# MAN-KIT SIT

✉ mankit.sit [at] ed.ac.uk

🖥 mksit.me    in LinkedIn    🎓 Google Scholar    ○ Github

## RESEARCH INTERESTS

My research interests lie in the intersection of Large-Scale Machine Learning, Distributed Systems and Specialized Accelerators. My current research is about enabling efficient training gigantic machine learning models on distributed systems for the masses.

## EDUCATION

**The University of Edinburgh, United Kingdom**                          *2021 - Present*
PhD in Computer Science
Advisor: Prof. Luo Mai

**Imperial College London, United Kingdom**                          *2018 - 2019*
PhD in Computing (Transferred to the University of Edinburgh)
Advisor: Prof. Wayne Luk

**Keio University, Japan**                          *2016 - 2018*
MSc in Engineering
Advisor: Prof. Hideharu Amano
Research Topic: Exploiting Multi-level Parallelism on FPGAs using Polyhedral Model

**The Chinese University of Hong Kong, Hong Kong**                          *2012 - 2016*
BEng in Computing Engineering
Advisor: Prof. Kin-Hong Wong

## PUBLICATIONS

*Equal contribution

Hanjing Wang*, **Man-Kit Sit**\*, Congjie He, Ying Wen, Weinan Zhang, Jun Wang, Yaodong Yang, Luo Mai. "GEAR: A GPU-Centric Experience Replay System for Large Reinforcement Learning Models," 2023 International Conference on Machine Learning, 2023.

Chijun Sima, Yao Fu, **Man-Kit Sit**, Liyi Guo, Xuri Gong, Feng Lin, Junyu Wu, Yongsheng Li, Haidong Rong, Pierre-Louis Aublin, Luo Mai. "Ekko: A Large-Scale Deep Learning Recommender System with Low-Latency Model Update," USENIX Symposium on Operating Systems Design and Implementation (OSDI), 2022.

Manuel Bravo, Zsolt István, **Man-Kit Sit**. "Towards Improving the Performance of BFT Consensus For Future Permissioned Blockchains," https://arxiv.org/abs/2007.12637, 2022

Cheng Luo, **Man-Kit Sit**, Hongxiang Fan, Shuanglong Liu, Wayne Luk, Ce Guo. "Towards Efficient Deep Neural Network Training by FPGA-based Batch-level Parallelism," 2019 Annual International Symposium on Field-Programmable Custom Computing Machines (FCCM), 2019

**Man-Kit Sit**, Ryosuke Kazami, Hideharu Amano. 2017. "FPGA-based Accelerator for Losslessly Quantized Convolutional Neural Networks," 2017 International Conference on Field-Programmable Technology (FPT), 2017

## WORK EXPERIENCE

### City University of Hong Kong, Hong Kong         April 2020 - August 2021
*Research Assistant*
*Supervised by Dr. Ray Cheung*

- ⋄ Experience on Verilog HDL, RISC-V ISA, Embedded C Programming
- Developing a hardware secure module for a lightweight RISC-V processor to improve the efficiency of cryptographic operations

### IMDEA Software Institute, Spain         Oct 2019 - Mar 2020
*Research Intern*
*Supervised by Dr. Zsolt Istvan*

- ⋄ Experience on Vivado HLS, Verilog HDL, Go, AWS EC2 F1
- Evaluating a hardware-efficient distributed consensus protocol in software and developing a hardware prototype of the protocol on FPGAs

### Fixstars Corporation, Japan         2017 - 2018
*Part-time Software Engineer & Intern*

- ⋄ Experience on CUDA, Intel x86 Assembly, Halide
- Implementing a deep neural network model using CUDA on NVIDIA Jetson TX1 for assisting autonomous car driving
- Developing sample applications to demonstrate the use of Halide language to generate hardware circuits on FPGAs for image processing applications