

Dailun Li

Room 303, 1430 Rue City Councillors, Montreal, Quebec H3B1B4
(604) 365-7971 | lidl200147@gmail.com
GitHub Repo: github.com/lidl2019

EDUCATION

McGill University, Montreal, Canada

Expected Graduation: 2023.1

- Major in CS Minor in ECON CGPA 3.98/4.00 – Dean's Honour List

University of Oxford, Oxford, United Kingdom

2021.4 – 2021.7

- 7 weeks of online research in deep learning on EEG signal processing

RELATED EXPERIENCE

Algorithm Engineer

2022-5 - 2022-8

ChromX Health Ltd., Guangzhou, China

- Developed two techniques on evaluating mass spectrums on **people's breathing materials** to help predicting Lung Cancer (Specifically Squamous Cell Carcinoma and Adenocarcinoma). These methods involve machine learning techniques like PCA, Logistic Regression, MLP that consists of 2216 sample points and over 400 chemicals.
- Developed algorithms to support wave detecting, wave alignment, and wave separation to measure the specific magnitude of each chemical on the spectrum.
- The two algorithms (one using preprocessed wave magnitudes, the other using data points on mass spectrums) are able to robustly separate malignant cancer patients from healthy people, with a 94.6% F1 score over 628 healthy and 605 patients.
- Typical extracted biomarkers including Isoprene and Acetone are proven to be identifiers of lung cancer.

Research Assistant

2022-5 - 2022-9

McGill University, Montreal, Quebec

- Supervised by Professor Bettina Kemme
- Help formalized and implement operations for SQL support in AIDA, using pandas-like APIs. Such implementation will turn transformations in pandas to SQL table operations in order to speed up the process. E.g. A scheduler will detect and estimate the operation time and to decide whether the operation will perform locally, or perform in a remote database.

Software Development Engineer (Intern)

2021.7 - 2021.9

Beijing Venustech Technology Ltd., Beijing, China

- Develop web pages in Vue.js that monitor network stream for abnormal message detection
- Develop a Honeypot system that analyzes attempts by malicious users
- Use Logistic Regression model to label abnormal messages, which has a 78% accuracy
- Store user request logs to MySQL database using sqlalchemy

Research Assistant

2021.4 - 2021.7

University of Oxford, Oxford, United Kingdom

- Supervised by Professor Maarten De Vos
 - Collect human sleep EEG signals and analyze the corresponding sleep qualities with RNN
 - The RNN model reaches an 87.5% accuracy on 5-category classification over 5,600,000 samples
- *Report can be found at <https://github.com/lidl2019/Automated-EEG-grading>, which is going to be published at IEEE Explore in late 2022*

RELATED PROJECTS

Construct VITS Text to Speech Model, using Anime characters

- Convert .x3 file to .wav file, with a sampling frequency of 22050Hz
- align such speech with the proper txt extracted from subtitles
- Using VITS to Transfer Learning the proper speeches
- With the trained model, evaluate using HifiGAN / WaveGlow to synthesize speech

Detailed Analyzation on Self-attention in RNN

- Explore the effects of datasets on the self-attention mechanism with datasets such as Yelp, Xinhua, etc.
 - Explore the effects of various types of RNN models (LSTM, GRU) on the self-attention layer
 - Confirm that the self-attention layer may cast negative influence, which contradicts common knowledge
- *Codes and report can be found at <https://github.com/lidl2019/Comp550-Final>*

CNN for Multi-MNIST Handwritten Character Classifier

- Implement a CNN classifier that classifies handwritten digits and alphabets in 52x52 images
 - Experiment with various CNN models including AlexNet, VGG-16, ResNet, etc.
 - Apply random forest, data augmentation, and data filtering to optimize performance
 - Reach a 96.5% accuracy, which surpasses manual precision, and stand as the top team in 86 teams
- *Codes can be found via <https://github.com/lidl2019/Multi-minist-detector>*

CYK Parser of French Grammar

- Implement CYK parser for French grammar from scratch
 - Implement TFIDF vectorizer, the CYK algorithm, parsers that converts CFG into CNF
 - Define detailed French grammar in CFG (Context-free Grammar)
- *Codes can be found via <https://github.com/lidl2019>*

AWARDS

- *Gold Medal, Canwa CUP Go Competition, Canada* 2022
- *Faculty of Science Scholarship, McGill University, Canada* 2020 - 2021
- *IEEEExtreme 15.0 rank 203rd globally 4th in Canada, IEEE, U.S.* 2020 - 2021
- *Dean's Honour List, McGill University, Canada* 2020 - 2021
- *Official Go player (5 dan), Canadian Go Association, Canada* 2019
- *AP Scholar National Honour Roll, College Board, U.S.* 2019

SKILLS AND LANGUAGES

- Skills (Statistics): pandas, sns, bokeh, matplotlib, beautifysoup
- Skills (Database): MySQL, MongoDB
- Skills (Programming Language): Python, Java, Javascript, C, Ocaml, Bash, MIPS
- Skills (Web Framework): Django, Vue
- Language: English, Mandarin (Native) Japanese (Limited)
- Additional Skills: Go, Guitar, Music Theory