

Xueqiao PENG

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EDUCATION & ACADEMIC VISITINGS

University of Electronic Science and Technology of China, Chengdu, SC, China
B.S. Degree in Software Engineering

Sept. 2017 – Jun. 2021
Ranking: Top 10%, GPA: 3.71/4.0

Curriculum Highlights

Mathematics and Statistics: Discrete mathematics (86), Probability theory and mathematical statistics (85), Calculus (91), Big data computing technology (87).

Computer Science: C language programming (84), Data structures and algorithms (81), Computer organization (83), Computer graphics (92), Compilation principles (87), Embedded system design (93), Cloud computing fundamentals (88).

PUBLICATIONS & MANUSCRIPTS

- Yuke Wang, Boyuan Feng, **Xueqiao Peng**, Yufei Ding.
Convolution Neural Network Architecture Optimization via Information Field.
AAAI, 2021. Submitted. <https://arxiv.org/abs/2009.05236>
- Boyuan Feng, Yuke Wang, Xu Li, Shu Yang, **Xueqiao Peng**, Yufei Ding.
SGQuant: Squeezing the Last Bit on Graph Neural Networks with Specialized Quantization.
ICTAI, 2020. Accepted. <https://arxiv.org/abs/2007.05100>
- Yan Kuang, Tian Lan, **Xueqiao Peng**, Gati Elvis Selasi, Qiao Liu, Junyi Zhang.
Unsupervised Multi-discriminator Generative Adversarial Network for Lung Nodule Malignancy Classification.
IEEE Access, 2019. Accepted. <https://ieeexplore.ieee.org/abstract/document/9066829>

RESEARCH EXPERIENCE

Department of Computer Science, University of California, Santa Barbara, USA
Undergraduate Research Assistant

Advisor: Dr. Yufei Ding
Mar. 2020 – Now

Information Field (CNNIF)

- Proposed **Information Field** to estimate the quality of a CNN architecture and guide the design search process.
- Built a static optimizer to improve the CNN architectures at both **the stage level** and **the kernel level** to validate the effectiveness of Information Field.
- Inspired by the optimizer at the kernel level, designed **unexplored convolution blocks** and **a new type of factorized kernel**.
- Accomplished the **stage-level organizer** and was responsible for proofreading the paper for AAAI 2021.

Specialized Quantization (SGQuant)

- Proposed a specialized **GNN quantization scheme, SGQuant**, to systematically reduce GNN memory consumption.
- Designed a GNN-tailored quantization algorithm and a GNN quantization fine-tuning scheme to reduce memory consumption.
- Investigated the multi-granularity quantization strategy that operates at different levels (components, graph topology, and layers) of GNN computation.
- Offered an automatic bit-selection (ABS) to pinpoint the most appropriate quantization bits for the above multi-granularity quantization.

Sliding-Channel Convolutions (DSXplore)

- Proposed **DSXplore**, an efficient deep separable convolution on GPU.
- Designed a novel deep separable convolution, **sliding convolution**, combined with channel overlapping that can significantly overcome the accuracy drop from existing convolutions at algorithmic optimization.
- Reduced **the atomic operation** during the forward and backward phases by leveraging the output-centric and input-centric thread mapping techniques at the implementation level.
- Fully integrated DSXplore with the Pytorch framework to improve programmability and accessibility.

Network and Data Security Lab, UESTC, Chengdu, China
Undergraduate Research Assistant

Advisor: Dr. Tian Lan
Sep. 2018 – Feb. 2020

Multi-Discriminator Generative Adversarial Network (MDGAN)

- Focused on **Unsupervised Learning** in pulmonary medical image processing.
- Built an **Unsupervised Multi-Discriminator Generation Adversarial Network** combined with encoder to classify benign and malignant lung nodules; calculated the MDGAN discriminator feature loss and image reconstruction loss to score the malignancy.
- Accomplished **Image Preprocessing** of pulmonary nodules in the experiment and was responsible for the translation and typesetting of the paper for IEEE Access, 2019.

School of Information and Software Engineering, UESTC, Chengdu, China
Undergraduate Research Assistant

Advisor: Dr. Li Yi
Oct. 2019 – Jan. 2020

Image classification website based on Dense-Net

- Developed a website for classification with **image recognition, independent editing, comments, collection, and other personalized functions**.
- Trained the **Dense-Net Network** from dataset Cifar100, using TensorFlow in Python.

School of Information and Software Engineering, UESTC, Chengdu, China
Undergraduate Research Assistant

Advisor: Dr. Ping Kuang
Sept. 2019 – Oct. 2019

AR based on web

- Devised an experiment showing different 3D models using markers recognition, functional on all platforms.
- Employed a 3D mario model implementing aframe, came with custom components which integrated it on the screen.
- Designed a marker “hiro”; allowed mobile phone or computer camera to recognize the marker and display a 3D model on the screen of the device.

School of Information and Software Engineering, UESTC, Chengdu, China
Undergraduate Research Assistant

Advisor: Dr. Erqiang Zhou
Oct. 2018 – Nov. 2018

Lexer

- Built a **Lexer** to identify the validity of input text and output the judgement process and results.
- Adopted a **top-down grammar**, which enables the Lexer to construct a predictive analytical chart and evaluates the next step of the lexer by comparing the top of the stack to input text.

SELECTED SKILLS

Computer Skills	Python, C/C++, Java, PostgreSQL, LATEX, Linux
Language	Chinese (native), IELTS: 7.0 (R7.5+L7.5+S6.0+W6.0)