

EDUCATION

The Ohio State University Ph.D. in Department of Computer Science and Engineering	Ohio, USA 2021–Present
National Taiwan University M.Sc. in Department of Computer Science & Information Engineering • GPA: 3.97/4.30, Rank: 60/152	Taipei, Taiwan 2015–2018
National Taiwan University B.Sc. in Department of Computer Science & Information Engineering • GPA: 4.02/4.30, Rank: 7/111	Taipei, Taiwan 2011–2015

RESEARCH EXPERIENCES

Ph.D. Student at CSE, OSU Advisor: Dr. Wei-Lun Chao • [AAAI 2023, arXiv 2022] <u>Fractal pre-training</u> for federated learning. A gradient-descent-based framework for effectively learning fractals. • [arXiv 2022] A memory- and parameter-efficient approach for <u>fine-tuning</u> pre-trained vision transformers.	Ohio, USA Aug. 2021 –Present
Research Assistant at AINTU Center, NTU Advisor: Dr. Chu-Song Chen • [INDIN 2021] <u>Continual learning</u> for defect detection. • [TAI 2021, TNNLS 2022] <u>Binary hash code learning</u> (i.e., to learn binary features for efficient image retrieval) by exploiting semantic guidance.	Taipei, Taiwan Jan. 2021 –Aug. 2021
Research Assistant at Inst. of Information Science, Academia Sinica Advisor: Dr. Chu-Song Chen • [NeurIPS 2019] <u>Continual learning</u> with dynamically expanding and shrinking structures. • [IJCNN 2020] <u>Network compression</u> for MobileNet, a lightweight architecture.	Taipei, Taiwan Apr. 2019 –Dec. 2020
Master Student at CSIE, NTU Advisor: Dr. Jane Yung-jen Hsu • [FG 2019] A <u>facial action unit detection</u> approach that exploits identity labels. This method achieved state-of-the-art performance.	Taipei, Taiwan Sep. 2015 –Feb. 2018

PUBLICATIONS

* indicates equal contributions

- [1] **C.-H. Tu***, H.-Y. Chen*, D. Carlyn, and W.-L. Chao, “Learning fractals by gradient descent”, in *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2023.
- [2] H.-Y. Chen, **C.-H. Tu**, Z. Li, H.-W. Shen, and W.-L. Chao, “On the importance and applicability of pre-training for federated learning”, *arXiv preprint arXiv:2206.11488*, 2022.

- [3] **C.-H. Tu***, Z. Mai*, and W.-L. Chao, "Visual query tuning: Towards effective usage of intermediate representations for parameter and memory efficient transfer learning", *arXiv preprint arXiv:2212.03220*, 2022.
- [4] H.-F. Yang, **C.-H. Tu**, and C.-S. Chen, "Learning binary hash codes based on adaptable label representations", *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, vol. 33, no. 11, pp. 6961–6975, 2022.
- [5] C.-H. Chen, **C.-H. Tu**, J.-D. Li, and C.-S. Chen, "Defect detection using deep lifelong learning", in *2021 IEEE 19th International Conference on Industrial Informatics (INDIN)*, 2021, pp. 1–6.
- [6] **C.-H. Tu**, H.-F. Yang, S.-M. Yang, M.-C. Yeh, and C.-S. Chen, "Semantichash: Hash coding via semantics-guided label prototype learning", *IEEE Transactions on Artificial Intelligence (TAI)*, vol. 2, no. 1, pp. 42–57, 2021.
- [7] **C.-H. Tu**, J.-H. Lee, Y.-M. Chan, and C.-S. Chen, "Pruning depthwise separable convolutions for mobilenet compression", in *IEEE International Joint Conference on Neural Networks (IJCNN)*, 2020, pp. 1–8.
- [8] **C.-H. Tu**, C.-E. Wu, and C.-S. Chen, "Extending conditional convolution structures for enhancing multitasking continual learning", in *Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)*, 2020, pp. 1605–1610.
- [9] S. C.-Y. Hung, **C.-H. Tu**, C.-E. Wu, C.-H. Chen, Y.-M. Chan, and C.-S. Chen, "Compacting, picking and growing for unforgetting continual learning", in *Advances in Neural Information Processing Systems (NeurIPS)*, 2019, pp. 13 669–13 679.
- [10] **C.-H. Tu**, C.-Y. Yang, and J. Y.-j. Hsu, "Idennet: Identity-aware facial action unit detection", in *IEEE International Conference on Automatic Face & Gesture Recognition (FG)*, 2019, pp. 1–8.
- [11] H.-F. Yang, **C.-H. Tu**, and C.-S. Chen, "Adaptive labeling for deep learning to hash", in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2019.
- [12] H.-F. Yang, **C.-H. Tu**, and C.-S. Chen, "Adaptive labeling for hash code learning via neural networks", in *IEEE International Conference on Image Processing (ICIP)*, 2019, pp. 2244–2248.
- [13] H.-F. Yang, T.-Y. Chen, **C.-H. Tu**, and C.-S. Chen, "Equivalent scanning network of unpadded cnns", *IEEE Signal Processing Letters*, vol. 25, no. 10, pp. 1590–1594, 2018.

AWARDS AND ACHIEVEMENTS

- University Fellowship, The Ohio State University 2021
- Reviewer in Pattern Recognition, ELSEVIER 2020
- The Presidential Award (5%), National Taiwan University Fall 2013
- The Presidential Award (5%), National Taiwan University Fall 2012

INVITED TALKS

- **Compacting, Picking and Growing for Unforgetting Continual Learning** December 2020
AI Forum 2020 at Howard Civil Service International House, Taipei, Taiwan

SKILLS

- **Programming Languages:** C/C++, Python, L^AT_EX
- **Development Tools:** UNIX, PyTorch, Tensorflow, OpenCV, Git