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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*

- Building 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 0.2 - 0.7 on several client data sets.
  - Worked on document-object detection and localization on images, over 0.85 IoU score achieved.
  - Worked on document image classification, over 0.85 accuracy score achieved on a data set with 20+ classes.
  - Worked on object detection on visually-rich documents, such as stamps and check marks.
  - 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.
  - Collaborated with the BizDev team, facilitated alignment amongst RnD groups to develop business-oriented solutions.
- 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).
- Research domains: Information Extraction, Document Intelligence, Document Understanding, Natural Language Processing, Computer Vision.
- Other tasks: Conducting/Facilitating technical sharing sessions; Training/Mentoring.
- Tools and technologies
  - Mainly used: Python, Pytorch, Tensorflow/Keras, Transformers (Hugging Face), OpenCV, git/Github, 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.

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.

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*.

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
Environments	GCP, AWS, Linux, Windows.
Languages	Vietnamese (native), English (fluent), Japanese (JLPT N4).
Misc	Problem Solving, Attentive to detail, Academic Research, Presentation, Communication.

Projects

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

- 4th place on the Private Leaderboard.
- 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 company in Vietnam. The competition attracted over 700 teams competed in 3 challenges.

Electric Meter OCR **Oct 2019 — Nov 2018**
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.