

## SUMMARY

- 4 years of experience in AI/DL, mostly focused on Document Image Understanding.
- 1 year of experience in Data Science, focused on geophysical data.
- Co-authored 3 papers on Information Extraction.
- Bachelor of Computer Science - Highest Ranking Graduate.

## 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 statistical 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.

## 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.

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- 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

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**Bachelor Degree, Computer Science (Honours Programme)** **Aug 2016 — Aug 2020**  
*University of Engineering and Technology - Vietnam National University, Hanoi* *GPA: 3.83/4.00*

- **Highest Ranking Graduate.**

## HONOURS AND AWARDS

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**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](#).

**Academic Encouragement Scholarship** **2016 - 2020**

*University of Engineering and Technology - Vietnam National University, Hanoi*

Awarded to top 8% student semesterly on the basis of academic performance and extracurricular activities.

3 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.

## SKILLS

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<b>Programming</b>	Python, Git, $\LaTeX$ , Markdown, Java, C/C++, SQL, SPARQL.
<b>Tools and Library</b>	Pytorch, Transformers ( <a href="#">Hugging Face</a> ), Tensorflow/Keras, Notebook, Github, OpenCV, Scikit-learn, Docker, LibROSA.
<b>AI Domains</b>	Information Extraction, 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> ).

## PROJECTS

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**Voice Gender/Accent Classification** **Aug 2018 — Sep 2018**

*Zalo AI Challenge 2018* [!\[\]\(4a60014e8c124e85ae27c7d200855f3f\_img.jpg\)](#)



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- **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

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### 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.