

Baozhong Tian, Ph.D.

Research Statement

Current Research Interests

One of my research interests focuses on the 3D reconstruction algorithms and their applications. There are different algorithms for computing depth information using single camera and a dynamic sequence of images. I have compared some optical flow based algorithms and will investigate and develop more robust 3D reconstruction algorithms. One of the applications is to recover sound from gramophone records by processing the scanned image of the records. This is useful in archiving the valuable historic records. I am currently in the process of building a system to extract sound from scanned images. The 3D approach is still under improvement in the aspect of algorithm efficiency.

There are also other computer vision research fields that I am interested in, such as robust stereo vision, image enhancement, image segmentation, image compression, etc. I am currently also working on some tracking application for organic farm operations, such as smart cultivation system using CNN (Convolutional Neural Networks).

Another area that brought to my interest recently is Cyber-Physical Systems. It is based on existing Internet infrastructure and incorporate many different kinds of physical sensor/actuators distributed among real world environments. Information is gathered, analyzed and decisions are made which may interact with physical operations. This is a quick evolving field of research which has spread over military, geological, civil engineering, and many other applications. I am currently working on some interdisciplinary research activities and has become a member of the editorial board of the Journal of Cyber-Physical System. As a co-PI, I was awarded the West Virginia 2013 Research Trust Fund Grant, West Virginia Center of Excellence for Cyber-Physical Systems, \$100,000.

Interests in Acoustics and Electrical Engineering

My study of Acoustics Science makes me also interested in many areas of acoustics such as architectural acoustics design, ultrasound detection and measurement and other industrial applications.