic Face and Gesture Recognition (FG08)*, September 2008.

[5] Zhipeng Zhao and Ahmed Elgammal, "A statistically selected Part-Based Probabilistic Model for Object Recognition," in *International Workshop on Intelligent Computing in Pattern Analysis/Synthesis, (IWICPAS06)*. Xian, China, August, 2006, LNCS 4153 pp 95-104.

[6] Akshay Vashist, Zhipeng Zhao, Ahmed Elgammal, Ilya Muchnik and Casimir Kulikowski, "Discriminative Part Selection using Combinatorial and Statistical Models for Part-Based Object Recognition," in *Beyond Patches Workshop in conjunction with CVPR06*, June 2006.

REFERENCE

Available upon request