Extract emotion information from facial expression (Machine Learning)

- Recognize and classify facial expressions for emotional cues
- Generate multidimensional plot rating test sample's degree of emotion (e.g. degree of happiness, degree of sadness, degree of disgust…)
- Application in dating, campaign, and advertising…

Place virtual object into reality scene (Augmented Reality)

- Recognize the surface normal of the major surface in the scene
- Orientate the virtual object to befit the perspective projection of the scene
- Overlay the reality image scene with the virtual object
- AR visualization of construction projects or other 3D models

Handheld scanner made from optical mouse (Stitching)

- Modify the hardware of a regular optical mouse
- Extract raw data from mouse
- Preliminary image processing
- Image stitching and distortion reduction

Optical odometry (Optical Flow)

- Implement optical flow algorithm on video clip/ camera feed
- Compute the motion of the camera frame
- Recover the change in yaw angle
- Application in robotics (localization and navigation)