XIANG LI

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EDUCATION

The Hong Kong University of Science and Technology *Sept 2016 - Present, Hong Kong*

- GPA: 3.98 / 4.3, Bachelor of Engineering in Computer Science, minoring in Design.
- Selected Coursework: Deep Learning for Computer Vision, Machine Learning, Bayesian Networks (Graduate), Machine Learning for Robotic, Combinatorial Optimization(Graduate), Big Data Mining and Management, Social Information Network Analysis and Engineering, Computer Graphics, Programming Languages.
- Kerry Holdings Limited Scholarship, Dean's list for all active semesters.

University of Illinois at Urbana-Champaign *Aug 2018 - Dec 2018, Urbana, IL, USA*

- GPA: 4.0 / 4.0, Semester Exchange in Computer Science.
- Coursework: Operating Systems, Parallel Computing, User Interface Design.

RESEARCH EXPERIENCE

One-Shot Object Detection without Fine-Tuning

Authors: **Xiang Li***, Lin Zhang* (equal contribution), Yau Pun Chen, Yu-Wing Tai, and Chi-Keung Tang *June 2019 - present, HKUST*

Advised by **Prof. Yu-Wing Tai** and **Prof. Chi-Keung Tang**.

- Proposed a novel two-stage model and training strategies for one-shot object detection by integrating the metric learning with an anchor-free Faster R-CNN-style detection pipeline. Eliminated the need to fine-tune on the support image and exceeded the state-of-the-art one-shot performance by 12.1%. Paper submitted to **CVPR2020**. Project page is available on personal website.
- Personal Contribution: Proposed and implemented the ideas based on MaskRCNN-benchmark, performed extensive quantitative and qualitative experiments to justify our contribution.

FSS-1000: A 1000-Class Dataset for Few-Shot Segmentation

Authors: **Xiang Li**, Tianhan Wei, Yau Pun Chen, Yu-Wing Tai, and Chi-Keung Tang *Feb 2019 - present, HKUST*

Advised by **Prof. Yu-Wing Tai** and **Prof. Chi-Keung Tang**.

- Propose a few-shot segmentation dataset containing 1000 varied object categories with pixelwise annotation of ground-truth segmentation. Achieved comparable performance to state-of-the-art with a simple yet effective baseline method trained on our dataset. Paper submitted to **CVPR2020**, a previous version is available on [ArXiv: 1907.12347]. Project page is available on personal website.
- Personal Contribution: Participated in the collection, labeling and maintenance of the dataset. Implemented the model and performed quantitative and qualitative experiments for the proposed model.

PROJECTS

System / Graphics:

- **CUDA CNN Forward**: Re-implemented the CNN forward algorithm of MXNet in CUDA using im2col + GEMM with additional profiling and optimization, performance ranked top 10 out of over 60 groups.
- **System Programming**: Implemented malloc, parallel make, shell, a command-line text editor, and a server-client model in C.
- **Computer Graphics**: Implemented a Ray Tracer and an interactive image processor in C++, A Modeler and an Animator with OpenGL

AI / Machine Learning:

- **One-shot Pokemon Classification**: Aiming to classify Pokemon images given only 1 reference per class, adopted a metric-learning based baseline and made comprehensive improvements. Improved 5-way top-1 accuracy from 55.3% to 71.6%.
- **TMDB Box Office Prediction**: Feature engineering and text embedding with an XGBoost based ensemble model. Top 6% on Kaggle.

Design / Web:

- **HKUST&CAA Design Thinking Project: Blurred**: In a month-long joint project in collaboration with the China Academy of Art, designed a household smoke detector with a strong visual hint of the damage on family members' health using lasers (poster).
- **GradeBuddy**: A React powered web app for interactive grade tracking that records learning habits and generates insightful statistics.
- **Roadmap**: A React powered web app that provides an interactive interface for making academic plans (e.g. taking different courses) at HKUST with node-edge graphs. Crawled HKUST courses meta-data and dependency to implement a course recommender.
- **WikiJump**: A cross-platform, independent, Mario-like platformer game implemented with libGDX and Java.

SKILLS

- Programming Languages: Python, C/C++, CUDA, Java, HTML + CSS + JavaScript
- Libraries: Pytorch, Tensorflow, Scikit-learn, Numpy, OpenCV, PIL, OpenGL, React, libGDX
- Languages: English (Fluent), Mandarin Chinese (Native)