TRAN BAO HIEU

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ABOUT ME

My name is Hieu, and I currently hold the position of AI Engineer at AkaBot. With four years of dedicated experience in research and development within the realms of Deep Learning and machine learning, I have honed my skills extensively. My primary focus lies in Intelligent Document Processing, specializing in OCR and Key Information Extraction models. Additionally, I am deeply involved in exploring generative models such as Variational Autoencoder (VAE), Generative Adversarial Nets (GAN), and Diffusion models.My passion for mathematics and coding fuels my ambition to excel in the field. I aspire to evolve into a prominent figure as an AI Engineer, AI Research Scientist, or any other role that allows me to continue pushing the boundaries of artificial intelligence.

EDUCATION

❖ **Ha Noi University of Science and Technology**   2016 - May 2021

Major: Computer Science

Best presentation award nomination for the Bachelor thesis defense

❖ **Lam Sơn High School for the Gifted**   2013 - 2016

Information Technology class

- Third Prize in Science and Technology Research Competition For High School Student 2015
- 1st rank in the entrance mathematics examination

HONORS & AWARDS

The 3rd task in the Vietnamese Handwritten Recognition challenge at Kalapa Challenge 2023	2023
Second prize in Ha Noi University of Science and Technology's Scientific Research Competition 2020	2020
First prize in Ha Noi University of Science and Technology's Innovative Product Competition 2020	2020
Third prize of 120.000 USD at Hackathon Call For Code IBM 2020	2020
Top 2 task 1 and Top 5 Finals at RIVF2021 MC-OCR Challenge 2021	2021
Best presentation award nomination for the Bachelor thesis defense	2021
Full scholarship for DS&AI Summer school	2021

PULICATION

Bao Hieu Tran, *Thanh Le Cong, Huu Manh Nguyen, Duc Anh Le, Thanh Hung Nguyen, PhiLe Nguyen, "SAFL: A Self-Attention Scene Text Recognizer with Focal Loss," IEEE InternationalConference On Machine Learning And Applications (IEEE ICMLA), 2020*

Tran Bao Hieu, *Hoang Duc Viet, Nguyen Manh Hiep, Pham Ngoc Bao Anh, Nguyen Duc Anh, Hoang Gia Bao, Hai-Phong Bui, Thanh Hung Nguyen, Phi Le Nguyen, Thi-Lan Le, "MC-OCR Challenge 2021: A Multi-modal Approach for Mobile-Captured Vietnamese ReceiptsRecognition", IEEE THE 2021 RIVF INTERNATIONAL CONFERENCE ON COMPUTING AND COMMUNICATION TECHNOLOGIES*

WORK EXPERIENCE

❖ **AkaBot, AI Engineer**   November 2022 - Now

AI Engineer, Akabot Vision Product

- In my role within AkaBot Vision, my primary focus revolves around the development, packaging, and seamless integration of OCR and key information extraction models into production environments. A key aspect of my work involves leveraging attention mechanisms to enhance the accuracy of OCR models. Furthermore, I've pioneered an algorithm dedicated to character position identification, which has led to the creation of a sophisticated layout

analysis document. This document parser operates at multiple levels, from block to character, offering a comprehensive understanding of document structure.

- Moreover, I am deeply involved in researching, training, and deploying Foundation models tailored for parsing English invoices. My aim is to construct a versatile invoice extraction model capable of accommodating diverse invoice formats. Through these endeavors, I contribute to advancing the efficiency and effectiveness of document processing within our systems.

❖ **Kaopiz Solution, Viet Nam**   June 2021 - October 2022

AI Research Engineer, Project: Japanese Handwritten Recognition
- Description:
  + My position: AI Research Engineer
  + Research and implement models to recognize Japanese handwritten, especially creating some algorithm to fix the Attention mechanism problems.

❖ **Vin University, Viet Nam**   January 2021 - May 2021

Research Assistant of Professor Minh Do, Project: Build an application to help patients manage their prescriptions
- Description:
  + My position: Member
  + Research and implement models to extract text from prescription, optimize prediction time of model OCR and enhance the model's detection capabilities, build a web api to response requests from client.
- Gained familiarity with research skills, coding skills, pytorch library.

❖ **AIOT Laboratory, Ha Noi University of Science and Technology,**   November 2020 - May 2021
  Collaboration With Clova AI lab, NAVER, Korea

Research Assistant of Assistant Professor Thanh Hung Nguyen, Dr. Phi Le Nguyen , Project: Vietnamese text recognition:
- Description:
  + My position: Team leader
  + Assign and support the work of team members, propose model, error pattern analysis and propose methods to resolve the errors.
- Gained familiarity with manage skills, error pattern analysis skills, resolve problem skills.

❖ **PIXTA, Viet Nam**   September 2019 - October 2019

AI and Computer Vision Intern, Project: Auto Tags Suggestion For Images
- Description: Build a system to automatically tags suggestion for image to support engine search:
  + My position: Member
  + Research papers "Attention based deep multiple instance learning " and "Deep multiple instance learning for image classification and auto-annotation". We used Faster RCNN to detect objects, then using deep multiple instance learning model with attention mechanism to predict related tags. Furthermore, with the aim for increasing accuracy of system, we also used "Fast zero shot learning" to predict unseen tags.
- Gained familiarity with research skills, present at ion skills, models deep learning and know how to combine multiple models to increase system's efficiency

RESEARCH EXPERIENCE

❖ **AIOT Laboratory, Ha Noi University of Science and Technology, Ha Noi**   October 2019 - Present
  City

Research Assistant of Dr. Phi Le Nguyen

- Project: Scene Text Recognizer
- My position: Team leader
- Propose new text recognition model which combined TPS, Resnet, Transformer and replaced Cross Entropy Loss by Focal Loss
- Gained familiarity with CRNN model, self attention mechanism, imbalance data
- Presented research in Ha Noi University of Science and Technology's Scientific Research Competition 2020
- Publication: **Hieu Tran Bao**, Thanh Le Cong, Manh Nguyen, Anh Duc Nguyen, Phi Le Nguyen, Thanh Hung Nguyen "SAFL: A Self-Attention Scene Text Recognizer with Focal Loss" ICMLA 2020
- Github: https://github.com/ICMLA-SAFL/SAFL_pytorch

CERTIFICATIONS

Machine Learning with Python: From Linear Models to Deep Learning - A course from Micro   2019
Master's program in Data Science from MIT

Practical Deep Learning - A course was organized by Center for Science and Development   2019
(CENSTED), Vietnam Institute for Advanced Studies in Mathematics (VIASM) and US

JLPT Japanese-Language Proficiency - N3   2019

EXTRACURRICULAR ACTIVITIES

❖ **Mentor Google Develop Student Hackathon**   December 2020 - Present

Organizer, Google Vietnam Developer Club

- I am an AI mentor and my mentee team archived the 2nd rank in the Google Develop Student Hackathon

❖ **Mathematics for Machine Learning Course**   December 2020 - Present

Organizer, AI4E
- Teaching Assistant
- Prepare exercises, solutions and answer questions of students

❖ **Machine Learning Blog**   February 2021 - Present

Organizer, Viblo
- Blogger, my blog: https://viblo.asia/u/HTKHHieu
- Write and share my knowledge of machine learning for everyone.

❖ **Deep learning basic book**   July 2020 - August 2020

Organizer, AI4E
- Participate in writing "Deep Learning basic book" version 2 with author Nguyen Thanh Tuan- founder AI4E
- Write Batch Normalization chapter and Word Embedding chapter
- Link ebook: https://nttuan8.com/sach-deep-learning-co-ban/

❖ **SheCode Viet Nam, Hanoi**   July 2020 - August 2020

Organizer, Shecode Viet Nam
- AI mentor of Shecode Hackathon 2020

SKILLS AND LANGUAGE

Language Program	Python, C/C++, Java
AI Framework	Pytorch, Keras, OpenCv, Numpy, Pandas
Computer Vision Skills	Image processing, Deep learning
Another techniques	Git, screen, byobu, scp, ssh, vv...

REFERENCES

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