Lester (Peng-Jian) Yang

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Research Experience

Policy Extraction and Data Efficiency in Hierarchical Implicit Q-Learning (HIQL) Jul. 2025 - Sept. 2025
University of Amsterdam Amsterdam, Netherlands
Advised by Professor. Herke van Hoof.

- Investigated policy extraction and data efficiency in HIQL, proposing a critic extraction mechanism to enable DDPG+BC integration with HIQL's action-free value functions for offline goal-conditioned reinforcement learning.
- Demonstrated that original HIQL outperforms critic extraction variants on OGBench robotic manipulation tasks, revealed through data-scaling analysis that despite data inefficiency, implicit value-policy coupling is crucial for HIQL's performance.

Injecting T5 with Numerical Reasoning through Sequential Pre-Training Sept. 2020 - Mar. 2021
University of California, Berkeley Remote
Advised by Dr. Daniel Cer.

- Enhanced T5 model's numerical reasoning capabilities through systematic fine-tuning and multitask learning framework. Developed training strategies across diverse reading comprehension and numerical reasoning datasets.
- Achieved 24.9-point F1 score boost over baseline, matching performance of larger BERT-Base model while maintaining computational efficiency. Github: github.com/lesterpjy/numeric-t5.

Boltzmann Machines as Ansatzes of Molecular Wave Functions via Variational Monte Carlo Aug. 2018 - Sept. 2019
Theoretical and Quantum Chemistry Group, Nagoya University Nagoya, Japan
Advised by Professor. Takeshi Yanai.

- Developed C++ implementation of Boltzmann machine-based neural network quantum states for Complete Active Space Configuration Interaction (CAS-CI) calculations, introducing architectures that achieve accurate molecular wave function determination with concave optimization landscapes.
- Accelerated network convergence by 25% through integration of stochastic reconfiguration and Metropolis-Hastings sampling algorithms. Github: github.com/lesterpjy/nqs-casci.

Publications and Patents

- Peng-Jian Yang, Shang-Yu Yu, Yi-Hsieh Wang, Ko Chun Lin, Zhaoyan Han. 2023. Color matching system for product manufacturing. United States Patent US11847799B2.
- Peng-Jian Yang, Ying Ting Chen, Yuechan Chen, Daniel Cer. 2021. NT5?! Training T5 to Perform Numerical Reasoning. *arXiv* preprint *arXiv:2104.07307v2*.
- Peng-Jian Yang, Mahito Sugiyama, Koji Tsuda, Takeshi Yanai. 2020. Artificial neural networks applied as molecular wave function solvers. *Journal of Chemical Theory and Computation*. *doi:10.1021/acs.jctc.9b01132*.

Open Source and Projects

- **Debiasing LLMs through faithful circuits**: Developed mechanistic interpretability pipelines using edge attribution patching to identify model vulnerabilities, introducing technique that reduced bias of Llama-3.2-1B by 12.6% while increasing toxicity detection accuracy by 3.4%.
- **Optimizing Perceiver**: Augmented Perceiver's cross-attention bottleneck through architectural modifications and orthonormality regularization, achieving 61.42% accuracy on CIFAR-100 and outperforming standard baseline by over 20 percentage points.
- **LangChain**: Enabled visual debugging of PDF file loading within LangChain via 'pdfplumber' (PRs #4552, #4353; merged).

Education

University of Amsterdam
Master of Science in Artificial Intelligence Jun. 2026 - (Expected)
Relevant Coursework: Deep Learning I/II, Machine Learning I/II, Reinforcement Learning, Foundation Models.

University of California, Berkeley
Master of Information and Data Science May 2021
Relevant Coursework: Statistics for Data Science, Natural Language Processing with Deep Learning.

Nagoya University
Bachelor of Science in Chemistry Sept. 2019

Work Experience

Logitech Hsinchu, Taiwan
Senior Engineering Scientist Jun. 2022 - May 2024
Engineering Scientist May 2021 - Jun. 2022

- Spearheaded data science innovation projects for the global CMF (Color, Material, and Finish) engineering team.
- Developed patented computer vision system for precise color measurements, utilized in engineering validation in product development and production quality control.
- Reduced spray paint process carbon footprint by 11% by analyzing manufacturing data and using XGBoost models with SHAP explanations to identify key power-consuming factors.
- Managed and mentored data science intern teams, guiding development of new software prototypes. Half of developed prototypes were promoted as ongoing projects, enhancing the team's tooling and capabilities.

Omnistream Co. Singapore
Data Science Intern Apr. 2020 - Jun. 2020

- Orchestrated data engineering and business teams to refactor data pipelines and refine product quality.
- Expedited product delivery by over 300% with a customized XGBoost package for feature importance and automated analytics.
- Trimmed number of XGBoost model features by 91% via feature engineering while maintaining accuracy, improving model interpretability and client confidence.

Teaching Experience

Teaching Assistant, Exploratory Data Analysis and Dashboarding with R Mar. 2023
Moderated week-long workshop for professionals from the US Centers for Disease Control and Prevention, focusing on R for data analysis and dashboarding.

Skills

Programming: Python (NumPy, Pandas, Matplotlib, Plotly, scikit-learn, nltk, OpenCV, TensorFlow, PyTorch), SQL.

Concepts: Machine Learning, Deep Learning, NLP, Reinforcement Learning, Statistics (linear models, regression, hypothesis testing), Data Visualization.

Tools: Git, LaTeX.