

# Chloe Tran

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## SKILLS

**Skills** — Python, R, ShellScript, MySQL, MATLAB | Numpy, Pandas | Vue.js, Flask, Node.js, Streamlit | Machine Learning/ Deep Learning Models | Skikit Learn, PyTorch

## PROFESSIONAL EXPERIENCE

**Bioinformatics Data Analyst**, *Huntsman Cancer Institute*    05/2023 – present | Salt Lake City, Utah  
Implementing unsupervised (SNN) and semi-supervised (Leiden) learning techniques using Python and R for **clustering single-cell data** from patient tumor samples to track transcriptional changes and predict pathways to counter treatment resistance.

Developing **interactive web tools** for single-cell data visualization leveraging Vue.js, React, Node.js, Flask, and Docker, enhancing data accessibility and user engagement.

**Software Engineer**, *Rakuten Mobile Inc*    04/2022 – 05/2023 | Tokyo, Japan  
Designed and developed an **auto-monitoring dashboard** for real-time Linux server health management, particularly for 4G and 5G Radio Access Network (RAN) **data analysis**, to improve monitoring, enhance network performance, and facilitate informed decision-making. This includes:

- Designed an automated system to log in, collect health data, and capture resources, users, and connectivity every 4 hours.
- Analyzed and visualized data on a Streamlit dashboard.
- Summarized weekly KPIs for cluster status and connectivity, and identified anomalies for troubleshooting.

**Research Assistant**, *Hosei University*    04/2021 – 03/2022 | Tokyo, Japan  
Developed computer vision-based **student engagement detection** in online classes.

- Performed face detection using MTCNN and emotion detection using Mini-Xception.
- Analyzed the final results and created a dashboard called MOEMO to visualize the result in more interactive way.
- Generated after-class report that report comprehensively details students' affective states, concentration, engagement, and intervention time for each student.

## EDUCATION

**Master of Science and Engineering**, *Hosei University*    2019 – 2021 | Tokyo, Japan  
GPA: 3.51/4.0  
Thesis: Bi-directional intra prediction for compressive sensing images

**Bachelor of Computer Science**,    2014 – 2019 | Ho Chi Minh City, Vietnam  
*Vietnam National University of Information Technology*  
GPA: 3.20/4.0  
Thesis: A Computer vision-based system to find people in surveillance camera network

## PROJECTS

### Kidney Pathology Image segmentation

Performing **kidney pathology image segmentation** to segment chronic kidney disease (CKD) glands in patch images by training and testing multiple baseline CNN models (UNet, Attention UNet, RegNet, DynUNet) and Transformer models (UNetR, Swin UNetR) using the MONAI (Medical Open Network for AI) network architecture. Evaluate the accuracy of network combinations (CNN and Transformer) against the baseline models.

### Image Search In Context with Contrastive Language-Image Features

Developed a web-based noun learning system utilizing the **CLIP** (Contrastive Language-Image Pre-training) model for image recommendations, Azure speech to text, translation APIs for user voice input and translation, leveraging Streamlit for a user interface.

### Surveillance network locates individuals using computer vision

Developed a real-time system that can search a person by their face/ attribute in multiple cameras. Collected and preprocessed the real data from the university surveillance cameras. Implemented face detection using **MTCNN**, and pedestrian detection using **YOLO**, face cluster by **K-mean**.

### Chat conversation

Using pre-trained **Large Language Models** from Hugging Face API to create a chat conversation. The chat agent tokenizes the text input, generate the embedding output, then, decode the embedding vector to create the text output.

### Encoder Enhancement For Compressive Sensing

Designed a new encoder method for compressive sensing images by exploring the Walsh Hadamard matrix structure, resulting in a **19%** reduction in file size and enhancing compression image quality.

Proposed a Triangle Quantization method for compression rate control that allows the system to adjust the image quality upon the internet bandwidth.

## PUBLICATIONS

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### **Bi-directional intra prediction-based measurement coding for compressive sensing images.**

**Thuy T. T. Tran**, J. Peetakul, C. D. K. Pham, J. Zhou, IEEE 22nd International Workshop on Multimedia Signal Processing (MMSP) 2020

### **Frame Adaptive Rate Control Scheme for Video Compressive Sensing**

Fuma Kimishima, Jian Yang, **Thuy T. T. Tran**, Jinjia Zhou, International Conference on Image Analysis and Processing (ICIAP) 2022

### **Students' Emotion extraction and visualization for engagement detection in online learning**

Mohammad Nehal Hasnine, Huyen T. T. Bui, **Thuy T. T. Tran**, Ho Tan Nguyen, Gökhan Akçapınar, Hiroshi Ueda, 25th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems (KES) 2021

### **Briefing and Geo-visualizing on International Practices of Learning Analytics in Higher Education**

Hiroshi Ueda, Ho Tan Nguyen, Huyen T. T. Bui, **Thuy T. T. Tran**, Hisashi Hatakeyama, Mohammad Nehal Hasnine, The 21st IEEE International Conference on Advanced Learning Technologies (ICALT) 2021

### **Can Sakai Log Data Improve Learning Analytics? Findings from a Preliminary Survey**

Mohammad Nehal Hasnine, Ho Tan Nguyen, Huyen T. T. Bui, **Thuy T. T. Tran**, Hisashi Hatakeyama, Hiroshi Ueda, 33rd Education and Learning Support Information System Research Presentation, 2021

### **A Real-Time Learning Analytics Dashboard for Automatic Detection of Online Learners' Affective States**

MN Hasnine, HT Nguyen, **Thuy T. T. Tran**, HTT Bui, G Akçapınar, Hiroshi Ueda, Sensors 23 (9), 2023

### **Exploring the Use of CLIP Model for Images Recommendation in Noun Memorization using Various Learning Context**

MN Hasnine, **Thuy T. T. Tran**, Hiroshi Ueda, Bulletin of Research Center for Computing and Multimedia Studies, Hosei University, 2023

## CERTIFICATES

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**Google Data Analytics Certificate**  — 07/2021 (Coursera course) • **The Machine Learning Pipeline on AWS** — 12/2021 •

**Practical Data Science with Amazon SageMaker** — 12/2021

## SCHOLARSHIP AND HONORS

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**The 100th Year Anniversary Scholarship**, *Hosei University* 07/2020

**Japan Student Services Organization (JASSO) Scholarship**, JASSO 10/2019

**Daddy Longlegs Scholarship**, *Hosei University* 09/2019

**Scholarship for high performance student**, *University of Information Technology* 03/2016 – 09/2019