

LU SHILIN (卢仕霖)

B. Eng and MSc Student

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EDUCATION

Nanyang Technological University (NTU), MSc. in Communication Engineering, GPA: 4.88/5.0 Aug.2021-now

Related Coursework: Video signal processing (5.0/5.0); Advanced digital signal processing (5.0/5.0);
Computer network (5.0/5.0); Digital communication systems (4.5/5.0)

Shandong University (SDU), B. Eng. in Communication Engineering, GPA: 88.53/100 Sept.2017-Jun.2021

Related Coursework: Digital image processing (96/100); Advanced programming language (98/100);
Object oriented programming technology (96/100); Mobile communications (97/100); Communication
principles (96/100); Wireless communications (92/100)

Technical University of Munich (TUM), Summer Exchange Program Aug.2019

PUBLICATION

S. Lu, X. Hu, C. Wang, et al., “Copy-Move Image Forgery Detection Based on Evolving Circular Domains Coverage,”
Multimedia Tools and Applications. (Minor Revision)

Available in arxiv <https://arxiv.org/abs/2109.04381>

PROJECTS

Event Camera-based Action Recognition and Falling Detection Aug.2021-now

*Supervised by Prof. Chichung Kot (Alex), Fellow of Academy of Engineering, Singapore, Fellow of IEEE
and IES.*

- Reproduce, developed, trained and tested various spiking neural network (SNN) [1]-[3] under pytorch environment for action recognition.
- Derive and improve the PointNet++ [4] for action recognition accuracy and capacity.
- Explore and enforce anti-noise in the training data using motion consistency [5].

Copy-Move Image Forgery Detection Based on Evolving Circular Domains Coverage Apr.2019-Jul.2020

Submitted to “Multimedia Tools and Applications” Impact factor = 2.757 (2020)

- An outcome from “The 14th SDU Student Research Training Program”, as Team Leader.
- Responsible for coordinating the research, paper writing, generating ideas, carrying out reviews, design of experiment and generation of code.
- Proposed a sequential combination of SIFT/LPSD, g2NN, RANSAC, with a novel Evolving Circular Domain Coverage (ECDC) for performance improvement in forgery detection tasks.
- Achieved precision of 97.96%, recall of 100% and F_1 score 98.97%.
- The method is compared and shows advantage over 9 other state-of-art methods.

Fragile Watermark Algorithm for Tampered-pixels Localization Jun.2020-Jul.2020

- Designed a fragile watermark algorithm for tamper-pixels localization task.
- Implement a watermark insertion algorithm for experiment simulation.
- Provide a possible solution for protecting image integrity.

Mobile Communication Course Project

Mar.2020-Jun.2020

- Studied and reproduced the dynamic service migration in Mobile Edge Computing (MEC) based on Markov decision process [6].
- Optimized one-dimensional Markov Decision Process (MDP) by solving the Long-Term Expected Discounted Sum Cost (LDSC) in the MEC model.

Develop a Java based Database Application

Nov.2019-Jan.2020

- Design course requirement. Java-based Grade Inquiry Management System.
- Achieve automation in inquiry and modification of the grade database, including read, write, ranking and abnormality detection.

Explore terASIC ALTERA FPGA

May.2019-Jun.2019

- Explore frequency-based algorithm using VHDL.
- Achieve control of LEDs based on clock and hence controllable Hex number display on LED segment displays.

Honors & Rewards

SDU Excellent Student Scholarship	2017-2020
SDU Final Year Project Best Paper Award in communication engineering (2021)	Jun.2021
Second honor in the 14th SDU Student Research Training Program	Jul.2020

INTERNSHIP

China Mobile, Quanzhou Branch, Intern at Internet Dept. (Vacation Intern) 2018-2020

- Assisted in solving network signal problems, such as no signal, weak signal, and SIM cards problems. (15 weeks in total)

LANGUAGE & COMPUTER

English	IELTS 6.5
Computer Certificate	National Computer Rank, Grade Two
Programming Language	Skillful at C, C++, JAVA, MATLAB & familiarized with Python, Pytorch, SQL
Software	Skillful at Visual Studio, MATLAB, Office & familiarized with Latex, Ubuntu, Quarter II, Eclipse, Multisim

Reference List

- [1] W. Fang, Z. Yu, Y. Chen, T. Masquelier, T. Huang, and Y. Tian. "Incorporating learnable membrane time constant to enhance learning of spiking neural networks," in proc. of the IEEE/CVF International Conference on Computer Vision (ICCV), pp. 2661–2671, 2021.
- [2] W. Fang, Z. Yu, Y. Chen, T. Huang, T. Masquelier, and Y. Tian. "Deep Residual Learning in Spiking Neural Networks." arXiv preprint arXiv:2102.04159 (2021).
- [3] Ali Samadzadeh, Fatemeh Sadat Tabatabaei Far, Ali Javadi, Ahmad Nickabadi, and Morteza Haghiri Chehrehghani. "Convolutional Spiking Neural Networks for Spatio-Temporal Feature Extraction." arXiv preprint arXiv:2003.12346 (2020).
- [4] Q. Wang, Y. Zhang, J. Yuan, et al. "Space-time event clouds for gesture recognition: From RGB cameras to event cameras." in Proc. IEEE Winter Conference on Applications of Computer Vision (WACV), Waikoloa Village, HI, USA, 2019, pp. 1826-35.
- [5] Y. Wang, B. Du, Y. Shen, et al. "EV-gait: Event-based robust gait recognition using dynamic vision sensors." in Proc. IEEE/CVF Conference on Computer Vision and Pattern Recognition, Long Beach, CA, USA, 2019, pp. 6351-60.
- [7] S. Wang, R. Urgaonkar, M. Zafer, et al. "Dynamic service migration in mobile edge computing based on Markov decision process.", IEEE/ACM Transactions on Networking, vol. 27, no. 3, pp. 1272-88, Jun. 2019.