Chun-Min Chang

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Microsoft AI Residency Program February 28, 2018
Redmond, WA (USA)

Dear Hiring Manager,

I am writing to express my strong interest in the 2018 Microsoft AI Residency program. As you will see from my resume, both my work experience and professional skills are a perfect match for this program. More importantly, I possess great passion and drive to tackle real-world chanllenges by applying machince learning. The opportunity to work with prominent researchers and engineers in Microsoft sparks my motivation to apply for this program.

Currently I am a 2-nd year PhD student in National Taiwan University and also a machine learning engineer in Data Insight and Research Laboratory in Academia Sinica. My research interest focuses on deep learning, particularly on model compression and energy-efficient inference. Last month I proposed a novel channel-prioritized training procedure for convolutional neural networks to enable dynamic tradeoff between varying computation resource and performance demands, sacrificing 3% accuracy in exchange for 95% cost reduction. The result is submitted to the workshop track of international conference on learning representation ICLR 2018.

Another research interest of mine lies in the AI applications, especially in healthcare and clinical diagnosis. I was responsible as the technical lead for the following projects: (1) early detection of neuro-degeneration by raw fMRI images, (2) non-invasive glucose measurement via ECG and PPG signals, and (3) kidney functionality prediction using ultrasonic images. I am confident that my past work experience and the engaged projects have strengthened my technical skills and enabled me to work in diverse communities.

I am really excited about the opportunity to discuss my qualifications with you in greater depth. I can be reached by phone, email or Skype, all listed on my resume. Many thanks for your time and consideration; I look forward to hearing from you in the near future.

Sincerely,

Chun-Min Chang

Chun-Min Chang | Resumé

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Education

Graduate Institute of Electrical Engineering — **National Taiwan University, Taiwan**
Master degree, *3.8/4.0* — 2013–2015
Master thesis: investigate how simplified models of different fidelity levels affect ranking of solutions and how to allocate computational budget to find near optimal solutions

Department of Electrical Engineering — **National Taiwan University, Taiwan**
Bachelor degree, *3.6/4.0* — 2009–2013
Selected course: digital visual effect, optimal control, algorithm

Work Experience

Data Insight and Research Laboratory — **Academia Sinica, Taiwan**
Research assistant — 2016–present
Concentrate on deep learning, particularly in model compression and energy-efficient inference, and the AI applications in fields of healthcare and clinical diagnosis

Compression and efficient inference in deep learning

- Proposed a novel channel-prioritized training procedure to sparsify CNNs and enable dynamic inference, attaining a 16x parameters reduction without accuracy drop in experiment of VGG-16 over CIFAR-10

Applications in healthcare and clinical diagnosis

- Developed a 3D CNNs to detect neuro-degeneration by predicting chronological ages using fMRI images, achieving mean absolute error close to 4 and Spearman's correlation coefficient up to 0.95
- Proposed a non-invasive glucose measurement method based on 1D CNNs to handle ECG and PPG signals, accomplishing 93.5% clinically correct decisions and 6.5% uncritical decisions

Multimedia Networking and Systems Laboratory — **Academia Sinica, Taiwan**
Research assitant — 2015–2016
Work on quantitative data analysis, machine learning, and QoE assessment

- Proposed the very first non-intrusive methodology for quantifying the timing and positioning performance of commodity virtual reality systems, accepted by 2016 ACM Multimedia (acceptance rate: 22%)
- Investigated the relationships between crimes and various geographic, demographic and socioeconomic factors by applying machine learning techniques, accepted by 2017 ACIIDS

Microsoft Technology Center — **Microsoft, Taiwan**
Research and development intern — 2014–2015
Focus on cloud services, internet of things and application developments

- Designed and implemented the very first IoT demonstration of applying several Microsoft Azure services in the smart home scenario and developed cross-platform applications by Xamarin

Skills

R: data.table, dplyr, ggplot2, reshape2, stringr — *for data exploration and visualization*

Python: TensorFlow, Keras, scikit-learn, xgboost — *for machine learning and deep learning*

Projects

institution or employer **city**
degree or job title, grade Feb 2017
description

Publications

- Chun-Min Chang, Hung-Yi Ou Yang, Chia-Ching Lin, Chin-Laung Lei, and Kuan-Ta Chen. "Channel-Prioritized Convolutional Neural Networks for Sparsity and Multi-fidelity." *Submitted to the workshop of the 2018 International Conference on Learning Representations.* ICLR, 2018.
- Nathan Kuo, Chun-Min Chang, and Kuan-Ta Chen. "Exploring Spatial and Social Factors of Crime: A Case Study of Taipei City." *Asian Conference on Intelligent Information and Database Systems.* Springer, Cham, 2017.
- Chun-Min Chang, Shi-Chung Chang, and Chun-Hung Chen. "How Simplified Models of Different Variability Affects Performance of Ordinal Transformation." *2017 IEEE International Conference on Automation Science and Engineering (CASE)*, presenetation only, 2017.
- Chun-Min Chang, Cheng-Hsin Hsu, Chih-Fan Hsu, and Kuan-Ta Chen. "Performance measurements of virtual reality systems: quantifying the timing and positioning accuracy." *Proceedings of the 2016 ACM on Multimedia Conference.* ACM, 2016.