**SELECTED PROJECTS**

**Computer Vision**

**Project: *A Ball Tracker***

- Design a real-time baseball tracker under **C++**, Qt and **OpenCV**

- Accelerate the algorithm by using **OpenMP** to utilize concurrency and multiple thread computation.

- For further upgrade, develop a sophisticated template matching and optical flow detection algorithm to match objects with different size, shape and features

**Project: *Image Stitching Tool***

- Design and optimize feature detection algorithm and feature matching algorithm

- Stitch images together and improve the image quality by using blending technique

- Automatically detect suitable features such as SIFT, SURF and Harris, to achieve better match result

**Research Project: *Low-level image processing***

- Reconstruct a geometric model by computing the vision odometry, utilizing optimized smoothing and filter algorithms to get better image quality

- Design a boundary and centerline detector under **Maltab** based on **Dijkstra** Algorithm

**Front End**

**Project: *Personal Website of a photographer*** Dec. 2018- Feb. 2019

- Build the the the whole pages for a photographer who is studying in School of Visual Art

- Design the dynamic component of photo uploading interface. Utilize **Ajax** and **SQLite** to capture and manage photos uploaded by user

- Handle the uploading photos and store the files on server by utilizing **AWS S3 Bucket**.

**Project: *3D Simulator of Solar System*** Nov. 2018- Dec. 2018

- Implement a 3D object renderer with multiple functionalities supporting shadows, surface reconstruction and texture mapping under **QT** and **OpenGL**.

- Accelerate the computation of real-time dynamic parameters for all astronomical objects by using **C++ AMP**

**Project: *Tickets Inquiry Tool*** Oct. 2018- Nov. 2018

- Design an inquiry tool by **Python** to inquiry tickets information from official website of Chinese Railway Company

- Resolve, parse and visualize the **Json** format data

**Project: *Low-level image processing*** Sep. 2018- Nov. 2018

- Design a geometric model for computation of vision odometry involving smoothing and filtering algorithms

- Optimize low-level image processing method by applying dynamic programming and optimized filters using matlab

**Intern Project: *Local Execution of Simple Routine*** Jun. 209- Sep. 2019

- Optimize the whole architecture of the service to execute Alexa routines.

- Identify simple and complex routines and select suitable dispatcher for different routines

- Use AWS Step Function and AWS Lambda to manage the complex workflow of complex routines

- Use local service provider to execute simple routines directly