

Tianhao Chen

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EDUCATION

- **The Chinese University of Hong Kong (CUHK)** Hong Kong
Bachelor in Computer Science; First Class Honor; GPA: 3.76/4 (Top 15%) *Aug. 2018 - Jul. 2022*
 - **Relevant Courses:** Artificial Intelligence (A), Machine Learning (A), Computer Graphics (A), Image Processing and Computer Vision (A), Data Structures (A-), Algorithms (A-), Calculus (A), Linear Algebra (A), Discrete Mathematics (A), Probability and Statistics (A-)
 - **Honors & Awards:** Dean's List (2018-2019, 2020-2021, 2021-2022), ELITE Stream Scholarships (2018-2019, 2019-2020), Annual Scholarships Academic, Admission Scholarship of 70,000 HKD (Each year)
 - **ELITE Stream:** Member of the Engineering Leadership, Innovation, Technology and Entrepreneurship Stream (ELITE Stream)

RESEARCH INTERESTS

- Machine Learning; Deep Learning; Computer Vision; Computer Graphics; Bioinformatics

RESEARCH EXPERIENCE

- **Non-Coding RNA Annotation Using Deep Learning | Research Assistant** Hong Kong / Remote
Supervised by Assistant Prof. Yu Li, CUHK; Funded by Shenzhen Research Institute, CUHK *Jun. 2022 - Present*
 - Designed and implemented a deep learning network to accurately classify non-coding RNA functional regions at a speed approximately 1,000 times faster than traditional methods
 - Developed a highly efficient detection and segmentation model capable of identifying non-coding RNA functional regions within full sequences with great accuracy.
 - Demonstrated the effectiveness of deep neural networks even in the context of limited data; developed a novel methodology for the identification of hitherto undiscovered non-coding RNA families.
 - **Paper Publication:** *FastNCR: Fast and Accurate Million-Scale Non-Coding RNA Annotations with Deep Learning*, co-authored with Prof. Yu Li, under preparation for submission to journals.
- **3D Object Detection Using Point Clouds for Autonomous Driving | Graduation Thesis** Hong Kong
Supervised by Prof. Chi-Wing Fu, CUHK *Jan. 2021 - May 2022*
 - Enhanced the performance of a 3D object detection model by integrating RGB image segmentation outcomes with point cloud features.
 - Conducted research on knowledge distillation techniques to transfer knowledge from high-modularity detection networks to low-modularity detection networks.
 - Augmented point clouds by fusing multiple point clouds of the same object captured from different frames; applied denoising and sampling algorithms to the augmented point clouds, leading to a 4% increase in mean average precision.
 - Created a visualization tool to depict point clouds from diverse perspectives.

PROJECTS

- **Enhancing 2D Object Detection Performance (Image Processing & Computer Vision):** Implemented the network architectures of PSPNET-18 and PSPNET-50 for object detection; conducted experiments to enhance model performance via replacement of network modules, knowledge distillation, and semi-supervised learning. (May '21)
- **Skin Lesion Image Classification for Quick Melanoma Diagnosis (Artificial Intelligence):** Utilized a fully convolutional network (FCN) and deep residual network (DRN) for automated melanoma diagnosis; devised a pipeline to remove hair from skin lesion images, thereby minimizing the impact on segmentation performance. (Dec. '20)
- **3D Video Game Development (Computer Graphics):** Developed a 3D video game using OpenGL, implementing knowledge of coordinate transformation, lighting, texture mapping, normal mapping, and shadow mapping. (Dec. '20)

SKILLS SUMMARY

- **Programming:** Python, C, C#, C++, Unix Scripting, Java, SQL
- **Tools:** PyTorch, NumPy, Tensorflow, OpenCV, OpenGL, GIT, Docker, Postgres
- **Languages:** Chinese (Native), English (TOEFL: 105)