



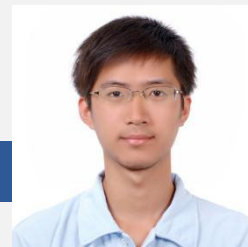
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# Chiao Yen-Hao

Software Engineer



## Companies & Education

- 2021 - Now **SenseTime**, AI Solution Manager
- 2019 - 2021 **Perfect Corp.**, Associate Principal Engineer
- 2012 - 2018 **Garmin**, Advanced Software Engineer
- 2010 - 2012 M.S. Computer Science, Computer Vision Lab  
**National Tsing-Hua University**, Taiwan
- 2006 - 2010 B.S. Computer Science  
**National Tsing-Hua University**, Taiwan

## Skills

### Computer Vision

Landmark detection, image segmentation, object detection, video stabilization, structure from motion

### Deep Learning Frameworks

Keras, TensorFlowJS

### Programming Languages

C++, python, C#, javascript, OpenCV

## Jobs Overview



Advanced Software Engineer,  
6 years

### Computer Vision

- Traffic sign detection
- 3D reconstruction from aerial images
- Video stabilization
- Image compression

### Navigation Map

- Survey car software
- Map production tools

Associate Principal Engineer,  
2.5 years

### Segmentation (skin care)

- acne/texture/dehydration detection

### Hand Pose Estimation (virtual try-on)

- hand joints/wrist/ring

### Algorithm Implementation

- porting algorithms to mobile(C++) and web(js) SDK

AI Solution Manager,  
0.5 years

### Product Management

- virtual try-on products

### Presales

- virtual try-on products
- AR marketing, AR navigation
- Avatar

## Project Experiences

### AR product management

- Product management (virtual try-on, AR marketing, AR navigation, Avatar)
  - Overlook market and potential competitors. Provide knowledge for tech niche of products and new business model
  - Keep track of product roadmap, business status and risks
- Presales information center
  - Handle questions between sales teams and product teams
  - Manage demo tools, support Asia-Pacific demos and POCs

### (AI) Hand virtual try-on

(7 engineers, 6 months)

- Training data generation (synthetic)
  - Generate training data from 3D hand model for ring/bracelet/nail virtual try-on
  - Render training images with Blender
  - Compute ground truth labels from hand mesh and joint coordinates
- Hand tracking
  - AI model for live 3D hand joints detection
- Finger pose estimation
  - AI model for live finger joints 3D pose estimation (translation, rotation, scale)

### (AI) Skin care feature detection

(1 engineer, 1 year)

- Acne detection (B2B), texture detection (B2B), dehydration detection (B2C)
- Full-stack from scratch to product
  - Data collection, labelling, augmentation, balancing
  - Model design
  - Post-processing, porting to PC, mobile and web platforms

### (AI) Feature integration and porting

(1 engineer, 6 months)

- Integration of 10 skin care features from different people and repositories
  - Coding style unification, code size reduction (>50%)
- Porting AI detectors to web platform with tensorflow.js
  - Web assembly for fast pre-processing and post-processing
  - TFJS for fast inference
- Set up and maintain servers for real time skin care detection

### Traffic sign recognition

(1 engineer, 2 assistants, 4 months)

- Image feature extraction for traffic signs with traditional CV algorithms
  - HSV color space, edge detection, connected components, DtBs, HOG
- SVM for classification (over 20 classes), with both precision and recall > 90%
- Replace manual operation of traffic sign labeling with automatic identification

### 3D reconstruction and ortho-rectification from aerial images

(3 engineers, 10 months)

- Reconstruct 3D scene from multiple 2D images by
  - SfM (Structure from Motion) to estimate camera poses, and construct ground feature point cloud
  - Bundle adjustment, with Ceres library for non-linear least square optimization
- Collaborating with GIS engineers, perform image stitching by orthographic projection, with re-projection error < 50cm

### Garmin street view survey car

(1 engineer, 3 drivers, 6 months)

- A large-scale update of survey car production software
  - Re-factory of production software into shooting, storage, map, user interface modules
  - Resolve overflowed memory problem due to replacement of high-resolution cameras
  - Dynamic adjustment of camera parameters to improve image quality
- Manage issue report system and related databases
- Online resolving issues reported by survey car drivers

### React web app

- Self-driven project
- A YouTube music player with user-based playlist and real-time shared playlist
- Built with React, Redux, Material UI for appearance, and Firebase for data storage

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## Publications

1. Rolling shutter correction for video with large depth of field. ICIP'13
2. Blind image deblurring with modified richardson-lucy deconvolution for ringing artifact suppression. PSIVT'11