

# CHENG-EN WU

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| CONTACT<br>INFORMATION | 1415 Engineering Dr<br>Madison, WI 53706  | Email: <a href="mailto:cwu356@wisc.edu">cwu356@wisc.edu</a><br>Webpage: <a href="https://cewu.github.io">https://cewu.github.io</a> |
| RESEARCH<br>INTERESTS  | My research interests lie at the intersection of computer vision and deep learning. I focus on Code Large Language Models (Code LLMs), Multimodal Large Language Models (MLLMs), and improving the efficiency of self-supervised learning models in both training and inference.  |   |
| EDUCATION              | <b>University of Wisconsin-Madison</b><br>Ph.D. student in Electrical and Computer Engineering<br>Advised by Prof. Pedro Morgado and Prof. Yu Hen Hu  | 2020 – 2025 (Expected)  |
|                        | <b>National Tsing Hua University</b><br>M.S. in Computer Science<br>Advised by Prof. Jia-Shung Wang   | 2014 – 2016   |
|                        | <b>National Taiwan University of Science and Technology</b><br>B.S. in Electrical and Computer Engineering  | 2009 – 2012   |
| WORK<br>EXPERIENCE     | <b>Microsoft</b> , Redmond, WA<br><i>Research Intern</i><br>Mentors: Yunsheng Li, Weijian Xu, Mengchen Liu <ul style="list-style-type: none"><li>Designed a post-training pipeline to enhance the performance of Code Large Language Models (Code LLMs).</li><li>Developed a Referring Expression Comprehension (REC) dataset to improve zero-shot performance on RefCOCO datasets.</li></ul>   | Feb. 2024 – Dec. 2024   |
|                        | <b>TikTok</b> , San Jose, CA<br><i>Research Intern</i><br>Mentors: Yu Tian, Linjie Yang, Haichao Yu, Heng Wang <ul style="list-style-type: none"><li>Studied an unsupervised prompt tuning method for vision-language pre-trained models, improving adaptation to downstream tasks. (ICCV'23)</li></ul>   | Jun. 2022 – Sep. 2022   |
|                        | <b>University of Wisconsin-Madison</b> , Madison, WI<br><i>Research Assistant</i><br>Advisors: Prof. Pedro Morgado and Prof. Yu Hen Hu <ul style="list-style-type: none"><li>Proposed a prototype-driven curriculum learning approach for Masked Image Modeling (MIM) to address early-stage optimization challenges in self-supervised visual learning. (CVPR'25)</li><li>Developed acceleration methods for Vision Transformer (ViT) contrastive learning, reducing computational costs through sequence compression strategies while maintaining performance. (NeurIPS'24)</li><li>Proposed a token pruning framework for Vision-language Pre-trained Models (WACV'25)</li><li>Proposed block pruning techniques to enhance the efficiency of Convolutional Neural Networks.</li></ul> | Sep. 2022 – Present   |
|                        | <b>NEC Labs America</b> , Princeton, NJ<br><i>Research Intern</i><br>Mentors: Farlay Lai, Asim Kadav <ul style="list-style-type: none"><li>Proposed a self-supervised video representation learning framework using cascade positive retrieval to enhance contrastive learning and reduce reliance on labeled data. (CVPRW'22)</li></ul>  | May 2021 – Aug. 2021  |
|                        | <b>Academia Sinica</b> , Taipei, Taiwan<br><i>Research Assistant</i><br>Advisor: Prof. Chu-Song Chen <ul style="list-style-type: none"><li>Developed continual learning methods for CNNs using model compression, critical weight selection, and progressive expansion to mitigate catastrophic forgetting. (NeurIPS'19)</li><li>Designed efficient deep learning architectures for visual recognition tasks. (MMSP'19)</li></ul>   | 2018 – 2020   |

**MediaTek**, Hsinchu, Taiwan 2017 – 2018  
*Software Engineer*  
 Improved the computational efficiency of neural networks on mobile devices and developed mobile GPU drivers to boost run-time of applications using neural networks.

**Realtek**, Hsinchu, Taiwan 2016 – 2017  
*Software Engineer*  
 Developed H.264 encoder drivers for TV SOC's.

**ITRI**, Hsinchu, Taiwan Summer 2015  
*Research Intern*  
 Developed MultiPath TCP to achieve high throughput of wireless networks.

**National Tsing Hua University**, Hsinchu, Taiwan 2014 – 2016  
*Research Assistant*  
 Collaborated with Jia-Shung Wang on real-time vehicle tracking system for visual surveillance.

**GOTrust Technology**, Taichung, Taiwan 2014  
*Software Engineer*  
 Developed middlewares for the secure MicroSD card and established an MFC-based testing tool for the production of secure MicroSD cards.

## PUBLICATIONS

**From Prototypes to General Distributions: An Efficient Curriculum for Masked Image Modeling**  
*Conference on Computer Vision and Pattern Recognition (CVPR) 2025*  
 Jinhong Lin\*, **Cheng-En Wu\***, Huanran Li, Jifan Zhang, Yu Hen Hu, Pedro Morgado (\*equal contribution)

**Patch Ranking: Efficient CLIP by Learning to Rank Local Patches**  
*Winter Conference on Applications of Computer Vision (WACV) 2025*  
**Cheng-En Wu**, Jinhong Lin, Yu Hen Hu, Pedro Morgado

**Accelerating Augmentation Invariance Pretraining**  
*Conference on Neural Information Processing Systems (NeurIPS) 2024*  
 Jinhong Lin\*, **Cheng-En Wu\***, Yibing Wei, Pedro Morgado (\*equal contribution)

**Why Is Prompt Tuning for Vision-Language Models Robust to Noisy Labels?**  
*International Conference on Computer Vision (ICCV) 2023*  
**Cheng-En Wu**, Yu Tian, Haichao Yu, Heng Wang, Pedro Morgado, Yu Hen Hu, Linjie Yang

**Block Pruning for Enhanced Efficiency in Convolutional Neural Networks**  
*arXiv preprint 2023*  
**Cheng-En Wu**, Azadeh Davoodi, Yu Hen Hu

**Self-supervised Video Representation Learning with Cascade Positive Retrieval**  
*L3D-IVU Workshop at Conference on Computer Vision and Pattern Recognition (CVPR) 2022*  
**Cheng-En Wu**, Farley Lai, Yu Hen Hu, Asim Kadav

**Merging Well-Trained Deep CNN Models for Efficient Inference**  
*Conference on Asia Pacific Signal and Information Processing Association (APSIPA) 2020*  
**Cheng-En Wu**, Jia-Hong Lee, Timmy ST Wan, Yi-Ming Chan, Chu-Song Chen

**Extending Conditional Convolution Structures For Enhancing Multitasking Continual Learning**  
*Conference on Asia Pacific Signal and Information Processing Association (APSIPA) 2020*

Cheng-Hao Tu\* **Cheng-En Wu\***, Chu-Song Chen (\*equal contribution)

**Compacting, Picking and Growing for Unforgetting Continual Learning**

*Conference on Neural Information Processing Systems (NeurIPS) 2019*

Steven Hung, Cheng-Hao Tu, **Cheng-En Wu**, Chien-Hung Chen, Yi-Ming Chan, Chu-Song Chen

**IMMVP: An Efficient Daytime and Nighttime On-Road Object Detector**

*IEEE International Workshop on Multimedia Signal Processing (MMSP) 2019*

**Cheng-En Wu**, Yi-Ming Chan, Chien-Hung Chen, Wen-Cheng Chen, Chu-Song Chen

**On Merging MobileNets for Efficient Multitask Inference**

*EMC<sup>2</sup> Workshop at IEEE Symposium on High Performance Computer Architecture (HPCA) 2019*

**Cheng-En Wu**, Yi-Ming Chan, Chu-Song Chen

**Traffic pattern modeling, trajectory classification and vehicle tracking within urban intersections**

*IEEE International Smart Cities Conference (ISC2) 2017*

**Cheng-En Wu**, Wen-Yen Yang, Hai-Che Ting, Jia-Shung Wang

PROFESSIONAL  
SERVICES

**Reviewer:** WACV '19, WACV '20, WACV '21, CVPR '22, ECCV '22, NeurIPS '22, CVPR '23, ICCV '23, CVPR '24, ECCV '24, NeurIPS'24, ICLR'25, ICML'25, CVPR'25

HONORS AND  
AWARDS

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| Honorable Mention at the MMSP Challenge                | 2019 |
| Delta Electronics Scholarship                          | 2016 |
| NTUST ECE Undergraduate Honorable Mention for Research | 2012 |

SELECTED  
PROJECTS

**Edge AI** 2022 – 2024  
*University of Wisconsin-Madison*  
Developed innovative block pruning methods for Convolutional Neural Networks, enabling seamless integration with edge devices like the NVIDIA Jetson Nano.

**Urban Computing** 2015 – 2016  
*National Tsing Hua University, Visual Communication Lab*  
Designed a real-time vehicle tracking method from surveillance camera videos and developed a system for trajectory classification and tracklet prediction.

**Gesture Recognition** 2010 – 2011  
*National Taiwan University of Science and Technology*  
Developed a method for detecting the number of fingers raised and built an Android App for gesture control of PowerPoint presentations.

SKILLS

**Computer Languages:** C, C++, Bash, Python, MATLAB,  $\text{\LaTeX}$ .  
**Toolbox/Software:** PyTorch, TensorFlow  
**Languages:** Chinese Mandarin (Native), English (Fluent)