XIANG LI

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EDUCATION

The Hong Kong University of Science and Technology   *Sept 2016 - July 2020, Hong Kong*
- GPA: 3.99 / 4.3, Bachelor of Engineering in Computer Science.
- Selected Coursework: Deep Learning for Computer Vision, Machine Learning, Bayesian Networks (Graduate), Machine Learning for Robotic, Combinatorial Optimization(Graduate), Big Data Mining and Management, Computer Graphics, Programming Languages.
- First Class Honors, 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 EXPERIENCES

One-Shot Object Detection without Fine-Tuning
Authors: **Xiang Li***, Lin Zhang* (equal contribution), Yau Pun Chen, Yu-Wing Tai, and Chi-Keung Tang   *Since June 2019, HKUST*
In ArXiv, Advised by Prof. Yu-Wing Tai and Prof. Chi-Keung Tang.
- Proposes 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. Eliminates the need to fine-tune on the support image and exceeds the state-of-the-art one-shot detection performance. Paper is in submission and available on ArXiv (link). Code is available on GitHub (link).
- 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   *Since Feb 2019, HKUST*
In **CVPR 2020**, Advised by Prof. Yu-Wing Tai and Prof. Chi-Keung Tang.
- Proposes a few-shot segmentation dataset containing 1000 varied object categories with pixelwise annotation of ground-truth segmentation. Achieves comparable performance to state-of-the-art with a simple yet effective baseline method trained on our dataset. Paper was accepted by CVPR2020 and available on CVF Open Access (link). Dataset and code available on GitHub (link).
- 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.

OPEN-SOURCE DEVELOPMENT

MMDetection   *Aug 2020 - Oct 2020, Hong Kong*
- Developing and maintaining MMDetection (link), an open-source object detection framework with 11.6k stars on GitHub.
- Personal contribution: implementing detection models in MMDetection, e.g. YOLO v4; reproducing their performances and optimizing their speed, making them modular components for in-place usage of all 40 detection models; implement new functionalities for the MMDetection framework; bug fixes and code refactoring; writing and reviewing documentations; solving issues and reviewing pull requests.

PROJECTS

System / Graphics:
- **CUDA CNN Forward** *(Sept 2018 - Dec 2018)* Re-implemented the CNN forward algorithm of MXNet in CUDA using im2col + GEMM among other optimizations. UIUC Parallel Programming final project, performance ranked top 10 out of over 60 groups.
- **System Programming** *(Sept 2018 - Dec 2018)* Implemented malloc, parallel make, shell, a command-line text editor, and a server-client model in C. UIUC System Programming course projects.
- **Computer Graphics** *(Jan 2018 - May 2018)* Implemented a Ray Tracer and an interactive image processor in C++, a Modeler and an Animator with OpenGL. HKUST Computer Graphics course projects.

AI / Machine Learning:
- **One-shot Pokemon Classification** *(Feb 2019 - May 2019)* 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%. HKUST Computer Vision course final project.
- **TMDB Box Office Prediction** *(Feb 2019 - May 2019)* Feature engineering and text embedding with an XGBoost based ensemble model. Top 6% on Kaggle. HKUST Machine Learning course final project.

Design / Web:
- **GradeBuddy** *(Sept 2018 - Dec 2018)* A React powered web app for interactive grade tracking that records learning habits and generates insightful statistics. UIUC UI Design course final project.
- **Roadmap** *(Sept 2017 - Dec 2017)* A React powered web app that enables interactive academic planning (e.g. taking different courses) at HKUST by plotting interactive graphs. Crawled HKUST courses meta-data and dependency to implement a course recommender. Side project at HKUST.
- **WikiJump** *(Jan 2017 - Feb 2017)* A cross-platform, independent, Mario-like platformer game implemented with libGDX and Java. HKUST Java programming final project.

SKILLS

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