Bor-Shiun **Wang**

PhD candidate · Computer Science and Engineering

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Summary

I am currently pursuing a PhD at the Institute of Computer Science and Engineering, National Yang Ming Chiao Tung University, with a research focus on explainable AI. My interests lie in exploring cutting-edge AI technologies and applying explainable AI in various domains. I'm also keen to study the various subfields of AI that are currently trending.

Education

National Yang Ming Chiao Tung University (NYCU) *Hsinchu, Taiwan*

Ph.D. in Institute of Computer Science and Engineering *Feb. 2022 - Present*

- Focusing on explainable AI.
- Published one paper, MCPNet, in CVPR 2024
- Published one paper, PRB-FPN+, in CVPR Workshop 2023

National Chiao Tung University (NCTU) *Hsinchu, Taiwan*

M.S. in Institute of Intelligent Systems *Feb. 2020 - Jan. 2022*

- Focusing on computer vision and matching learning.
- Published one paper, COFENet, in ICIP 2022.
- Published one paper, LDW-Pooling, in BMVC 2021.

Publications

- **Bor-Shiun Wang**, Chien-Yi Wang*, Wei-Chen Chiu*, "MCPNet: An Interpretable Classifier via Multi-Level Concept Prototypes", In IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024.
- **Bor-Shiun Wang***, Ping-Yang Chen*, Yi-Kuan Hsieh, Jun-Wei Hsieh, Ming-Ching Chang, JiaXin He, Shin-You Teng, HaoYuan Yue, Yu-Chee Tseng, "PRB-FPN+: Video Analytics for Enforcing Motorcycle Helmet Laws", In IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW) on the AI City Challenge, 2023.
- **Bor-Shiun Wang**, Jun-Wei Hsieh, Yi-Kuan Hsieh, Ping-Yang Chen, "COFENet: Co-Feature Neural Network Model for Fine-Grained Image Classification", In IEEE International Conference on Image Processing (ICIP), 2022.
- **Bor-Shiun Wang**, Jun-Wei Hsieh, Ping-Yang Chen, Ming-Ching Chang, Lipeng Ke, Siwei Lyu ,"LDW-Pooling: Learnable Discrete Wavelet Pooling for Convolutional Networks", The British Machine Vision Conference (BMVC), 2021.

Projects

Cassava Leaf Disease Classification *Nov. 2020 - Feb. 2021*

- **A challenging task** in fine-grained classification, identifying Cassava Leaf Disease, requires the model to distinguish between subtle morphological symptoms across highly similar categories.
- **Soft-label technique** relaxes the rigid constraints of one-hot encoding by encoding rich inter-class relationships and semantic similarities within the label space.
- **Mix-up augmentation** to increase the variation of the samples and generate the ground truth with the soft-label technique to enhance the discriminative ability of learned features.

College/University Student Research Application *Jul. 2019 - Feb. 2020*

- **Developed COFENet**, a novel deep learning architecture designed for fine-grained texture-based classification in images with high intra-class and low inter-class variation.
- **Engineered a spatial-structural relation module** that captures pairwise, orientation-wise, and distance-wise relationships between feature channels, surpassing traditional concatenation methods.
- **Addressed classification challenges** for small, blurry, and textured objects by integrating relative spatial layouts into end-to-end feature learning.
- **Published paper** to ICIP.

Technical Skills

Programming	C/C++, Python, HTML/CSS, SQL
AI/ML	OpenAI API, LLMs, MLLMs, Pytorch, Hugging Face, Scikit Learn, RAG
Cloud/DevOps	Git/Github, Docker