

# E-Ro Nguyen

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## Education

### Stony Brook University

New York, USA

#### Ph.D. in Computer Science

Aug. 2024 - Present

- Advised by [Prof. Michael Ryoo](#) and [Prof. Dimitris Samaras](#)

### University of Science, VNU-HCM

Ho Chi Minh City, Vietnam

#### B.Sc. in Computer Science | *Advanced Program in Computer Science*

Aug. 2018 - Nov. 2022

- GPA: 3.94 / 4.00
- Advised by Prof. Minh-Triet Tran
- Thesis title: Smart Interactive Retrieval of Visual Data via Semantic Understanding

## Experience

2022 - 2023 **Teaching Assistant**, University of Science - VNUHCM

HCMC, Vietnam

2019 - 2023 **Research Assistant**, SELAB, University of Science - VNUHCM

HCMC, Vietnam

2021 - 2022 **Research Intern**, VinAI Research

HCMC, Vietnam

## Publications

### Improving Referring Image Segmentation using Vision-Aware Text Features ([link](#))

In submission

E-Ro Nguyen\*, Truong-Hai Nguyen\*, Tuan-Anh Vu, Binh-Son Hua, Minh-Triet Tran, Sai-Kit Yeung

2023

### V-FIRST 2.0: Video Event Retrieval with Flexible Textual-Visual Intermediary ([link](#))

MMM'23

Nhat Hoang-Xuan, E-Ro Nguyen, Thang-Long Nguyen-Ho, Minh-Khoi Pham, ..., Minh-Triet Tran

2023

### VLFormer: Visual-Linguistic Transformer for Referring Image Segmentation ([link](#))

Preprint

E-Ro Nguyen, Nhat Hoang-Xuan, Tam V. Nguyen, Minh-Triet Tran

2023

### Flexible Interactive Retrieval SysTem 3.0 for Visual Lifelog Exploration ([link](#))

ICMR'22

Nhat Hoang-Xuan, Hoang-Phuc Trang-Trung, E-Ro Nguyen, Thanh-Cong Le, Minh-Triet Tran

2022

### Visual-Language Transformer for Referring Video Object Segmentation ([link](#))

CVPRW'22

E-Ro Nguyen, Nhat Hoang-Xuan, Minh-Triet Tran

2022

### Attention-based Hierarchical Fusion Network for Predicting Media Memorability ([link](#))

MediaEval'21

E-Ro Nguyen, Hai-Dang Huynh-Lam, Hai-Dang Nguyen, Minh-Triet Tran

2021

### PointRend with Attention Fusion Refinement for Polyps Segmentation ([link](#))

MediaEval'21

E-Ro Nguyen, Hai-Dang Nguyen, Minh-Triet Tran

2021

### Efficient One-Shot Video Object Segmentation ([link](#))

NICS'20

Nhat Hoang-Xuan\*, E-Ro Nguyen\*, Thuy-Dung Pham-Le, Khoi Hoang-Nguyen

2020

### Video Object Segmentation with Memory Augmentation and Multi-Pass Approach ([link](#))

CVPRW'20

The-Anh Vu-Le, Hong-Hanh, E-Ro Nguyen, Minh-Triet Tran

2020

### Multi-Referenced Guided Instance Segmentation Framework for Semi-supervised VOS ([link](#))

CVPRW'20

Minh-Triet Tran, Trung-Hieu Hoang, ..., E-Ro Nguyen, ..., Minh N. Do

2020

### iTASK - Intelligent Traffic Analysis Software Kit ([link](#))

CVPRW'20

Minh-Triet Tran, Tam V. Nguyen, ..., E-Ro Nguyen, ..., Minh N. Do

2020

## Honors & Awards

2022	<b>First Prize</b> , Student Scientific Research Award(EURÉKA)	HCMC, Vietnam
2022	<b>Sixth Place</b> , The 4th Large-scale Video Object Segmentation Challenge	New Orleans, U.S.A
2022	<b>Fourth Place</b> , The 2021 ICPC Asia Hanoi Regional Contest	Hanoi, Vietnam
2021	<b>First Prize</b> , Ho Chi Minh City AI-Challenge 2021	HCMC, Vietnam
2022	<b>Champion</b> , The 2021 ICPC National Vietnam Contest	Vietnam
2021	<b>Top 62nd</b> , Facebook Hacker Cup 2021	Online
2020	<b>Excellent Student in Artificial Intelligence</b> , Ho Chi Minh city	HCMC, Vietnam
2020	<b>Half-year Scholarship for Excellent Student</b> , University of Science - VNUHCM	HCMC, Vietnam
2020	<b>Third Prize</b> , Ho Chi Minh City AI-Challenge 2020	HCMC, Vietnam
2020	<b>Fourth &amp; Sixth Place</b> , The 2020 DAVIS Challenge on Video Object Segmentation	Online
2020	<b>Sixth Place</b> , The 2020 ICPC Asia Cantho Regional Contest	Can Tho, Vietnam
2019	<b>Bronze Medal</b> , The 2019 ICPC Asia Danang Regional Contest	Da Nang, Vietnam
2019	<b>Fourth Prize</b> , Samsung Collegiate Programming Cup 2019 Final Round	Seoul, Korea
2018	<b>Bronze Medal</b> , The 2018 ICPC Asia Hanoi Regional Contest	Hanoi, Vietnam
2018	<b>Full-year Scholarship for Freshman</b> , University of Science - VNUHCM	HCMC, Vietnam
2018	<b>Bronze Medal</b> , The 2018 ICPC Asia Yangon Regional Contest	Yangon, Myanmar
2018	<b>Participant</b> , Asia-Pacific Informatics Olympiad	Russia

## Projects

### Vietnamese Elementary Math Solving using Large Language Models [\(link\)](#)

HCMC, Vietnam

#### Personal Project

Sep. 2023 - Nov. 2023

- Fine-tuned LLMs models(Mistral, Vietcuna, LLaMA-2) to adapt the model for multiple choice and mathematics tasks.
- Applied QLoRA technique to optimize GPU memory and training/inference time.
- Collected, processed, and translated more than 20k multiple choice questions from English to Vietnamese to build a diversity training dataset and improve the model's generalization.
- Utilized GPT-3.5 to generate a step-by-step explanation for each question to improve 10% of model performance.
- Language/Technologies: Python, LangChain, OpenAI API

### Referring Expression Segmentation [\(link\)](#)

HCMC, Vietnam

#### Research Project

Nov. 2022 - Aug. 2023

- Collaborative research project with HKUST and Trinity College Dublin.
- Designed a multi-modal model to enhance the mutual information of vision and language.
- Proposed and implemented a contrastive loss to ensure further the coherent interpretation of language expressions.
- Utilized BERT to extract linguistic information and ResNet/Swin Transformer to encode visual information.
- Achievement: State-of-the-art on Referring Expression Segmentation datasets, and 1 paper is in submission.
- Language/Technologies: Python, PyTorch, OpenCV, Gradio

### Smart Interactive Retrieval of Visual Data via Semantic Understanding [\(link\)](#)

HCMC, Vietnam

#### Thesis Project

Feb. 2022 - Aug. 2022

- Developed a retrieval system with multiple effective filter algorithms to search and retrieve relevant images fast and accurately.
- Deployed a referring expression segmentation module to enhance the explainability of the retrieval system.
- Converted, stored and indexed millions of images as vector embeddings using vector database system Milvus.
- Achievement: Got 10/10 in thesis defense, First Prize in Student Scientific Research Award(EURÉKA).
- Language/Technologies: Python, PyTorch, OpenCV, Django, ReactJS, Milvus, Elasticsearch

### Vietnamese Scene Text Recognition

HCMC, Vietnam

#### Personal Project

Oct. 2021 - Dec. 2021

- Led a team of four to build a solution based on YoloV5 and MMOCR for detection and recognition of Vietnamese words in Scene Text images.
- Proposed and implemented a dictionary-guided heuristic algorithm to fix and eliminate wrong words, which boosts 3% in performance.
- Achievement: First Prize in the HCMC AI Challenge 2021.
- Language/Technologies: Python, PyTorch, OpenCV, Docker

## Extracurricular Activity

### Free Contest

HCMC, Vietnam

#### Problem Setter

Aug. 2017 - Mar. 2021

- Creating the algorithmic problems in free algorithmic contest for the community in Vietnam.

### Student Activities Board

HCMC, Vietnam

#### Core Member

Aug. 2017 - Mar. 2021

- Non-profit organization playing as an officially functional board that hosts student activities.

## Skills

- **Language:** Vietnamese (Native), English (Professional)
- **Programming:** Python, C/C++
- **Developer Tools:** Git/Github, Docker, Jupyter Notebook
- **Frameworks/Libraries:** PyTorch, Keras, OpenCV, NumPy, Matplotlib, FastAPI, Flask, Gradio, BentoML

## References

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### **Assoc. Prof. Minh-Triet Tran**

Vice President, Head of Software Engineering Lab, University of Science - VNUHCM, Vietnam

[tmtriet@fit.hcmus.edu.vn](mailto:tmtriet@fit.hcmus.edu.vn)

### **Asst. Prof. Binh-Son Hua**

School of Computer Science and Statistics, Trinity College Dublin, Ireland

[binhson.hua@tcd.ie](mailto:binhson.hua@tcd.ie)

### **Prof. Vu N. Duong**

Director of Air Traffic Management Research Institute, Nanyang Technological University, Singapore

[vu.duong@ntu.edu.sg](mailto:vu.duong@ntu.edu.sg)