Chang Huai-Yuan

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Applied Position: Computer Vision and C++ Engineer

Education

- **Peking University**, Beijing, China

  M.E. in Software Engineering, Sept. 2017 - Aug. 2020

  - Graduate thesis: Design and Implement of Real-time Long-term Single-person Tracking System

- **Chung Yuan Christian University**, Chungli, Taiwan

  B.S. in Computer Science and Information Engineering, Sept. 2013 - June 2017

  - Graduate thesis: Face Recognition Access Control System Based on Raspberry Pi

Experience

- **Patere Technologies, Inc.**, Taipei, Taiwan

  Computer Vision Engineer, Nov. 2020 - Now

  - Confidence and speech fluency detection
    - Surveyed how to detect the speech fluency and confidence of the candidate with speech detection.
    - Designed and implemented the rule-based project with basic speech features. Researched more complex and useful features which served for ML/DL, such as MFCC, FBank features.
  - Focus detection
    - Designed and Implemented the algorithm to check the candidate is focusing or not.
    - Accuracy, precision, and recall are all about 80% on the self-record dataset and the fewer testing dataset which acquired from YouTube.

- **Lenovo Group Ltd, Lenovo Research**, Beijing, China

  Computer Vision and AI Algorithm Intern, Aug. 2019 - Nov. 2019

  - Developed automatic training system for commodity detection based on RetinaNet for unmanned stores, and found the reason resulted in low detect success rate by analyzing the testing result
  - Increased the success rate of commodity detection about 20% through collecting and generating the more complicated and suitable data to train the model

- **Zero Zero Robotics**, Beijing, China

  Computer Vision and AI Algorithm Intern, Nov. 2018 - Aug. 2019

  - Involved in Hover 2 drone development
    - Researched and tested object tracking and Template Matching Algorithms, and analyzed their advantages and shortcomings

        - Implemented, maintained and optimized long-term object tracking function
        - Increased the success rate of object tracking function by 15%, and CPU utility decreased by 5% through adding constraints and modifying object re-identification strategy
    - Designed and researched binocular face recognition access control system
        - Studied the algorithms of face detection and recognition (MTCNN, FaceNet, and FaceBoxes)
        - Tried to achieve face anti-spoofing with binocular

Competition

- ## IBM Watson Build Competition: Clothes Master

  Team Leader, May 2018 - June 2018

    - **2nd place in China**
    - Implemented a personal dress recommendation web which based on IBM Watson chatbot
    - Achieved front-end(Javascript) and back-end(Node.js)
    - Designed software architecture and main functions, and Implemented them

Project

- ## Design and Implementation of Real-time Long-term Single Person Tracking System

  Individual Work, Nov. 2019 - April. 2020

    - Utilized two trackers to reach the goal, one is the tracker based on pose estimation, and the other is object tracking
    - Divided the tracker into three states: target selection, track and retrieval, to facilitate the design and implementation
    - Designed and Developed several methods to achieve the goal of real-time and stable long-term person tracking
    - Regarded self-collection and self-record drone dataset as test dataset
    - Tracking successful rate is 79.02%. Recall is 77.54%. FPS on computer CPU is 12.87
- ## 2D Anime Charactors Recognition Based on CNN

  Team Leader, May 2018 - June 2018

    - Tried to recognize the anime character successfully by the same character but different styles
    - Utilized the LBPcascade trained by other developers to detected anime faces
    - Utilized Inception v3 of TensorFlow official version to recognize anime figures, and only trained the classifier layer by transfer learning
    - **TOP1 result is 73.25%**
- ## Scheme Interpreter Implemented in C++

  Individual Work, Mar. 2017 - May 2017

    - Designed Scanner and Parser, and Binding and Error Message by analyzing Scheme code structure
    - Transformed Scheme code into designed logical tree structure
- ## Face Recognition Access Control System Based on Raspberry Pi

  Team Leader, Feb. 2016 - Nov. 2016

    - Learned and utilized the technologies of face recognition and pre-processing, and balanced the security and praticality during the development
    - There are establishment of face key and face recognition two partition of software system, and the systme had ported to Raspberry Pi and send signal to relay to control the electromagnetic induction door lock

Skills

- Programming Language: C, C++, Java, R, Python
- Other: Git, GDB, Docker, pdb