

FREDERICK LIU

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Natural Language Processing, Computer Vision, Deep Learning, Explainability, Federated Learning

EXPERIENCE

Google

October 2018 - Present

Software Engineer

Seattle, WA

- Built a model *explainability* library which offers feature attribution methods.
- Integrated the library into Google Cloud AI Platform and AutoML Tables.
<https://cloud.google.com/explainable-ai>
- Researched Attribution priors, Data influence.

Snap Inc.

August 2017 - October 2018

Software Engineer

Los Angeles, CA

- Built on-device(ios, android) machine learning models used for classification and ranking problems which provides *differential privacy* guarantees with *federated learning*.
<https://eng.snap.com/device-distributed-machine-learning/>

CMU

September 2015 - August 2017

Research Assistant

Pittsburgh, PA

- Improved en-de Neural Machine Translation by 0.8 BLEU score by adding context to word embedding.
- Improved classification accuracy on Chinese short text with low frequency characters by 0.25.
- Improved en-de Neural Machine Translation by 2.0 BLEU with *multi-modal*.
- Developed techniques to semi-automatically analyze privacy policies with crowdsourcing, natural language processing, and machine learning. <https://explore.usableprivacy.org/>

Trend Micro Inc.

Jul 2013 - Sep 2013

Software Engineer Intern

Taipei, Taiwan

- Designed UI for malware log display with javascript and visualized malware Data with parallel coordinates by modifying examples from D3.js.

EDUCATION

Carnegie Mellon University, School of Computer Science

May 2017

Master of Science in Language Technologies, Overall GPA 4.04/4.33

Pittsburgh, PA, USA

- Fully funded by National Science Foundation project

National Taiwan University

Jun 2014

Bachelor of Science in Computer Science, Overall GPA 3.86/ 4.30

Taipei, Taiwan

SELECTED PUBLICATIONS

Estimating Training Data Influence by Tracking Gradient Descent, NeurIPS'20

Incorporating Priors with Feature Attribution on Text Classification, ACL'19

Handling Homographs in Neural Machine Translation, NACCL'18

Learning Character-level Compositionality with Visual Features, ACL'17

Attention-based Multimodal Neural Machine Translation, WMT'17

The Creation and Analysis of a Website Privacy Policy Corpus, ACL'16

Crowdsourcing Annotations for Websites' Privacy Policies: Can It Really Work?, WWW'16

TECHNICAL STRENGTHS

Programming Languages

- C/C++, Python, Java, MATLAB, SQL, javascript, scala, android, ios(Objective-c)

Deep Learning Libraries

- Tensorflow, PyTorch