Chung-Yu Wei

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EDUCATION

University College London | *MSc Data Science and Machine Learning* **Sep 2024-Dec 2025**

- **Course:** Bayesian Deep Learning, Applied Deep Learning, Applied ML, Machine Vision, etc.

University of Manchester | *BSc (Hons) Mathematics and Statistics | First Class Honours* **Sep 2021-June 2024**

- **Course:** Practical Statistics, Linear Algebra, Random models, Geometry, Calculus, etc.

INTERNSHIP EXPERIENCE

Tractable | *Research Intern* **May 2025- Sep 2025**

- Developed a 3D-informed mask-transfer pipeline to project and re-project 2D panel masks across views, cutting manual labeling by 70%.
- Created a multi-view consistency metric to auto-flag and correct segmentation errors, boosting annotation quality.
- Built a scalable annotation engine using Grounding DINO and SAM to onboard new vehicle models rapidly.
- Retrained and evaluated segmentation models on the enriched dataset, driving a 15% mIoU improvement and 40% faster deployment.

Bain & Company | *Data Analyst Intern* **July 2023-Aug 2023**

- Performed data cleaning and statistical analysis on financial datasets in the core business unit to support growth and risk management.
- Leveraged Python for meticulous data preprocessing and regression analysis supplemented by Excel for data aggregation.
- Presented key financial indicators using matplotlib to illustrate trends and anomalies, thereby enhancing report clarity.
- Authored 7 detailed analytical reports that assessed financial stability and growth potential in a complex market environment.

PROJECTS

Weakly Supervised Learning with CAM for Image Classification & Segmentation | *Python, PyTorch, Matplotlib*

- Constructed a GradCAM framework on pre-trained ResNet50, produce CAM facilitating automatic localisation of target regions.
- Established a comprehensive data pipeline, including label adjustment and binary mask transformation to support both classification and segmentation tasks on the Oxford-IIIT Pet dataset.
- Implemented training, validation, and testing routines using PyTorch with forward/backward hooks to capture feature and gradient information, thereby generating heatmaps that visually reveal model focus areas.
- After extensive tuning, the model reached training, validation, and test accuracy of approximately 91.55/89.40/91.31%, respectively, while IoU and Coverage metrics steadily improved. This performance confirms robust classification and localisation across 37 pet categories.

Extreme Learning Machine - Enhanced Deep Learning for Image Recognition | *Python, PyTorch, TorchVision, NumPy, PIL*

- Tackled the CIFAR-10 image classification challenge by first establishing a baseline ELM model trained with SGD. Subsequently, enhanced variants implemented through Ensemble, Mix-up, and Ensemble & Mix-up strategies; comparative analysis based on accuracy, loss, and F1-score identified the Ensemble model as the top performer.
- Introduced an LS optimizer to refine the best Ensemble model, comparing its performance with the SGD approach. Although LS provided advantages in training speed and computational efficiency, the final test accuracy (~39%) was roughly 15% lower than SGD.
- Produced two 6×6 image montages with each image annotated with Ground Truth and predicted labels, offering a clear visual comparison of classification outcomes under various models and optimizers.

SKILLS & INTERESTS

- **Programming:** Python, MATLAB, R, Git.
- **Libraries:** NumPy, PyTorch, Pandas, Scikit-Learn, Nltk, Matplotlib, XGBoost.
- **Authoring:** Microsoft Office, Excel, Jupyter Notebook, LaTeX.
- **Language:** Mandarin (Native), English (IELTS 7)
- **Interested:** Basketball, Computer Games, Work Out, Tutoring.