garfieldlyu.github.io
lijunlyu@outlook.com
+31 649368405
Delft, The Netherlands

Lijun Lyu
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GarfieldLyu

Languages

Mandarin	Native
English	Fluent
German	B2
Cantonese	B2

Key Skills

Machine Learning

Deep Learning

Interpretable ML

Feature Selection

Information Retrieval

Reinforcement Learning

Natural Language Processing

Technologies

Python	Java	Bash
PyTorch	Keras	Git
Pandas	Numpy	Scikit-learn
Tensorflow		LaTeX
JavaScript		HTML
SQL		NoSQL
Docker		Kubernetes
MapReduce/PySpark		

Lijun Lyu PhD candidate, TU Delft, NL

I am experienced in **machine learning** and **deep learning** techniques, applied in diverse domains such as information retrieval, natural language processing, images and tabular data. My research has been bringing **interpretability** into deep learning models, which gives me an **in-depth understanding** of those models. I am focused on research, and also passionate about solving real-world problems by developing advanced and reliable models in practice.

Education

PhD candidate in Interpretable Machine Learning   Apr 2021 – present

TU Delft, The Netherlands (Nov 2022 – present), and
Leibniz University Hannover, Germany (Apr 2021 – Oct 2022)

Contributed to interpretability in deep learning models ranging from **text ranking using BERT**, **neural learning-to-rank**, and general classification tasks for **tabular and image** datasets. Explored common frameworks like **Captum**, and also developed novel algorithms to interprete large neural models in **Pytorch**. Published at multiple top conferences in NLP, Information Retrieval and Machine Learning.

MSc. in Computer Science (**with excellence**)   Apr 2015 - Apr 2018

Leibniz University Hannover, Germany

Worked on **MapReduce** technique(PySpark) and **NoSQL**(MongoDB) to process large datasets. Implemented a learning-to-rank algorithm with **Scikit-learn** for reference enrichment of Wikipedia entities. Published at Wiki Workshop 2018.

BSc. in Computer Science   Jinan University, China, Sep 2010 - June 2014

Selected Work Experience

Research assistant   L3S Research Center, Germany,   May 2018 - Mar 2021

Explored **deep learning algorithms in neural machine translation** area, to correct OCRed text corpus in ancient German language across centuries. Work selected and presented at EurNLP 2019 and received **travel grant** from Meta. The algorithm implemented in **Pytorch** and **Keras** is used by the Austrian National Library, and published at the top NLP journal TACL.

Selected Projects

SUWR-SequentialFS   Apr 2023–Present

Explored the current **interpretable ML** for images and tabular datasets domain and challenged their fundamental groundings. Proposed a theoretically guaranteed and effective solution for **reliable and explainable neural models** using **reinforcement learning**. Work currently under review (with positive scores) at the top machine learning conference ICML 2024.

FS-LTR github.com/GarfieldLyu/NeuralFeatureSelectionLTR   Jan 2022–Present

Explored **real-world learning-to-rank** problems proposed and studied by Microsoft and Yahoo. Built > 5 effective **explainable neural models** via **feature selection** for ranking purposes. Evaluated with **decision tree** models using LightGBM. Published at the top information retrieval conference ECIR2024.

Brittle-Bert github.com/menauwy/brittlebert   Aug 2021–2022

Supervised master student to investigate the well-applied **BERT-based rankers** in **information retrieval**, and successfully found out their vulnerabilities by adversarial attacks. Resulted in **Excellent Master Thesis Award** in Niedersachsen, Germany, 2022, and a publication at the top conference ICTIR 2022.