Wei He

Homepage: https://erichhhho.github.io

Email : wei005@e.ntu.edu.sg
Mobile: (+65) 9370 8594

Education

- **Nanyang Technological University (NTU)** — Singapore
  Master of Engineering in Computer Science; GPA: 4.83/5.00 — *Aug. 2018 – June. 2021*
  Supervisor: Prof. Siew-Kei Lam
  Research Direction: Network Compression and Acceleration, Semantic Segmentation

- **South China Agricultural University (SCAU)** — Guangzhou, China
  Bachelor of Science in Information and Computing Science; GPA: 4.39/5.00; Ranking: 1/968 — *Sep. 2014 – Jun. 2018*
  Supervisor: Prof. Kangshun Li
  Research Direction: Human Motion Recognition
  Outstanding Graduates & Outstanding Undergraduate Thesis 2018 - South China Agricultural University

Experience

- **Hardware and Embedded Systems Lab, School of Computer Science and Engineering** — NTU, Singapore
  Project Officer — *Aug. 2018 - Present*
  - **Involved Project:** Sensing and Management for Agile Transport (TUM-CREATE)
  - **Research Topic:** Deep Neural Network Compression For Pixel-level Vision Tasks
  - Presented a framework that utilizes knowledge distillation to recover the performance loss of DCNN models that have undergone network pruning;
  - Proposed a Context-Aware Pruning framework that utilizes channel association to exploit parameters redundancy for pruning semantic segmentation models;
  - Proposed an Adaptive Correlation-driven Sparsity Learning framework for DCNN compression that can provide superior performance on both image-level and pixel-level vision tasks.

- **Hardware and Embedded Systems Lab, School of Computer Science and Engineering** — NTU, Singapore
  Research Assistant — *Aug. 2017 - Feb. 2018*
  - **Involved Project:** Embedded Vision for Automotive and Traffic Management (National Research Foundation, Singapore)
  - **Research Topic:** Pedestrian Intention Prediction Using Deep Learning Technique
  - Conducted literature review on the state-of-the-art approaches for pedestrian trajectory prediction;
  - Implemented and evaluated Deep Learning approaches for path prediction in autonomous vehicle driving scene (KITTI benchmarks, etc.) in cooperation with research staff in HESL (Including Social-LSTM model and Social-Attention model);
  - Utilized GPU to accelerate deep model training (e.g LSTM, GRU, SRU) with TensorFlow and Pytorch architecture.

- **School of Computing, National University of Singapore** — NUS, Singapore
  Summer Intern — *June. 2017 - July. 2017*
  - **Project & Tutor:** Biometrics in Depth under Prof. Terence Sim
  - Utilized basic Computer Vision techniques on bio-images (e.g., SVD for image compression, image filtering, histogram equalization and color space conversion for image processing);
  - Extracted fused biometrics features using LDA and PCA on CMU PIE dataset, and independently developed a facial recognition system after comparing different pattern classifiers (Baye's classifier, KNN, SVM, BP-NN, etc.) performance;
  - Analyzed different types of biometrics system attacks and defence, wrote summary report as the final work.

- **Guodian Shipping (Hong Kong) Company Limited** — Hong Kong
  Data Intern — *Dec. 2016 - Feb. 2017*
  - Responsible for the business data maintenance, using Excel and Microsoft SQL Server;
  - Implemented SQL sentences to manipulate the business data in the company database system with Microsoft SQL Server;
  - Analyzed and predicted data trends statistically with models (Regression Analysis, Time Series Analysis, etc.).

Publications & Patent

1. **Wei He**, Meiqing Wu, Mingfu Liang, and Siew-Kei Lam. CAP: Context-Aware Pruning for Semantic Segmentation. In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, pages 960–969, January 2021. (Oral)

2. **Wei He**, Meiqing Wu, and Siew-Kei Lam. ACSL: Adaptive Correlation-driven Sparsity Learning for Deep Neural Network Compression. Under review in *Journal of Neural Networks*.

3. **Wei He**, Zhongzhan Huang, Mingfu Liang, Senwei Liang, Haizhao Yang. Blending Pruning Criteria for Efficient Convolutional Neural Networks. In *30th International conference on artificial neural networks (ICANN)*, September 2021.

4. Zhongzhan Huang, Senwei Liang, Mingfu Liang, **Wei He** and Haizhao Yang. Efficient Attention Network: Accelerate Attention by Searching Where to Plug. arXiv preprint arXiv:2011.14058.

5. Sirin Haddad, Meiqing Wu, **Wei He**, Siew-Kei Lam. Situation-aware pedestrian trajectory prediction with spatio-temporal attention model. In *Proceedings of the Computer Vision Winter Workshop (CVWW)*, pp. 4–13, Stift Vorau, Austria, 2019.

6. **Wei He**, Shaoyang Hu, Shanni Li, Kangshun Li, Human Motion Model Construction Based on Gene Expression Programming. In *Proceedings of the 9th International Symposium on Intelligence Computation and Applications (ISICA)*, pp. 473-485, Singapore, 2017 (Oral).

7. Kangshun Li, **Wei He**, Shaoyang Hu, Xiaozhen Wang. Method of human behavior recognition based on GEP, CN106909891A, 2017-06-30, CN 201710059525.6

Academic Service

Program Committee for Conferences:

- *IEEE/CVF Winter Conference on Applications of Computer Vision* (WACV), 2022
- *The 32nd British Machine Vision Virtual Conference* (BMVC), 2021
- *The 30th International Conference on Artificial Neural Networks* (ICANN), 2021
- *IEEE/CVF Winter Conference on Applications of Computer Vision* (WACV), 2021
- *The 31st British Machine Vision Virtual Conference* (BMVC), 2020

Academic and Competition Awards

- Outstanding Undergraduate Thesis Award (SCAU, China), 2018
- National Scholarship (Ministry of Education, China), 2016 & 2017
- The First Class Scholarship (SCAU, China), 2017 & 2016 & 2015
- The Third Prize in *China Undergraduate Mathematical Contest in Modeling*, 2016
- The Third Prize in *Certificate Authority Cup Network Challenge Mathematical Contest in Modeling*, 2015 & 2016

Others

- **Language Skills:** Native in Mandarin and Cantonese; Fluent in English; Basic in Spanish.
- **Programming:** Proficient in Python, C, Java, C#, SQL; Experienced on deep learning framework (PyTorch, CUDA), web application development, desktop application development, web page design (HTML, CSS, Javascript); Microsoft Office Software, Data Analysis Software (MATLAB, SPSS), Database Management System (Microsoft SQL Server, MySQL)