

Pranav Mantini

Contact

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Interests

- **Computer Vision, Image Processing
Machine Learning, Video Analytics**
- Human Motion Analysis and Prediction, 3D Models for Surveillance, Automated Video Surveillance, Software Development, Algorithm Design.

Education

Ph.D., Computer Science, 2015
University Of Houston, Houston, TX, USA.
Dissertation Topic: "Context Based Human Trajectory Forecasting and its Applications".

M.S., Computer Science, 2009
University of Houston - Clear lake, Houston, TX, USA.
Capstone: "Using CUDA for Solar Thermal Plant Computation".

B. Tech., Information Technology, 2007
St. Joseph's College of Engineering, Chennai, TN, India.
Project: "Virtual Defense Machine in JAVA uses 1024 bit key".

Experience

University of Houston, Houston, TX, USA
Department of Computer Science

February, 2010 - Present

Lecturer

- **Computer Vision:** Graduate level course

Post Doctoral Fellow

- **Non-functionality and Operational Degradation Detection in Video Surveillance Systems:** Surveillance Cameras become non-functional for variety of reasons, from getting simply unplugged to getting struck by lightning. Currently designing a cloud based camera fault detection tool to automatically identify such non-functionality and alert the user through an intuitive user interface.

Research Assistant

- **3D Models for Video Surveillance:** Designed a complete 3D environment model for simulating video surveillance through networked video surveillance cameras.
- **Human Occupancy Map Estimation:** Developed a methodology for estimating the human occupancy map for hallways based on the surrounding 3D geometry.
- **Human Trajectory Forecasting:** Developed an algorithm for predicting human motion within indoor environments that incorporates the effect of the surrounding geometry and observed human social norms.

- ***Re-Identification using Contextual Features:*** Implemented an algorithm to improve re-identification through incorporating a human motion prediction model to complement existing features with spatio-temporal features.
- ***Camera Placement Optimization:*** Developed an algorithm to locate the best position to setup security cameras based on the human motion in the environment for obtaining effective surveillance.
- ***Tracking using Context Based Human Motion Estimation:*** Developed an algorithm for tracking humans in indoor environments by employing human motion prediction that takes social context and environment into consideration.

Teaching Assistant

- Shared responsibilities for exams, homework assignments, and grades for graduate level course: Digital Image Processing in Fall 2013.
Computer Architecture in Spring 2014.

Network Administrator/Web Developer, Quantitative Imaging Lab

- Designed and developed a website for Quantitative Imaging Laboratory and worked as network administrator for Windows network and Ubuntu web server.

Tietronix Software, Houston, TX, USA

January, 2009 - May, 2009

Masters Capstone Project

- ***Using Cuda for Solar Thermal Computation:*** Implemented an algorithm for Enabling faster computation of solar thermal energy using NVIDIA CUDA.

Publications

- **P. Mantini**, S.K. Shah. Human Trajectory Forecasting In Indoor Environments Using Geometric Context.
- **P. Mantini**, S.K. Shah. Enhancing re-identification through contextual trajectory forecasting.
- **P. Mantini**, S.K. Shah. Camera Placement Optimization Conditioned on Human Behavior and 3D Geometry.
- **P. Mantini**, S.K. Shah. Multiple People Tracking using Contextual Trajectory Forecasting.

Work in Progress

- **P. Mantini**, S.K. Shah. Human Trajectory Prediction within Indoor Scenarios and Its Application in Re-Identification.
- **P. Mantini**, S.K. Shah. A Signal Detection Theory Approach for Camera Tamper Detection.
- **P. Mantini**, S.K. Shah. Camera Tamper Detection Techniques for Video Surveillance: A Survey.

Skills

Languages: C/C++, Python, Java, MATLAB.

APIs: OpenCV, OpenGL, Google Cloud Platform (SDK).

Tools: Eclipse, Visual Studio, LaTeX, Adobe Photoshop.

Web. Development: HTML, PHP, SQL, MYSQL, JQuery, AJAX.

Operating Systems: Unix/Linux, Windows.

**Patents,
Provisionals**

- Past: Optimal Camera Placement for Effective Surveillance, 2015.

**Leadership
Activities**

NSF I-Corps Entrepreneurship Course, Entrepreneurial Lead January, 2016 - February, 2016

- Lead a three person team of computer scientist and software engineer to interview one hundred customers in five weeks to create a viable business model for a computer vision startup.

Pratham@UH, President

August, 2012 - May, 2014

- Lead a non-profit organization consisting of 20 members. Conducted various fundraising and awareness events for supporting the education of underprivileged children in India.