Xuanzhuo Xu

School Of Electronic Engineering And Computer Science Peking University
Email Address: xxzh@pku.edu.cn **Tel:** +86 155-1006-8091

EDUCATION

Peking University School Of Electronic Engineering And Computer Science

- **Computer Science** Department of Computer Science and Technology Undergraduate

EXPERIENCE IN RESEARCHING

- **Research on 2D Object Detection**, Summer Intern under Jianbo Shi, UPenn 2021-07 —— Now
  - Following advisor Jianbo Shi(His homepage:https://www.cis.upenn.edu/~jshi/) from University of Pennsylvania. Focusing on 2D Object Detection. To be more specific, trying to improve the performance of FPN and DETR taking advantage of attention mechanism.
- **Research on Vision Transformer**, Megvii Inc. 2020-12 —— 2021-06
  - Improve the performance of DETR (DEtection TRansformer) scheme proposed by Facebook. Try to find some shortcomings and potential adversarial sample attack towards it.
- **Survey on the topic of Blind Deblur**, Course Project 2020-05
  - Course: Computational Photography: Image Formation Theory and Deep Learning Practice
  - Content: Presented a 13-pages(in the template of CVPR) survey report after reading 20 papers associating with Blind Deblur. My work mainly focus on the classical approaches in last ten years, and reproduced some of these approaches.

EXPERIENCE IN ENGINEERING

- **Industrial tasks relevant to computer vision**, Megvii Inc. 2020-12 —— 2021-06
  - Traditional vending machine can only sell a very limited range of things, we tried to realize an algorithm that can automatically tell what merchandise had been fetched from the cabinet, which selling almost every kinds of things provided in normal shop. That was the first approach to realize this advanced vending machine as far as I know.
  - Based on RetinaNet, we realized a mask detection model with the coding frame MegEngine by Megvii Inc.. That model needs to perform on a machine with small memory. Eventually that model runs as fast as about 30 fps.
  - A textile mill has multiple bobbins that indicates different kinds of yarns they produce, and the bobbins are in need of classification. However, there are only a small set of labeled pictures given to us. We managed to realize the model via contrastive learning and some little tricks related to few-shot learning. And it was able to classify abnormal ones, and finally tell which bobbins are in the same category.
  - A pharmaceutical factory who filtrate and bulking produced pills by a spinning holey disk, previously they count the number of pills by weighting, which is not such accurate. We tried to count the pills been bulked via traditional computer vision approaches like Hough Transform.
- **Refinements on DETR**, Course Project 2021-03 —— 2021-06
  - Course: Computer Vision and Deep Learning
  - Project: We tried multiple approaches aiming to improve the performance on DETR, with some newly proposed ideas, including Criss-Cross Attention, Conditional Positional Encodings for Vision Transformers, and also changing the structure of Transformer.
- **Generating Adversarial Examples**, Course Project 2020-03 —— 2020-06
  - Course: Introduction to Artificial Intelligence
  - Project: Produced a programme aiming to attack those common image classfication neural network, including those pre-known network, and unknown neural network(Black box attack).

LEVEL OF FOREIGN LANGUAGE

- **English**
  - CET6: 559; CET4: 621; TOEFL: 101; GRE: 321

CAMPUS ACTIVITIES

Offcial social media of Peking University in Weibo and Wechat

- Vice Chef Editor 2019-08 —— 2020-09
  - Resopnsibile for the arrangement of Peking University official Weibo account. In the period of being at that position, the number of follower had increased over 300% , total read number of my creation has overpassed 100 million.
- Chef Editor 2020-09 —— 2020-03

CODING SKILLS

- C, C++, Python, Pytorch.