

I consider myself a novice trying to get out of Dunning-Kruger's Valley of Despair, an individual who is intellectually curious, passion-driven and eager to make meaningful impacts. I have been working in the industry for over 4 years, focusing on developing AI solutions for Key Information Extraction from business documents. However, my interest does not lie within said domains and I am open to any interesting topic/problem. I am looking for opportunities where I could stay current with the literature, develop and implement AI solutions that people enjoy using.

## 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 (Oral presentation)**.
- 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: *2022 International Joint Conference on Neural Networks (IJCNN)*. **Oral presentation**. IEEE, pp. 1–8.
- 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: *Document Analysis and Recognition-ICDAR 2021 Workshops: Lausanne, Switzerland, September 5–10, 2021, Proceedings, Part II 16*. **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)** Sep 2016 — Aug 2020  
*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.

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## 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.

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## EXPERIENCE

### AI Researcher/Engineer

Nov 2018 — Present

*Cinnamon AI*

*Hanoi, Vietnam*


- **Researched, developed, and implemented AI solutions for client projects and internal usage.**
  - **Co-authored 3 peer-reviewed papers** on Key Information Extraction.
  - **Developed AI solutions for Key Information Extraction on document images of a low-resource language:** Implemented MVLM pre-training task for LayoutLM (and variants), adapted the English pre-trained weights to a low-resource language (Japanese), pre-trained and fine-tuned it on several client data sets, which **increased the f1-score by 2% - 7%.**
  - **Developed solutions for localizing and extracting documents from scanned images containing multiple documents** using Image Processing techniques and Deep Learning models, **achieved 85%+ IoU score.**
  - **Worked on Document Image Classification, over 85% accuracy** achieved on a client data set with **20+** classes.
  - **Worked on Object Detection on Document Images:** such as detecting logos, stamps, check marks, etc.
  - **Performed Data Synthesis/Augmentation** using image processing techniques for overcoming data shortage.
  - Other: Benchmarked internal AI solutions, Text Segmentation, printed/handwriting OCR, handled AI pipeline on client projects, contributed to several internal libraries.
- **Developed data-driven products and processes.**
  - **Developed synchronization and local version control features** for the CLI tool, used by AI Engineers and Researchers to query data from a central database and manage the local copy.
  - **In charge of data-related objectives on the department road map:** lead discussions, identify issues, propose solutions, decide action items for data centralization, data management, data integrity, labeling UI improvement, central database design, etc.
  - **Taking part in revamping the internal data management system:** Develop a new standardized label format, redesign database schema, develop data sharing hub.
  - **Initiated and took charge of data standardization:** defined and implemented processes regarding data life cycle and organization, enabling data sets from different client to be re-useable collectively.
- Other tasks: Supporting cross-department alignment; Conducting/Facilitating technical sharing sessions; Training/Mentoring;.
- Tools and technologies
  - Mainly used: **Python, Pytorch, Tensorflow/Keras, Transformers (Hugging Face), Git, OpenCV, Scikit-learn L<sup>A</sup>T<sub>E</sub>X.**
  - Also familiar with: DVC, Neptune, CircleCI, Jenkins, Docker, 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*

- **Contributed to the Machine Learning Toolkit of the [Well Insight platform](#)** 
  - **Built predictive models for geophysical data** using machine learning and statical methods.
  - Worked in conjunction with Front-end/Back-end Engineers and domain experts to ensure requirements are met.
  - Problem 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.

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## 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 synthesis 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 hardware.

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## 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 could ever be.)
- 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.

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## SKILLS

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