

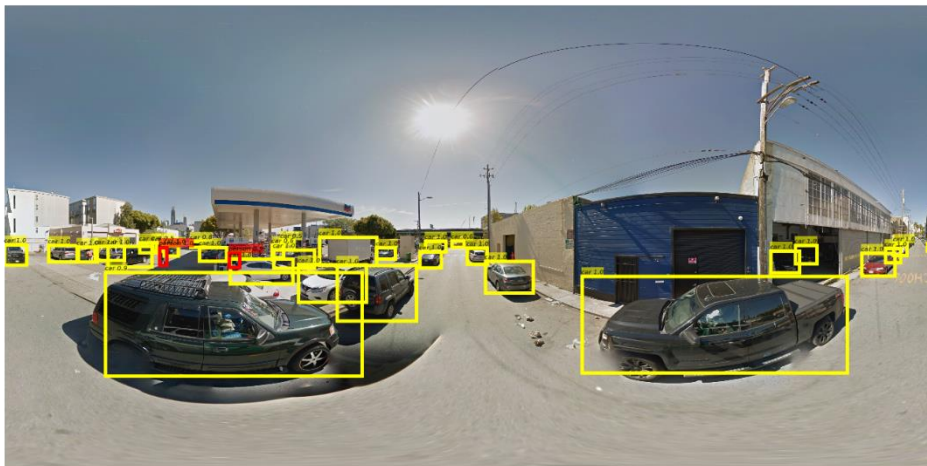
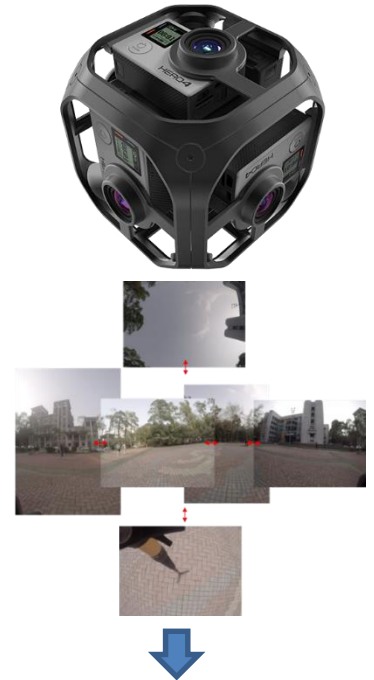
NTHU CS Computer Vision Lab.

Prof. Shang-Hong Lai

- **3D Reconstruction**
 - 3D room layout estimation from images
 - Visual SLAM
- **Image/Video Analysis and Processing**
 - Action recognition
 - Facial video analysis (expression recognition, behavior recognition)
 - Image synthesis, enhancement, and completion with GAN
- **Visual Learning**
 - Object detection/tracking
 - Biometric recognition
 - Defect classification

Stitching and Object Detection/Tracking for 360° Video

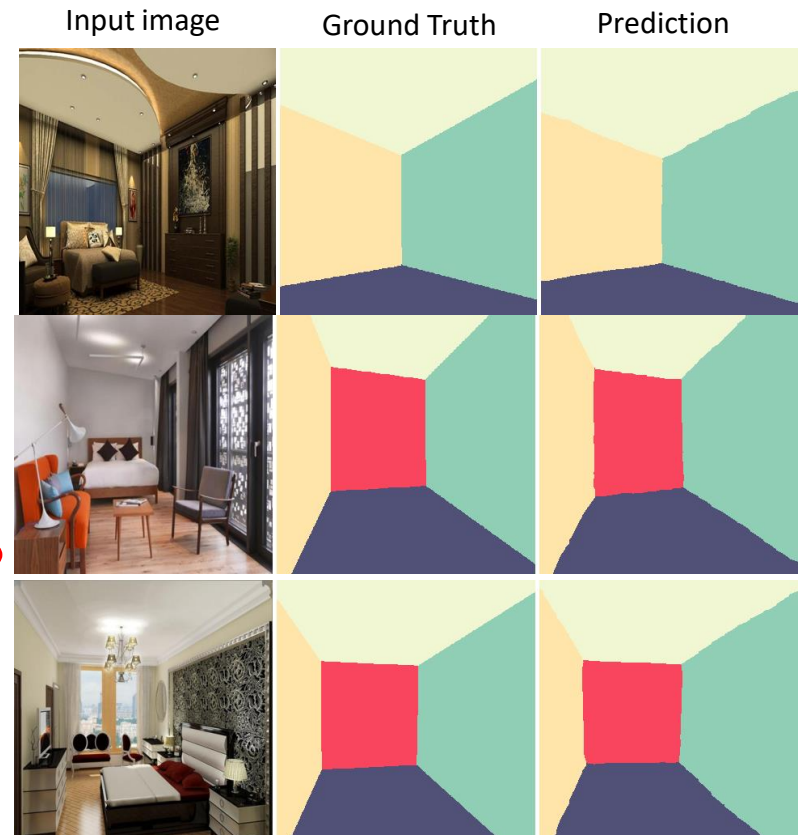
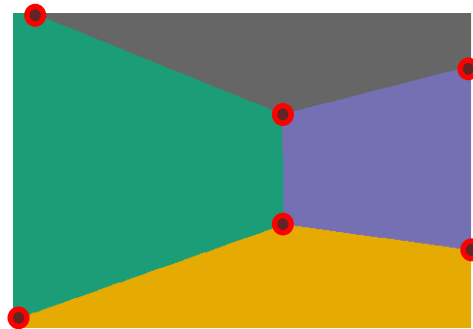
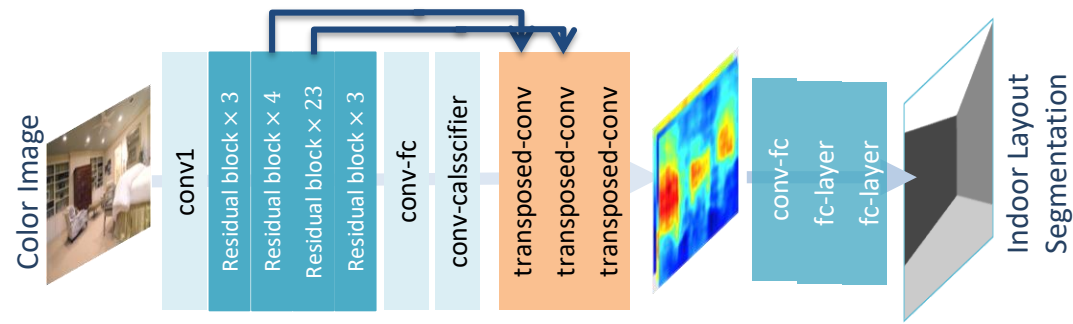
- Combine the videos taken from 6 GoPro cameras into a 360° panoramic video.
- Develop algorithms for exposure compensation and image dehazing to achieve seamless stitching.
- Develop deep neural network models for object detection and tracking directly on spherical coordinated image/video.



Video Stitching

Indoor Scene Layout Estimation

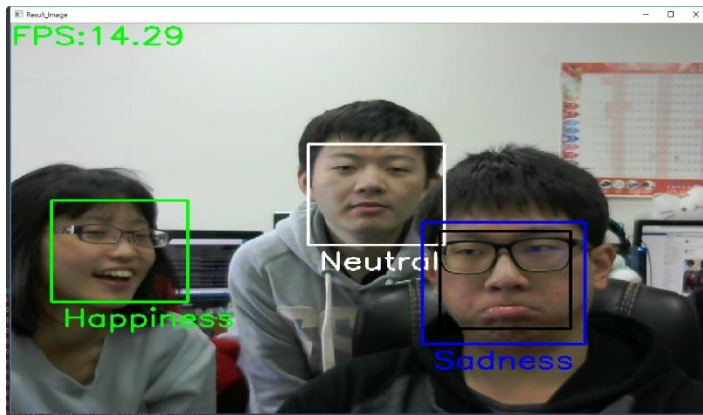
The goal of this research is to reconstruct 3D room layout model and estimate 3D pose of the camera from images or video of cluttered indoor scenes based on a semantics-guided deep learning framework.



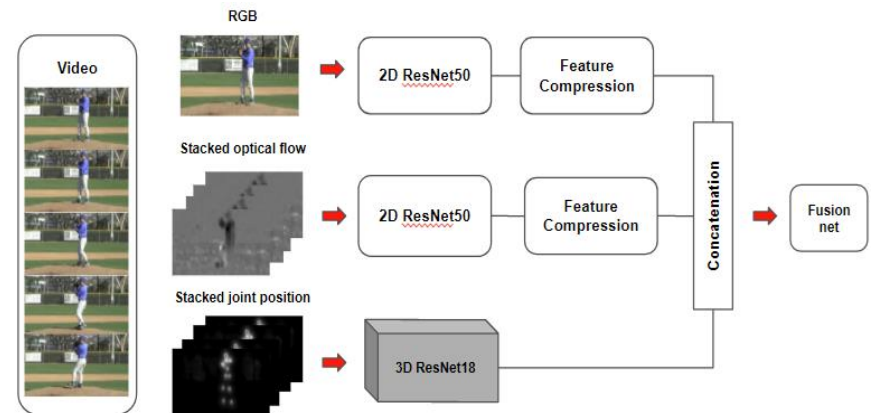
Human Related Recognition

Develop deep neural networks for human-related recognition tasks, including biometric recognition (face and fingerprint recognition), expression, behavior and action recognition.

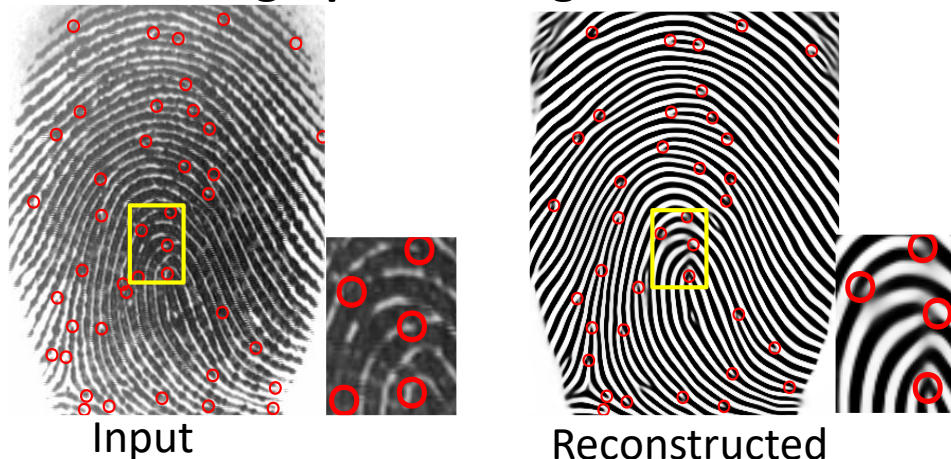
Expression Recognition



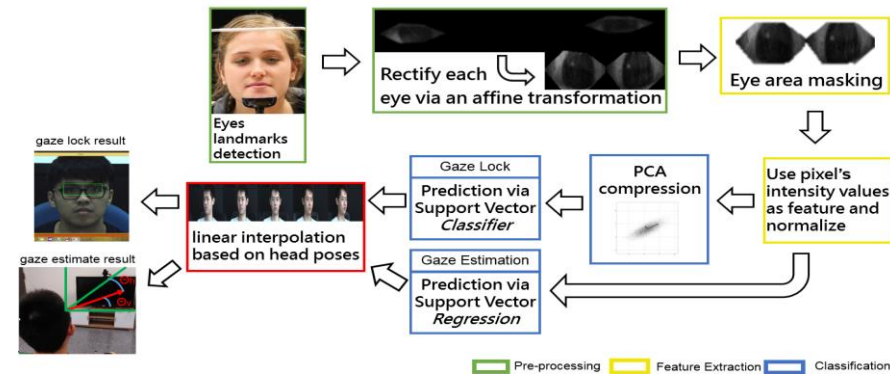
Action Recognition



Fingerprint Recognition



Gaze Estimation



Pre-processing Feature Extraction Classification