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Hieu (Ian) Vu

AI Researcher/Engineer

Hieu M. Vu
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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 2 conference papers, current Google Scholar h-index: 2.
- 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 **2 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 Student Researcher — **Aug 2017 — Sep 2019**
IOT Lab, University of Engineering and Technology - VNU — *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.

Publications

1 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*.

2 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 - Workshop on Document Images and Language (ICDAR 2021)**. Springer, pp. 353–363.

3 **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) **Aug 2016 — Aug 2020**
University of Engineering and Technology - VNU, Hanoi, Vietnam *GPA: 3.83/4.00*

- **Highest Ranking Graduate.**

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).

Projects

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.