

DI WU

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EDUCATION

University of California, Los Angeles

Los Angeles, CA

Bachelor of Science in Computer Science

08/2018-06/2022

- Overall GPA: **3.975/4.0**
- HSSEAS Dean's Honor List (2019/2020/2021)
- Relevant Coursework: Computer Organization, Algorithms, Operating Systems, Formal Language and Automata, Digital Design Lab, Machine Learning, Artificial Intelligence, Data Mining, Numeric Methods, Linear Algebra.
- Independent Studies: Stanford CS231N (Computer Vision), CS224N (Natural Language Processing).

LANGUAGE AND SKILLS

Language	Mandarin (Native), English (Professional), Japanese (Beginner)
TOEFL	117 (R: 28; L: 30; S: 30; W: 29)
GRE	337 (V: 167/98%; Q: 170/96%; AW: 4.5/81%)
Programming	C, C++, Python, shell, OCaml, Scheme, Verilog, MATLAB
Machine Learning	NumPy, TensorFlow, PyTorch, pandas, scikit-learn, Matplotlib
Activities	Member, Unmanned Air System (UAS) at UCLA
Hobbies	Air Traffic Control, Flight Simulation, Producing Aviation Videos

PUBLICATIONS

Wu, D., Ahmad, W. U., Dev, S., and Chang, K. W. (2022). Representation Learning for Resource-Constrained Keyphrase Generation. *arXiv preprint arXiv:2203.08118*.

Li, J., Garfinkel, J., Zhang, X., **Wu, D.**, Zhang, Y., de Haan, K., Wang, H., Liu, T., Bai, B., Rivenson, Y., Rubinstein, G., Scumpia, P., and Ozcan, A. (2021). Biopsy-free in vivo virtual histology of skin using deep learning. *Light: Science & Applications*, 10(1), 1-22.

INTERNSHIP EXPERIENCE

Microsoft Research Asia

Beijing, China

Research Intern, Mentor: Ning Shang

04/2021 - 09/2021

- Participated in the research project "Sparse Analysis". Implemented over 10 model compression methods including pruning, quantization, and knowledge distillation, and measured their performance on MobileNetV2 and Transformers. For pruning, the analysis involved criterion, sparsity scheduling, and learning scheduling.
- Participated in the development of the open source AutoML toolkit **NNI**. Contributed over 5000 lines of code including a benchmark for hyperparameter optimization, a pruner for pruning Transformers, and three examples.

NewsBreak

Beijing, China

Natural Language Processing Intern

07/2020 - 10/2020

- Worked on a hierarchical multi-label classification problem with 268 categories. Improved the f1-score by 49% with multiple statistical and deep learning methods.
- Improved the performance of model pre-training, fine-tuning, and online serving pipelines.

RESEARCH EXPERIENCE

UCLA NLP Lab

Los Angeles, CA

Student Research Assistant, Supervisor: Prof. Kai-Wei Chang

02/2021 - present

- Work on resource-constrained keyphrase generation. Experiment with retrieval-augmented unsupervised/semi-supervised representation learning and data augmentation approaches.

- Work on keyphrase generation with pre-trained language models. Investigate the necessity of pre-training, the effect of pre-training domain and task, the effect of architecture, and knowledge distillation for fine-tuning.
- Cooperate with Taboola. Using an internal dataset as the use case, experiment with keyphrase generation and adaptation methods and compare with the company's working pipeline.

The Ozcan Research Group, UCLA

Student Research Assistant, Supervisor: Prof. Aydogan Ozcan

Los Angeles, CA

09/2019 - present

- Utilized a generative adversarial network for virtually staining skin tissues with an emphasis on Basal Cell Carcinoma. Designed methods to improve both single-image quality and temporal coherence of the predictions.
- Explored dataset engineering and data augmentation methods to solve problems caused by class imbalance.
- Adapted the training pipeline from TensorFlow 1 to TensorFlow 2, improving training speed by 15%.

PROJECT EXPERIENCE

MobileNetV2 Compression

Individual Project during internship at Microsoft Research Asia

Beijing, China

08/2021

- Experimented with different compression methods such as pruning, quantization, and knowledge distillation.
- Compressed MobileNetV2 by over **50%** while retaining over **96%** accuracy on the Stanford Dogs dataset.
- Code and report notebook available at https://github.com/xiaowu0162/mobilenet_compression.

COVID-19 Prediction

UCLA CS145 Group Project

Los Angeles, CA

10/2020 - 12/2020

- Pre-processed the data and formulated the problem as time-series predictions and implement classical algorithms like Autoregression, Linear regression, ARIMA, SIR, and RNN.
- Evaluated the above algorithms qualitatively and quantitatively, and explored ensemble methods.
- Final MAPE performance exceeded the baseline model by 45%, and the final method ranked **2/31** within class.

Plant Pathology 2020

Individual Project, Open Competition on Kaggle

Los Angeles, CA

03/2020 - 05/2020

- Built a deep learning model to diagnose diseases based on images of apple tree leaves.
- Fine-tuned popular classifier architectures: DenseNet, ResNext, EfficientNet, and Xception.
- Final model achieved **97.8%** validation set accuracy and **95.4%** test set accuracy.

2048-on-FPGA

UCLA CS M152A Group Project

Los Angeles, CA

03/2020

- Designed a 2048 game using Verilog and deployed it on a Xilinx Nexys3 FPGA.
- Fully simulated new block generation, movement, and merge logic of the original game.
- Code available at <https://github.com/xiaowu0162/2048-on-FPGA>.

Bruinwalk Best Professor

Individual Project

Los Angeles, CA

10/2019

- Obtained 4,500 course evaluations with scrapy, and generated course quality reports automatically.

Genome Matcher

UCLA CS32 Individual Project

Los Angeles, CA

05/2019

- Designed a genome library using a Trie data structure that supports fast insertion, genome sequence search, and SNIp search.