(+84) 35 336 6633
Hanoi, Vietnam
vmhieu17@gmail.com

Hieu (Ian) Vu

Hieu M. Vu
vmhieu
lone17

I consider myself a novice trying to get out of Dunning-Kruger's Valley of Despair, an individual who is intellectually curious and passionate about making even the slightest meaningful impact. I have been working in the industry for over four years, focusing on Information Extraction on business documents using techniques from Computer Vision and Natural Language Processing. However, my research interest does not lie within said domains. I am open to any interesting topic as I am driven by the urge of contributing to the greater good and am easily intrigued by technological novelty.

Publications

1 Nguyen, Bao-Sinh, Tien Dung Le, **Hieu M Vu**, Tuan-Anh D Nguyen, Minh-Tien Nguyen, and Hung Le (2022). "Improving Document Image Understanding with Reinforcement Finetuning". In: *arXiv preprint arXiv:2209.12561*. Accepted to ICONIP 2022.

2 Son, Nguyen Hong, **Hieu M Vu**, Tuan-Anh D Nguyen, and Minh-Tien Nguyen (2022). "Jointly Learning Span Extraction and Sequence Labeling for Information Extraction from Business Documents". In: *arXiv preprint arXiv:2205.13434*. Accepted to IJCNN 2022 (Oral).

3 Nguyen, Tuan-Anh D, **Hieu M Vu**, Nguyen Hong Son, and Minh-Tien Nguyen (2021). "A Span Extraction Approach for Information Extraction on Visually-Rich Documents". In: *International Conference on Document Analysis and Recognition*. Best Paper Award, DIL - ICDAR 2021). Springer, pp. 353–363.

4 **Vu**, **Hieu M** and Diep Thi-Ngoc Nguyen (2020). "Revising FUNSD dataset for key-value detection in document images". In: *arXiv preprint arXiv:2010.05322*.

Education

Bachelor Degree, Computer Science (Honours Programme)
University of Engineering and Technology - Vietnam National University, Hanoi *GPA: 3.83/4.00*

- **Highest Ranking Graduate.**

Honours and Awards

Best Paper Award **Sep 2021**
ICDAR 2021, Workshop on Document Images and Language
Paper title: A Span Extraction Approach for Information Extraction on Visually-Rich Documents
Accepted for oral presentation and awarded the Best Paper Award at Workshop on Document Images and Language, ICDAR 2021.

Certificate of Highest Ranking Graduate **Aug 2020**
University of Engineering and Technology - Vietnam National University, Hanoi
Awarded to students graduate with the highest GPA amongst the graduating class.

Certificate of Merit for Excellent Graduation **Aug 2020**
Vietnam National University
Awarded by the President of Vietnam National University, Hanoi to students with excellent academic performance and level of conduct during a 4-year undergraduate programme.

Certificate of Excellent Thesis Defence **Aug 2020**
University of Engineering and Technology - Vietnam National University, Hanoi
Awarded to the best thesis of the Undergraduate Thesis Defence Committee.
Thesis title: A Layout-aware key-value relation predicting model for document images.

Certificate of Excellent Student **2016 - 2020**
University of Engineering and Technology - Vietnam National University, Hanoi
Awarded annually to students with excellent academic performance and level of conduct.
3 times awarded.

Academic Encouragement Scholarship **2016 - 2020**
University of Engineering and Technology - Vietnam National University, Hanoi
Awarded to top 8% student every semester on the basis of academic performance and extracurricular activities.
4 times awarded, 6 times nominated.

Top 4 Zalo AI Challenge 2018 - Voice Track **Sep 2018**
Zalo, VNG Corporation (Individual participant)

Finished at 4th place on the Private Leaderboard of the Voice Gender/Accent Classification challenge.

Zalo AI Challenge 2018 is a Kaggle-like competition hosted by Zalo - one of the biggest tech companies in Vietnam. The competition attracted over 700 teams competed in 3 challenges.

Akira Scholarship **Nov 2017**
Akira Education

A Japanese Language education scholarship awarded to students with excellent academic records.

Experience

AI Researcher/Engineer **Nov 2018 — Present**
Cinnamon AI *Hanoi, Vietnam*

- Build Document Intelligence technologies
  - Conducted researches, applied state-of-the-art methods to serve client projects.
  - Co-authored **3 papers** on Information Extraction.
  - Worked on **Information Extraction for Visually-rich Documents with limited data** using language models, **increased the f1-score by 2% - 7%** on several client data sets.
  - Worked on **Document-object Detection and Localization** on images,**over 85% IoU score achieved**.
  - Worked on **Document Image Classification**, **over 85% accuracy** achieved on a data set with **20+ classes**.
  - Worked on **Object Detection on Visually-rich Documents**, such as stamps and bullet point symbols.
  - Worked on **Data Synthesis/Augmentation** using image processing techniques for overcoming data shortage.
  - Other problems worked on: Text segmentation, printed/handwriting OCR, handled AI flow on client projects, contributed to internal libraries.
- Contribute to the Internal Data Management System
  - Developed **synchronization and local version control features** for the CLI tool.
  - Initiated and took charge of **data standardization**: making data from client projects be collectively re-useable for RnD purposes.
  - Participated in system design and feature planning.
  - Aligned requests and expectations of different user groups (RnD members and DataOps members).
- **Supported RnD - Business alignment**, aiming toward creating business-oriented solutions.
- Other tasks: Conducting/Facilitating technical sharing sessions; Training/Mentoring.
- Tools and technologies
  - Mainly used: **Python, Pytorch, Tensorflow/Keras, Transformers (Hugging Face), Git, OpenCV, Scikit-learn LaTeX.**
  - Also familiar with: DVC, Docker, Jenkins, CircleCI, KubeFlow, Elasticsearch.
  - Environments: GCP, AWS, Linux, Windows.

Undergraduate Research Assistant **Aug 2017 — Sep 2019**
IOT Lab, University of Engineering and Technology - Vietnam National University, Hanoi *Hanoi, Vietnam*

- Worked on the Well Insight platform
  - **Built predictive models for geophysical data** using machine learning and statical methods.
  - Contributed to the Machine Learning module of the Well Insight platform.
  - Worked on: Facies/rock type classification; Time series prediction on well-logs data; Permeability regression; Integrated Prediction Error Filter Analysis (INPEFA) curve calculation; Cumulative and Federated learning for well-logs data.
- Tools and technologies: Python, Keras/Tensorflow, OpenCV, Scikit-learn,XGBoost, Javascript.

Projects

Data Utility Improvement Experiment for DECAF **Oct 2022 —- Nov 2022**
Personal research

- Studied about Causal Inference, Algorithmic Fairness and specifically the paper DECAF: Generating Fair Synthetic Data Using Causally-Aware Generative networks.
- Conducted experiments on improving data utility of the DECAF method using alternating graph during synthesization while still achieving similar level of fairness.
- Gave discussion and suggestions on the choice of data utility metrics.

Voice Gender/Accent Classification **Aug 2018 — Sep 2018**
Zalo AI Challenge 2018

- **4th place** on the Private Leaderboard, achieved **79.208% accuracy**.
- Individual participant, participated only during the last 10 days/1 month+ of the competition.
- Problem description: Classify the speaker's voice in a recording (typically under 3 seconds) by gender(male/female) and regional accent (northern/central/southern).
- About the competition: Zalo AI Challenge 2018 is a Kaggle-like competition hosted by Zalo - one of the biggest tech companies in Vietnam. The competition attracted over 700 teams competed in 3 challenges.

Electric Meter OCR **Oct 2019 — Nov 2019**
University Coursework Project

- Achieved **0.08 on edit distance** while having the size of just **under 10MB** and processing time of under **0.3 seconds** per image on a normal laptop.
- Problem description: Extract the value on the dial from images of electric meters. The solution is meant to be used in embedded hardwares.

Outreach

Cinnamon AI Global Bootcamp 2022
Mentoring

- Mentored a group of 4 students. The team eventually won the 2nd prize for their graduation project.
- (These kids are amazing, far more gifted than I am.)
- Contributed to syllabus design, contributed questions to the entrance test, interviewed candidates.

Cinnamon AI Taiwan Bootcamp 2020
Teaching/Mentoring

- Prepared materials and gave lectures on Language modelling and Transformers to a class of 15 students, most of them hold a Master degree or are Master students. Also mentored a group of 3.
- Contributed to syllabus design, interviewed candidates.

Skills

Programming	**Python, Git, LaTeX**, MarkDown, Java, C/C++, SQL, SPRQL.
Tools and Library	**Pytorch, Transformers (Hugging Face)**, Tensorflow/Keras, Notebook, Github, OpenCV, Scikit-learn, Docker, LibROSA.
AI Domains	**Information Extraction**, Document Intelligence, Document Understanding, Data Science, Natural Language Processing, Computer Vision.
Environments	GCP, AWS, Linux, Windows.
Languages	Vietnamese (native), English (fluent), Japanese (JLPT N4).
Misc	Problem Solving, Attentive to detail, Presentation, Communication, Academic Research (Google Scholar profile).