Thodsaporn Chay-intr

AI Solutions Consultant, AI/ML Engineer, and NLP Researcher
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AI Solutions Consultant, AI/ML Engineer, and NLP Researcher with 5+ years in NLP, ML, and AI software development across academic and commercial settings. Directed design and development of innovative applications, significantly contributing to the Thai NLP community. leveraging LLMs for custom AI solutions and achieving up to 99% accuracy in multilingual ASR. Demonstrated expertise in Python, PyTorch, and data analysis, with a state-of-the-art track record in text segmentation (F1-scores between 97.7% and 99.4% across Asian languages), multimodal sentiment analysis, and text generation. Recognized for multidisciplinary collaboration and leadership.

Work Experience

iApp Technology Limited, Pathum Thani, Thailand Jan 2024 – Apr 2024
AI Solutions Consultant and AI Engineer

iApp is an AI innovator in Thailand, creating an open-sourced OpenThaiGPT and leading the application of recent AI technologies in Thai businesses, crafting customized AI solutions for diverse clients.

- Contributed to strategic decision-making, guiding AI project lifecycles from concept to completion, aligning with trends and goals to ensure top-quality and performance for successful delivery to clients.
- Provided expert consultation on integrating AI solutions to client products for enhancing their business and achieving strategic goals.
- Spearheaded POCs, developed, and delivered AI solutions, leveraging open-source LLMs (e.g., LLaMa-2 and OpenThaiGPT) with RAG through PyTorch and llama.cpp, for various use cases, including, financial agents, helpdesk, and information retrieval tasks.
- Conducted comprehensive data analysis and modeling using PyTorch, enhancing model accuracy by up to 27% for various tasks such as intent classification, sentiment analysis, and face-shape classification.
- Contributed the development of state-of-the-art AI products for various domain solutions, e.g., multilingual ASR (English, Japanese, Chinese and Thai) with up to 99% of accuracy achievement and LLM-based FAQ classification with 88.97% of accuracy.

Artificial Intelligence Association of Thailand, Pathum Thani, Thailand Jan 2018 – Aug 2023
Machine Learning Researcher and Lecturer (Ad Hoc and Project-based)

AIAT is a non-profit aiming to advance AI in Thailand, enhancing knowledge through conferences, courses, and events nationwide.

- Designed and delivered Python courses on data analysis, AI, and ML. Covered tools (e.g., pandas, scikit-learn, spacy) and algorithms (e.g., regression, SVM, neural nets) in text and image analysis to educate hundreds of students, cultivating ML enthusiasts in Thailand.
- Offered in-depth consultations to undergraduate and graduate students on theoretical, practical, ML concepts, strategically guiding study plans and assisting in the publication of over 20+ international research papers and projects.

Tokyo Institute of Technology, Tokyo, Japan Sep 2019 – Mar 2020
Research Assistant

Tokyo Institute of Technology is a top-ranked research university in Japan, ranking within top-100 by QS World University Rankings, known its wide-ranging research topics and strong emphasis on innovation and technology.

- Collaborated with a multidisciplinary team of 8 members to design and implement tailored APIs for Natural Langue Understanding and Generation units for Japanese conversational dialogs.
- Designed, developed, and applied LSTM-based sequence-to-sequence models using PyTorch for text generation and refinement, resulting in enhanced fluency and a more natural linguistic output, validated through human evaluations.

iApp Technology Limited, Pathum Thani, Thailand Mar 2017 – Feb 2018
Machine Learning Engineer and Researcher

- Spearheaded and led a cross-disciplinary team of linguists and software developers to construct the first Thai Treebank, comprising over 5,000 entries, contributing Thai NLP resources, enhancing research, innovations, and applications in the NLP community.
- Led the development and deployment of native and web applications in React, Python, and GCP as a pipeline product for syntactic extraction, with an emphasis on intuitive UX, bolstering ongoing developments in the Thai NLP community.

Education

Tokyo Institute of Technology, Tokyo, Japan Apr 2019 – Sep 2023
Doctor of Engineering — Information and Communications Engineering
NSK Scholarship Foundation

Sirindhorn International Institute of Technology, Pathum Thani, Thailand Jul 2015 – Aug 2018
Master of Engineering — Information Communication and Technology for Embedded Systems
TAIST Tokyo Tech Scholarship

Thammasat University, Pathum Thani, Thailand Jun 2011 – Aug 2015
Bachelor of Science — Computer Science
A Member of the Student Representative Council

Key Skills

Technical Skills

- **Programming Languages**: Python, C/C++, Rust, Java
- **ML Toolkits**: PyTorch/Lightning, TensorFlow/Keras, Hugging Face, PyG, OpenCV, Scikit-learn, Spacy, NLTK
- **Tools & Technology**: Linux, Hadoop, Spark, SQL, NoSQL, Oracle Database, Docker, Jupyter, Neo4j, Elasticsearch GCP, AWS, Git

Languages: Thai (Native), English (Advanced), Japanese (Intermediate)

Selected Projects

Extreme Fine-tuning: A Novel and Fast Fine-tuning Approach for Text Classification (EACL 2024) Mar 2024

- Proposed a novel text classification fine-tuning approach incorporating backpropagation with extreme learning machine, reducing fine-tuning time while retaining classification accuracy and F1-score.
- Attained faster fine-tuning time by up to 74.8% with comparable scores over recent state-of-the-art models on MELD, IEMOCAP, IMDb, and AG News datasets.

LLaVAC: Fine-tuning LLaVA as a Multimodal Sentiment Classifier Jan 2024

- Proposed a method to fine-tune Large Language-and-Vision Assistant (LLaVA) as a classifier for classifying multimodal sentiment labels by designing a prompt to consider unimodal and multimodal labels and generating predicted labels.
- Outperformed state-of-the-art baselines by up to 7.31% in accuracy and by 8.76% in weighted-F1 in the MVSA-Single dataset.

A Unification-based Knowledge Graph Construction for Thai Profile Generation from Online Resources Sep 2023

- Constructed a knowledge graph for Thai researchers, using 6+ million entries crawled from online research databases.
- Designed a semi-supervised method with multi-task learning to extract entities/relations, improving F1-score by 8% over baseline.

Simple2In1: A Simple Method for Fusing Two Sequences from Different Captioning Systems into One Sequence Sep 2023

- Developed a T5-based generative model for Thai captions fusion, outperforming baselines by 5.2% in sBLEU and ROUGE-L scores.
- Accomplished a sBLEU score of 79% and a ROUGE-L score of 90% for a small captioning dataset comprising 3,168 samples.

LATTE: Lattice ATTentive Encoding for Character-based Word Segmentation (Journal of NLP) Jun 2023

- Proposed, and implemented a sequence labelling method that integrates multi-granularity linguistic units, Lattices, GNNs, PTMs, and Attention Mechanism using PyTorch and PyG to generate and refine text representations for word segmentation.
- Achieved state-of-the-art performance (97.7% to 99.4% of F1-score) across Asian languages: Japanese, Chinese, and Thai.

Multimodal Sentiment Analysis Using Multiple Labels from Different Modalities Mar 2023

- Collaborated with students to design and implement a sentiment analysis model for social network data, leveraging text, image, and multimodal labels using CLIP, BERT, and RoBERTa. Yielded up to 2% improvement in F1-score over recent models.
- Attained F1-scores of 74.1% for MVSA-single and 62.0% MVSA-multiple datasets.

Detecting Fraud Job Recruitment Using Features Reflecting from Real-world Knowledge of Fraud Mar 2022

- Developed a method to classify fake job recruitments using a set of novel features designed to reflect fraudster behaviors.
- Yielded accuracy of 97.64% for Employment Scam Aegean Dataset (EMSCAD).

Public Budget Usage Monitoring System (Bronze Medal - The 47th International Exhibition of Inventions Geneva) Feb 2019

- Cooperated with an interdisciplinary team to develop a monitoring system that utilizes Scrapy to crawl large-scale unstructured data from government sites, such as procurement and budget portals, for corruption detection in text data. Deployed by two organizations.
- Developed a text classification method in TensorFlow, with rule-based enhancements, for corruption detection, validated by experts.

Selected Relevant Publications

Extreme Fine-tuning: A Novel and Fast Fine-tuning Approach for Text Classification Mar 2024
18th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2024)

- A novel fine-tuning approach that incorporates backpropagation followed by extreme learning machine for text classification.
- Achieved comparable performance state-of-the-art works while reducing fine-tuning time by up to 74.8% across well-known text classification datasets (MELD, IEMOCAP, IMDb, and AG News).

LATTE: Lattice ATTentive Encoding for Character-based Word Segmentation Jun 2023
Journal of Natural Language Processing, Volume 30, Issue 2

- A sequence labelling method that integrates multi-granularity linguistic units, Lattices, GNNs, PTMs, and Attention Mechanism
- Achieved state-of-the-art performance (97.7% to 99.4% of F1-score) across Asian languages: Japanese, Chinese, and Thai.

Character-based Thai Word Segmentation with Multiple Attentions Jun 2023
Journal of Natural Language Processing, Volume 30, Issue 2

- A sequence labeling model that utilizes BiLSTM, PTMs and multiple attention mechanisms across multiple linguistic units, including characters, character clusters, subwords, and words.
- Achieved state-of-the-art performance on well-known Thai datasets, on par with LATTE: Lattice ATTentive Encoding for Character-based Word Segmentation.

Character-based Thai Word Segmentation with Multiple Attentions Sep 2021
International Conference on Recent Advances in Natural Language Processing (RANLP 2021)

- A preliminary sequence labeling model that utilizes only BiLSTM and multiple attention mechanisms across multiple linguistic units, including characters, character clusters, subwords, and words
- Achieved state-of-the-art performance on a well-known Thai dataset.