DONG Qihua

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EDUCATION

2017 Sept - 2021 July **B.Sc. in Computer Science,** City University of Hong Kong, Hong Kong (HK)
Minor in Mathematics
- CGPA 3.89 (Top 5%), Major GPA 3.95, Minor GPA 4.08

ENGLISH TEST GRADES

TOEFL 109
GRE 330 + 3.5

EXPERIENCE

Research Assistant *2021 Aug - Now*
Department of Computer Science, City University of Hong Kong, HK
- Supervised by Professor **Liao Jing** and worked on **computer vision**, especially **3D medical image segmentation**

Student Research Assistant *2020 Sept - 2021 Feb*
Department of Computer Science, City University of Hong Kong, HK
- Supervised by Professor **Wang Jianping** and researched system **scheduling** schemes for **self-driving** tasks

Full-stack Programmer, Internship *2019 Sept - 2020 June*
Sik Sik Yuen, HK
- **Developed** an app that identifies the emotion of users as well as **maintained** the existing app and web service

ACADEMIC AWARDS AND SCHOLARSHIPS

2021 **First class honor**, Bachelor's degree of City University of Hong Kong, HK
2019 **Bronze Medal**, The 2019 **ICPC** Asia Nanchang Regional Contest, Jiangxi Normal University, China
2017 - 2021 **Dean's List**, City University of Hong Kong, HK
2017 - 2021 **Full Tuition Scholarship**, City University of Hong Kong, HK

Publications

- Du Hao*, **Dong Qihua*,** Xu Yan, Liao Jing. "**Weakly-Supervised 3D Medical Image Segmentation using Geometric Prior and Contrastive Similarity"**. Submitted to *IEEE Transactions on Medical Imaging, 2022*.
- He Ruozhen*, **Dong Qihua***, Lin Jiayin, Rynson Lau. "**Weakly-Supervised Camouflaged Object Detection with Scribble Annotations"**. Submitted to *Proc. NeurIPS, 2022*.

Projects

Proper Initialization of 3D models *2022 May - Now*
- Explore how to utilize the pretrained weights of 2D models for both spatiotemporal and 3D spatial tasks.

Pretrained models are lacking in 3D models, especially in the medical field. The project aims to tackle the limitation by transferring 2D weights.

Weakly-Supervised 3D Medical Image Segmentation Framework *2022 Feb - 2022 May*

- Designed a new weakly supervised framework to segment medical images with bounding-box labels, and achieved state-of-art results with large improvement.
- Used prior geometric knowledge to guide the segmentation of medical images.

  The method transformed the segmentation into point cloud representation and compared it with the template shape to improve performance.
- Distinguished instances from model representation space.

  Rich semantic features are learned by models. Replacing them with the grayscale features in medical images allows models to predict more exact segmentation.

Weakly-Supervised Camouflaged Object Detection *2021 Dec - 2022 May*

- Proposed a new weakly supervised task with the first dataset in weakly-supervised camouflaged object detection.
- Achieved results that exceeded baseline largely.

  The method proposed two new loss functions. The consistency loss novelly pointed out an ignored bias in previous works. The feature loss focused on the camouflaged part, leveraging semantic features to infer camouflaged objects.

Swin Transformer on 3D Medical Image *2021 Aug - 2022 Jan*

- Applied 3D Swin transformer to segment medical images.

  Video Swin transformer has achieved success in video tasks. This project tried to take advantage of the Swin architecture to benefit medical segmentation tasks.

Skills

- Computer languages — Python, C++, R, Javascript, Java, CSS
- Tools and library — PyTorch, Numpy, Detectron2, AdelaiDet, mmDet, nnUNet, Scikit-learn, OpenCV
- Athletic — CityU mainland basketball team
- Guitar — Learn by myself and often play by myself!

UNIVERSITY ACTIVITIES AND COMMUNITY SERVICE

2019 — **Outstanding Athlete** in Professor Edmond Ko Cup's Relay Competition, City University of Hong Kong, HK

2018 — **City-Youth Empowerment Project**, City University of Hong Kong, HK
- Organized and delivered English interview workshops for underprivileged primary school students

2018 — **Stellar Social Practice Project**, Fudan University, Shanghai
- Visited villages in Yunnan Province to explore and promote Yi minority culture