Indoor Localization using Sensors on Smart Devices:

In this project we developed localization technologies that leverages on RF sensors such as Bluetooth Low Energy (BLE) beacons or WiFi-RTT access points. The system was developed it can provide various level of localization resolution such as proximity, room level, precise coordinates (like google maps). The system is modular in nature and can utilize information from multiple sensors such as BLE, WiFi-RTT, floor plan, Inertial Measurement Unit (IMU) etc. The system modular such that it can be adapted for variety of applications such as manufacturing, museum visits, hospitals, office visits and can be deployed as a smartphone application.

Localization of Endoscope

In this project we developed an image based endoscope localization system that combines deep learning predictions with traditional computer vision methods to estimate the pose of the endoscope.

Activity Recognition using RF Sensors

In this project we developed an activity recognition using RF sensors which can be mounted under desks or walls. The system was tested for variety of applications such as activity prediction at checkout counters, activity prediction performed by office desk users and space utilization on display counters in stores (e.g. apple stores). The system is non-intrusive in natures as it only captures movement through RF signal reflection.

Resume: <a href="resume/CV.pdf"> CV </a>

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<b>

<a href="https://dl.acm.org/doi/10.1145/3343055.3360742">

A Web-Based Remote Assistance System with Gravity-Aware 3D Hand Gesture Visualization - ISS'19 Demo

</a>

&nbsp;

<a href="pictures/ISS2019/VideoDemo.mp4">[Video]</a>

</b> <br>

<i>Chelhwon Kim, Patrick Chiu, Yulius Tjahjadi</i>

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<a href="https://www.fxpal.com/publications/toward-long-distance-tabletop-hand-document-telepresence/">

Toward Long Distance Hand-Document Telepresence - ISS'19 Poster (Best Poster Award)

</a>

&nbsp;

<a href="pictures/ISS2019/poster\_teleskele\_ISS-19\_v04.pdf">[Poster]</a>

</b> <br>

<i>Chelhwon Kim, Patrick Chiu, Joseph de la Pena, Laurent Denoue, Jun Shingu, Yulius Tjahjadi</i>

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<b><a href="https://www.fxpal.com/publications/info-indoor-localization-using-fusion-of-visual-information-from-static-and-dynamic-cameras/">

InFo: Indoor localization using Fusion of Visual Information from Static and Dynamic Cameras - IPIN'19

</a>

</b> <br>

<i>Chelhwon Kim, Chidansh Bhatt, Mitesh Patel, Don Kimber, and Yulius Tjahjadi</i>

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<b><a href="http://www.fxpal.com/publications/capturing-handwritten-ink-strokes-with-a-fast-video-camera.pdf">

Capturing Handwritten Ink Strokes with a Fast Video Camera - ICDAR'17

</a>

</b> <br>

<i>Chelhwon Kim, Patrick Chiu, and Hideto Oda</i>

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<b><a href="https://vision.soe.ucsc.edu/node/374">

Indoor Manhattan Spatial Layout Recovery from Monocular Videos via Line Matching - CVIU (2017)

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<i>Chelhwon Kim, and Roberto Manduchi</i>

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<b><a href="https://vision.soe.ucsc.edu/node/363">

Planar Structures from Line Correspondences in a Manhattan World - ACCV'14

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<i>Chelhwon Kim, and Roberto Manduchi</i>

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<b><a href="http://www.fxpal.com/publications/high-quality-capture-of-documents-on-a-cluttered-tabletop-with-a-4k-video-camera/">

High-Quality Capture of Documents on a Cluttered Tabletop with a 4K Video Camera - DocEng'15

</a>

</b> <br>

<i>Chelhwon Kim, Patrick Chiu, and Henry Tang</i>

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<b><a href="JoV2013/SaliencyDetection.html">

Visual Salinecy in noisy images - JoV (2013)

</a>

</b> <br>

<i>Chelhwon Kim, and Peyman Milanfar</i>

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<b><a href="http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.485.8464&rep=rep1&type=pdf">

Structured light based depth edge detection for object shape recovery - CVPR'05 Workshop

</a>

</b> <br>

<i>Chelhwon Kim, Jiyoung Park, Juneho Yi, and Matthew Turk</i>

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