Phuc's LOR Draft | Dr/Prof. Z

1. General Information

Full Name: Phuc Nguyen Duc Anh
Role of Phuc:

First name:
Last name:
Organization:
Duration of Working Together:
Position/Title:
Relationship:
Phone Number:
Email Address:

Collaboration context:

2. Research Project

Project Title: Detecting Omissions in Geographic Maps through Computer Vision

Brief Project Description: The VinMap research project, a collaboration between VinAI Research and the Ministry of Information and Communications (MIC) of Vietnam, proposes using artificial intelligence to identify misinformation in geographic map images (due to alterations or falsifications). This research addresses the issue of inaccurate national map images on the internet. As a result, the model is currently in use by the government, and a research paper on this work has been published at the International Conference on Multimedia Analysis and Pattern Recognition 2024 (MAPR'2024).

Phuc's Contributions:

- **Problem Identification:** The research problem was defined by MIC to address inaccuracies in national map images circulating in the media.
- **Methods and Tools:** Phuc proposed using state-of-the-art AI and computer vision models to extract semantic information from images. He trained this model on the newly developed VinMap dataset, enhancing both accuracy and reliability across diverse input images.
- **Outcomes:** The model is now utilized by MIC for cybersecurity management, effectively improving the accuracy of national map images on the internet - an issue impacting global perceptions of national geography. The VinMap dataset has been published in a research paper accepted at MAPR'2024.

Research Independence: Phuc independently proposed both the methodology and dataset to tackle this novel problem. He also implemented evaluation metrics to ensure the model delivers optimal performance in real-world applications.

3. Publication

Title: Detecting Omissions in Geographic Maps through Computer Vision
Conference: International Conference on Multimedia Analysis and Pattern Recognition 2024 (MAPR'2024).
Role of Phuc: First Author

Presentation at the Conference: Phuc presented the research findings at MAPR'2024, held in Da Nang on August 15, 2024, in his role as the first author of the paper.

4. Attitude towards receiving information

Proactive and Adaptable Attitude: When a new project was introduced and the opportunity arose to work with new collaborators, Phuc consistently demonstrated a readiness to receive information and engage in the research and execution of the project. Every week, during the weekly meetings, Phuc presented his progress report, discussing the project's developments over the past week. In these meetings, Phuc received suggestions from Dr/Prof. Z and the Ministry of Information and Communications (MIC), which he used to improve the model and adapt it to fit the MIC's system requirements.

Ability to Handle Unexpected Information Calmly and Creatively: During the project, the MIC faced several unforeseen challenges, such as insufficient resources to deploy the model. Phuc took the initiative to quantize the model, adapt its weights using transfer learning, and find ways to deploy it within the system. This demonstrated Phuc's calmness in handling unexpected situations, his ability to adapt quickly to changes, and his skill in leveraging these challenges to bring value to the project.

5. Personal Qualities

Facing and Overcoming Challenges: During the project, Phuc encountered several difficulties, especially when the MIC did not provide clear initial requirements regarding resources. However, Phuc was highly adaptive to these challenges. Moreover, in the weekly meetings, Phuc proactively implemented and executed the suggestions from Dr/Prof. Z and the MIC, consistently exceeding expectations with the model's accuracy surpassing 90% and achieving near real-time processing speed.

Long-Term Commitment to the Project: Phuc completed the project and handed it over to the MIC within the 6-month goal. In the remaining 2 months, Phuc wrote a detailed report on the VinMap project, which was later published as a conference paper that was accepted. The research received positive feedback from the domestic research community and sparked lively discussions on AI forums in Vietnam, as it addressed a critical and urgent issue.

Ability to Work Under Pressure: Phuc independently implemented and developed the algorithms and methods under the supervision of Dr/Prof. Z. Additionally, Phuc provided labeling tools to a team of 5-10 labelers, ensuring that the labeling task was completed within 3 months. After establishing the methods, Phuc deployed the system on the MIC's

infrastructure for real-time operation. At the same time, Phuc wrote the paper and conducted detailed experiments to evaluate the method, ensuring timely completion and submission to the MAPR'2024 conference.

6. Lessons Learned from the Project

After this real-world project, Phuc gained valuable insights:

The opportunity to work on a project that contributes to society was incredibly meaningful to Phuc, as his passion lies in using AI for the betterment of human life. He focused on developing a practical, deployable product before drafting the technical report.

Working on a real-world project came with its challenges, but Phuc successfully overcame them and completed the project with great attention to detail, especially in writing the paper and submitting it to the conference.

Phuc also learned important skills in project management and reporting, which helped him organize and lead the project effectively.

7. Suggestions for Dr/Prof. Z

Key Points to Emphasize:

Independent Research Skills and Problem-Solving Ability: Highlight Phuc's capacity to conduct research independently and his strong problem-solving skills, particularly when faced with challenges during the project.

Adaptability and Learning Attitude: Emphasize Phuc's proactive attitude when receiving new, unplanned information, and his eagerness to learn new concepts and work collaboratively with new teams.

Project Completion and Notable Contribution: Mention Phuc's ability to complete the project successfully, delivering impressive results and making significant contributions, particularly in the development and deployment of the model used by the Ministry of Information and Communications - gain positive attention from the community.

8. Supplementary Materials:

[1] Statement of Purpose (SOP)

[2] Curriculum Vitae (CV)

[3] PhD Application Information Table for SOPs