

# Luong Hien Nga

✉ [hiennga001@e.ntu.edu.sg](mailto:hiennga001@e.ntu.edu.sg) ☎ (+65) 91367508  
🌐 <https://lhienga.github.io/portfolio/> 🌐 <https://www.linkedin.com/in/hien-nga-luong/>

## EDUCATION

### Nanyang Technological University

Singapore

#### BSc in Data Science and Artificial Intelligence - CGPA: 4.87/5

Aug 2020 - May 2024

- Awarded BSEAN scholarship for 4 academic years
- Exchange student at **National University of Singapore** on Semester 1 - Academic Year 2023-2024
- Relevant coursework: Database, Data Visualisation, Data Analytics and Mining, Data Analytics with Computer, Statistical Methods in Finance, Probabilities and Statistics, Natural Language Processing, Neural network and Deep learning, Machine Learning, Software Engineering, Data Structures and Algorithms
- Under 3-year MOE Tuition Grant bond obligation

## EXPERIENCE

### NTU S-Lab For Advanced Intelligence

Singapore

#### Computer Vision Intern

Sep 2022 - Aug 2023

- Explored and implemented models from MMSegmentation (UNet and Segformer) for remote sensing segmentation task; annotated satellite images with QGIS, performed evaluation on team's annotation quality and suggested improvements
- Spearheaded task planning initiatives within the team; effectively estimated project timelines to ensure timely project completion

### Asurion

Singapore

#### Data Science Intern

Jan 2022 - Apr 2022

- Built, deployed and tested Computer Vision classification models (MobileNetv2, Resnet50) for phone insurance purchase automisation on AWS with SageMaker, S3, and Lambda, achieving 95% accuracy
- Created a data pipeline that can automatically fetch, pre-process raw images from customers and feed to the model for continuous training

### HADTech

Vietnam

#### Backend Engineer Intern

May 2021 - July 2021

- Designed and developed micro-services system for an educational web application with NestJS, Kafka and TypeScript; created Learning Management System and Authentication Gateway APIs
- Integrated system with MongoDB; deployed and tested with Docker

## ACADEMIC PROJECTS

### Visual Dialog System (Final Year Project)

Jun 2023 – now

- Conduct detailed research and review SOTA Multimodal Large Language Models; build a visual dialog system based on BLIP2 and InstructBLIP, allowing users to have a conversation with chatbot about a given image
- Design UI with Figma and develop a website for chatbot with HTML, CSS and Flask

### YouTube Viewership Data Visualisation

Aug 2023 – Nov 2023

- Pre-processed data including text cleaning, binning and outlier detecting; constructed statistical tests with Python
- Designed and created visualisations including pyramid bar chart, geospatial chart, donut chart... with Tableau following visualisation techniques such as Gestalt Principles
- Created a video presentation on the project that effectively showcase the visualisations in 5 minutes

### Tumour cells phenotyping with Machine Learning

Aug 2021 - May 2023

- Created and executed data pipelines; utilised matrix calculations to efficiently and accurately process large volumes of biological data; implemented Autoencoder and ensemble clustering for unsupervised tumour cell morphological feature clustering
- Analysed data and developed data visualisations with QuPath and Tableau to aid cross-functional teams in understanding and addressing data-related issues

### **Controllable Synthesis of Synthetic Images**

*Aug 2022 - Nov 2022*

- Employed Denoising Diffusion Probabilistic Models (DDPMs) to generate synthetic images from CIFAR-10 dataset; trained classifiers on varying proportions of real and generated images
- Performed statistical tests on performance of different classifiers, revealing that substituting 25% of training data with synthetic images does not compromise classification accuracy

### **Hotel Reviews Sentimental Analysis**

*Sep 2022 – Nov 2022*

- Executed and compared among different classification models including traditional machine learning models (RandomForest, Logistic Regression...) and SOTA neural networks (LSTM, BERT...)
- Crawled hotel reviews from TripAdvisor with Python Selenium package for evaluation; produced a comprehensive EDA and NLP report with 91% accuracy attained in classification task

### **Database Construction for Online Shopping Website**

*Feb 2022 – May 2022*

- Designed an Entity-Relationship (ER) diagram and developed a normalised database schema for an online shopping website; implemented the database schema using MySQL
- Created and executed tailored queries to retrieve data based on specific business requirements within the domain of online shopping platform

### **StudyBuddy App**

*Feb 2022 – May 2022*

- Conceptualised and designed a study companion and location finding app; modelled the system with UML and created UI with Figma
- Developed and deployed application incorporating 13 functions including study partners and locations searching, locations rating and reviewing... using Android Studio, Firebase and Google Map API

### **Data Analysis and Outcome Predictions on Kickstarter Projects**

*Feb 2021 – May 2021*

- Developed and evaluated classification models (Random Forest Classifier and XGB Classifier) for project outcome prediction through GridSearchCV and ROC-AUC curve analysis with an accuracy rate of 70%
- Conducted visual and statistical analysis of a Kickstarter project dataset with Seaborn and Matplotlib libraries; produced a comprehensive Exploratory Data Analysis (EDA) and Machine Learning report

## **EXTRA-CURRICULAR ACTIVITIES**

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### **NTU Welfare Service Club - Friends of Children**

**Singapore**

#### **Regular Volunteer**

*Feb 2021 - Jun 2022*

- Instructed primary students in Maths and English, offering clarification and tracking progress to enhance academic performance
- Conducted life skills sessions and facilitated monthly events

### **NTU Machine Learning and Data Analytics Club**

**Singapore**

#### **Academic Portfolio member**

*Aug 2021 - Jun 2022*

- Participated in an ML Training Programme to enhance foundational knowledge in various aspects of Machine Learning
- Facilitated technical aspects of MLDA ad-hoc events, including Deep Learning Week and hackathons

### **Healthy Everyday Organisation**

**Vietnam**

#### **Co-founder, Head of Media-Design Department**

*Mar 2019 - Dec 2019*

- Conceptualised and designed the main theme of the organisation; created designs for blogs and captured event photography
- Led media and design team to enhance the visual appeal of the Facebook page, resulting in a following of over 4,500 users

## **ADDITIONAL**

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- Languages: Vietnamese (Native), English (Full proficiency)
- Virtual training: Machine Learning (Stanford University), Data Visualisation with Tableau (UC Davis), Microsoft PowerBI Introduction (Udemy)
- Programming Languages: Python, R, C, C++, Java, Javascript, Typescript