Guo-Hua Wang

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Education

- **Nanjing University** — Nanjing, China
  Ph.D. in Computer Science and Technology — *Aug. 2018 – Jun. 2023 (expected)*
  LAMDA Group, State Key Laboratory for Novel Software Technology
  Supervisor: Prof. Jianxin Wu
  Dissertation: Research on Theories and Approaches for Deep Model Compression

- **Nanjing University** — Nanjing, China
  Bachelor in Automation — *Aug. 2014 – Jun. 2018*
  School of Management & Engineering
  Dissertation: Research on Image Retrieval Based on Deep Learning

Professional Experience

- **Microsoft Research Asia** — Beijing, China
  Research Intern at Media Computing Group — *Mar. 29, 2022 – Oct. 21, 2022*
  - Worked with Dr. Jiahao Li, Dr. Bin Li, Dr. Yan Lu, and other colleagues on learnable image compression
  - Achieve the first end-to-end neural image codec to exceed H.266/VCC with a single model at 30 FPS
  - Propose the mask decay algorithm for improving an efficient image codec model with the help of a large model
  - Propose residual representation learning to enable and improve the encoding scalability
  - Research work published in ICLR 2023

- **Tencent** — Shenzhen, China
  Research Intern at YouTu Lab — *Jul. 21, 2021 – Nov. 12, 2021*
  - Worked with Dr. Bin-Bin Gao, and other colleagues on computer vision
  - NVT Project: Role as a core algorithm engineer. Implement and optimize the instance segmentation module for defect detection. Outperform other business competitors with a significant margin. Complete PoC successfully
  - Research on change detection: Role as an independent researcher. Propose a new paradigm for solving change detection. Propose the C-3PO model which achieves state-of-the-art performance
  - Research work published in PR and protected by a patent

Research Interests

His research interests include **Machine Learning** and **Deep Learning**. Currently, he focuses on:

- **Multi-model Learning**
  Knowledge Distillation, Model Compression/Acceleration.

- **Few-label Learning**
  Semi-Supervised Learning, Few-shot Learning.

- **Image Related Tasks**
  Classification, Detection, Segmentation, Change Detection, Image Retrieval, Image Compression.

Publications

Conference

- **Practical Network Acceleration with Tiny Sets** [arXiv, paper, code]
  Guo-Hua Wang, Jianxin Wu
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023

- **EVC: Towards Real-Time Neural Image Compression with Mask Decay** [arXiv, paper, code]
  Guo-Hua Wang, Jiahao Li, Bin Li, Yan Lu
  The 11th International Conference on Learning Representations (ICLR), 2023

- **Repetitive Reprediction Deep Decipher for Semi-Supervised Learning** [arXiv, paper, code]
  Guo-Hua Wang, Jianxin Wu
  The 34th AAAI Conference on Artificial Intelligence (AAAI), 2020

Journal

- **How to Reduce Change Detection to Semantic Segmentation** [arXiv, paper, code]
  Guo-Hua Wang, Bin-Bin Gao, Chengjie Wang
  Pattern Recognition (PR), 2023

- **Distilling Knowledge by Mimicking Features** [arXiv, paper, code]
  Guo-Hua Wang, Yifan Ge, Jianxin Wu
  IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2022

Manuscript

- **Practical Network Acceleration with Tiny Sets: Hypothesis, Theory, and Algorithm** [arXiv]
  Guo-Hua Wang, Jianxin Wu
  In arXiv preprint arXiv:2303.00972, 2023

- **R2-D2: Repetitive Reprediction Deep Decipher for Semi-Supervised Deep Learning** [arXiv]
  Guo-Hua Wang, Jiahao Li, Bin Li, Yan Lu
  In arXiv preprint arXiv:2202.08955, 2022

- **PENCIL: Deep Learning with Noisy Labels** [arXiv, paper, code]
  Kun Yi, Guo-Hua Wang, Jianxin Wu
  In arXiv preprint arXiv:2202.08436, 2022

Professional Service

- **Conference Reviewer**
  - CVPR2023, CVPR2022, CVPR2021
  - ICCV2023, ICCV2021
  - ECCV2022, ECCV2020
  - IJCAI-ECAI 2023, IJCAI-ECAI 2022, IJCAI2021
  - ICPR2020
  - PAKDD2023, PAKDD2022

- **Journal Reviewer**
  - IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
  - IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
  - Elsevier Journal of Pattern Recognition (PR)

Teaching Assistant

- **Introduction to Computation Theory**   Course Website
  Prof. Fangmin Song   *Spring, 2021*

- **Pattern Recognition**   Course Website
  Prof. Jianxin Wu   *Spring, 2021*

- **Introduction to Computation Theory**   Course Website
  Prof. Fangmin Song   *Spring, 2020*

- **Pattern Recognition**   Course Website
  Prof. Jianxin Wu   *Spring, 2019*

Honors & Awards

- **Microsoft Research Asia Stars of Tomorrow (Award of Excellence)** — 2022
- **National Scholarship for Doctoral Students** — 2021
  - Highest scholarship for Chinese doctoral students

- **Excellent Student of Nanjing University** — 2021
- **Honorable mention in the competition of 2020 DIGIX Global AI Challenge** — 2020
- **Scholarship of CFETS Information Technology** — 2019
- **Presidential Special Scholarship for first year Ph.D. Student in Nanjing University** — 2018
- **Outstanding Graduate of Nanjing University** — 2018
- **National Third Prize of the 3rd China Data Mining Competition** — 2018
- **Excellent Student of Nanjing University** — 2016, 2017
- **Pacemaker to Excellent Youth League Member** — 2016
  - Highest honor for all students in Nanjing University

- **National Scholarship for Undergraduate Students** — 2015
  - Highest scholarship for Chinese undergraduate students

Technical Skills

- **Languages:** Python, C/C++, Java, Shell, Latex
- **Libraries:** Pytorch, NumPy, Matplotlib, Pandas
- **Developer Tools:** VS Code, Git, Docker
- **Operating Systems:** Ubuntu, Windows, Virtual Machine (Azure)