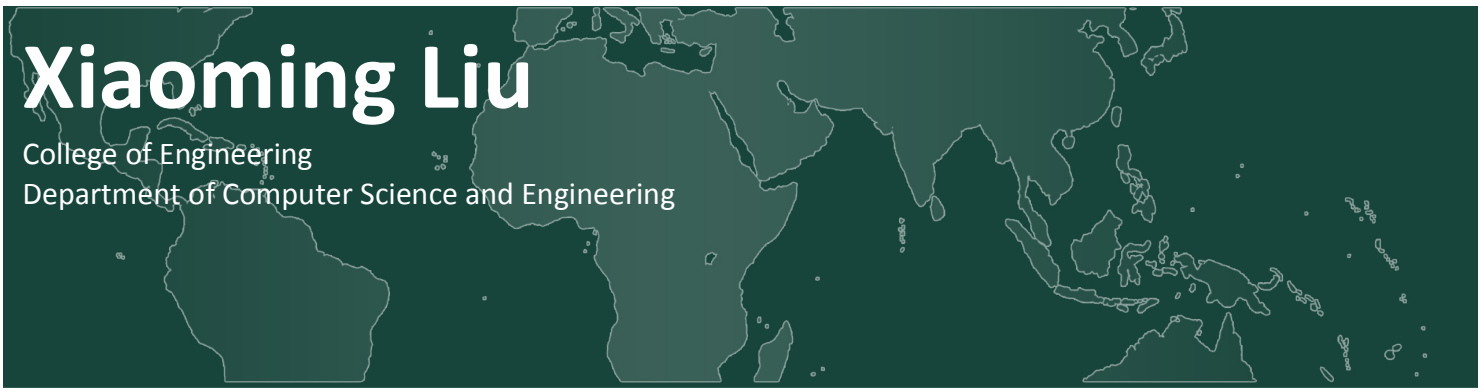

Xiaoming Liu

College of Engineering
Department of Computer Science and Engineering

Dr. Xiaoming Liu is an Assistant Professor in the Department of Computer Science and Engineering. His research interests include computer vision; machine learning; human computer interface; medical image analysis; pattern recognition; image and video processing; and multimedia retrieval. Xiaoming Liu received his Ph.D. degree in Electrical and Computer Engineering from Carnegie Mellon University in 2004. He received a B.E degree from Beijing Information Technology Institute, China and a M.E. degree from Zhejiang University, China in 1997 and 2000 respectively--both in Computer Science.

Global Research Interests

Xiaoming's global research interests include; computer visions; machine learning; human computer interface; medical image analysis; pattern recognition; image and video processing; and multi-media retrieval.

Liu's research interests focus on designing advanced algorithms for computer vision and applying them to a variety of applications. He is particularly interested in face recognition, bio-metrics, human sensing and visual analysis for agriculture and medical image analysis. Liu would like to address whether the computer can be smart enough to fully understand the visual world in the massive image and video data and extract useful information from it.

Description of Research Proposal:

Dr. Liu is applying his core visual analysis capability to a wide variety of research topics, with exemplar proposals as follows:

1. In many computer vision problems, there exists side information, i.e., information contained in the training data and not available in the testing phase. This motivates us to develop a new learning approach known as learning with side information that aims to incorporate side information for improved learning algorithms.
2. Although face recognition in controlled condition has performed well, it is still very challenging to conduct unconstrained face recognition, where the subject's face can have arbitrary pose, illumination, and expression. Liu is working on incorporating advanced image alignment technique for face recognition from surveillance contents.
3. Liu is interested in biometrics research. For example, one project is to use the dynamics information of how a computer user types on a keyboard to authenticate the user, which can be a replacement of the conventional password based user authentication. Liu is also working on developing person re-identification algorithm for person retrieval from surveillance videos.
4. Visual analysis for agriculture: Some ongoing efforts are to perform detailed leaf segmentation so as to understand the photosynthesis efficiency of plants under various gene mutations; to have a UAV fly over a field and estimate the level of disease infection of the crops; to determine the optimal feeding schedule by monitoring the fish behavior.

Region/Country of research:

China