XU, Yanbo (Billy)

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Education

Hong Kong University of Science and Technology 2018, Sep. - Current

Bachelor of Science in **Computer Science** and **Mathematics**.

École Polytechnique Fédérale de Lausanne 2022, Feb. - July

Exchange Student in **Computer Science**

Publications

- **Yanbo Xu*,** Yueqin Yin*, Liming Jiang, Qianyi Wu, Chengyao Zheng, Chen Change Loy, Bo Dai, Wayne Wu. "**TransEditor: Transformer-Based Dual-Space GAN for Highly Controllable Facial Editing.**" Accepted by *2022 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*
- Qing Lian, **Yanbo Xu**, Weilong Yao, Yingcong-Chen, Tong Zhang "**Semi-Supervised Monocular 3D Object Detection by Multi-View Consistency**." Accepted by *2022 European Conference on Computer Vision (ECCV)*

Research Experience

EPFL Image and Visual Representation Lab 2022, Mar. - Current

Semester Research Project Supervisor: **Prof. Sabine Süsstrunk, Dr. Tong Zhang, Mr. Ehsan Pajouheshgar**

- An undergoing research project about the disentangled representation for 3D GAN and 3D latent space.

HKUST Bachelor Final Year Thesis 2022, Jun. - Current

Final Year Thesis Supervisor: **Prof. Qifeng Chen**

- The undergoing thesis is about 3D generation of indoor scene with data from different domains and formats, i.e., data from 3D and 2D dataset. We except to learn the 3D information with good image quality using a semi-supervised learning method.

Shanghai AI Lab & SenseTime 2021, Feb.- Dec.

Computer Vision Researcher Internship Supervisor: **Prof. Chen Change Loy, Prof. Bo Dai, Dr. Wayne Wu**

- "**TransEditor: Transformer-Based Dual-Space GAN for Highly Controllable Facial Editing**" . In a dual-space GAN structure, we introduce interaction between two latent spaces, achieving semantic disentanglement and better latent editing performance.

HKUST Statistic and Machine Learning Research Group 2021, Jan.- Dec.

Undergraduate Research Assistant Supervisor: **Prof. Tong Zhang, Mr. Qing Lian**

- "**Semi-Supervised Monocular 3D Object Detection by Multi-View Structure from Motion**" . We introduce a semi-supervised framework for 3d object detection. The proposed photometric loss provides supervision signal for labeled and unlabeled data.

HKUST Undergraduate Research Opportunity Program

Undergraduate Research Assistant

Detecting Deep Learning Software Defects 2020, Jun.- Sep.

Supervisor: **Prof. Shing Chi Cheung, Mr. Yongqiang Tian**

- This research project aims at getting and analysing code coverage of PyTorch using CMake, Gcov. The developer should be able to get code coverage in function, blocks and branch level. The project involves special compilation of PyTorch, collection of unit test, generation and analysis of Gcov files.

Common Sense Reasoning with Knowledge Graphs 2019, Sep.- Dec.

Supervisor: **Prof. Yangqiu Song, Dr. Hongming Zhang**

- This project evolves improving training of NLP models using knowledge graphs generated from images. My job was trying to recreate an event-to-event NLP model.

Internship & Project Experience

EPFL Optimization for Machine Learning (PG Level) 2022, Feb. – July

- Our project "The effect of delay and momentum in Asynchronous Stochastic Gradient Descent" studies how dose asynchronization influence the convergence of a deep network, and how momentum could be used to resolve the issues.

EPFL Artificial Neural Network (PG Level) 2022, Feb. – July

- Our project contains implementation of standard Q learning and Deep Q learning methods on the game tic-tac-toe. We exams the effects of different learning strategy (self-learning, optimal player) and different learning parameters.

SenseTime 2021, Feb. - Aug

Computer Vision Researcher Internship project: High-quality Makeup Transfer

- Literature Review for SOTA Methods (Mostly GAN related)
- Data Process and Analysis (Real collected human face data, from video and photo)
- Algorithm Reproduction, Improvement and Training (SOTA Style Transfer GAN models)
- Pipeline Integration (The overall pipeline, includes data pre-process, post-process)

SYNYI AI 2020, Nov. – 2021 Feb.

AI Algorithm Engineer Internship project: Automatic Decision Making for Hospital Resources

- Data Analysis (Real data from the hospitals)
- Problem Modeling (Into math problem, optimization problem)
- Algorithm Implementation: Including using statistical learning, deep learning and so on.
- Algorithm Research: Read paper and advanced research for better solution.

ChinaPnR 2020, Sep. – Nov.

Python Engineer Internship projects: Streaming Application, Payment services

- Backend System Designing and Building (using Flask, Fast Api, with cloud servers provided by Aliyun and deployment).
- Designing and Managing of Database (SQL, SQL Alchemy).
- Front end Building (using HTML, VUE, JS, such as web and WeChat small program, integrating payment services).

Teaching Assistant 2021, Jan. – Mar.

- TA for the course "**Artificial Intelligence – Deep Learning Implementation and research**" by Prof. **Mark Vogelsberger**.

HKUST Deep Learning in Computer Vision 2020, Feb. – Jun.

- Our project "A Chronological Illustration Generation Framework For Documents" provides a model which generates a series of images to describe a relatively long story.

VR Gaming Design 2019, Jul. – Sep.

- In the summer program held by PKU and HKU, we designed a VR game using Unity 3D. My job was some 3D modelling and writing code for the game.

Team Member in HKUST RoboMaster Team 2019. Jan. - May

- RoboMaster is a robot competition held by DJI. My Role is an assistant machinal engineer making partial design of the drone.

Honors & Awards

HKSAR Government Scholarship Fund - Reaching Out Award 2021/22	2022
CVPR 2022 Travel Grant	2022
HKUST Entrepreneurship Competition Student Team Award	2022
HKSTP Ideation Program	2022
HKUST Undergraduate Research Opportunity Program Stipend	2020
HKUST University' s Scholarship Scheme for Continuing Undergraduate Students	2019 & 2021
Wu Ti Hsien Science & Education Foundation Fund Scholarship	2019 & 2020
HKUST Dean' s list of School of engineering	2019 & 2020
HKUST Admission Scholarship	2018

Extracurricular Experience

HKUST-Sino One Million Dollar Entrepreneurship Competition 2022

We start a company to solve collaboration and version control problems in multimedia industry. We won the student team award and got into the HKSTP Ideation Program.

Leading Peer Mentor in Peer Mentor Program 2019-2020

The Peer Mentor Program is held by MSSUG, HKUST. The responsibility of Peer Mentor is to guide and help year 1 students when entering the university.

HKUST BIZCATHON 2019

A hackathon about virtual banking in Hong Kong. Our team designed a mobile app with ability to visualize data using AR.

Skills & Related Courses

Skills:

- **Programing**: **Python** (Numpy, Pytorch, Scikit-learn, Flask, Fastapi), **C++** (Cmake, QT), **JavaScript** (js, Vue), **SQL**, **MIPS**
- **Mechanical: CAD Designing** (SolidWorks), **3D Printing**

Related Courses:

- **Computer Science:** Deep Learning in Computer Vision, Honors Design and Analysis of Algorithms, Computer Organization, Programming with C++, Object-Oriented Programming and Data Structures, Introduction to Computer Science, Artificial Neural Network, Optimization for Machine Learning, Theory of Computation, Operating Systems
- **Mathematics:** Mathematical Analysis, Discrete Math, Linear Algebra, Probability Theory, Differential Equation, Calculus, Abstract Algebra, Statistic, Real Analysis, Multivariable Calculus, Stochastic Process, Statistical Machine Learning.