# Thamolwan Poopradubsil

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https://thamolwanpo.github.io/

## RESEARCH INTERESTS

My research focuses on applying machine learning to assess the social, environmental, and public opinion impacts of public policies. I am also interested in enhancing large language models (LLMs) through knowledge graph construction and developing Responsible AI frameworks to ensure fairness and transparency in decision-making.

## EDUCATION

**M.S. Computer Science and Information Engineering** 2021
National Central University Taoyuan, Taiwan

**B.S. Computer Science, First Class Honors** 2019
Kasetsart University Bangkok, Thailand

## RESEARCH EXPERIENCE

**Independent Researcher**, advised by Dr. Tipajin Thaipisutikul Nov. 2023 – Present
*Faculty of ICT, Mahidol University* *Nakhon Pathom, Thailand*

- Analyzed sector-specific climate policies in *ScanClimatePolicy* across key sectors like Energy, Transportation, and Infrastructure, focusing on policy effectiveness.
- Developed a framework emphasizing context-specific strategies to improve climate policy impact on GHG emission reduction.
- Created dataset recommendation systems for the *IntelliMatch* project using sentence-based searches and large language models.
- Enhanced dataset retrieval efficiency and user experience by improving traditional search methods.

**Graduate Student**, lab of Dr. Chia-Hui Chang Sep. 2019 – Jul. 2021
*Computer Science and Information Engineering, National Central University Taoyuan, Taiwan*

- Developed a model to improve message merging and question-answer pairing for reply-to prediction tasks in instant messaging platforms as part of the thesis *Context-Aware Question-Answer Pairing and Dialogue Act Tagging from Instant Message Chatlog*.
- Proposed and implemented a model for dialogue act tagging, leveraging BERT to include conversational context, improving tagging accuracy with out-of-domain datasets.
- Built a retrieval-based chatbot that used prepared Q&A pairs and dialogue act tagging for answer selection, demonstrating practical applications of the models.

- Conducted a text-mining project titled *Antibody Watch: Text mining antibody specificity from the literature*, using BERT and SciBERT to classify reports of antibody non-specificity, significantly improving the precision of biomedical research tools.
- Executed a detailed NLP study for *Chat-log Disentanglement via Same-Thread Classification and Direct-Reply Prediction*, utilizing BERT with Attention over Attention (AOA) to improve prediction accuracy for same-thread discussions and direct replies in chat logs.

**Undergraduate Student**, supervised by Dr. Chakrit Watcharopas Jan. 2019 - June 2019
Co-Advisors: Dr. Usa Sammapun and Dr. Ruj Akavipat
*Department of Computer Science, Faculty of Science. Kasetsart University Bangkok, Thailand*

- Developed a deep learning system for autonomous vehicles as part of the thesis *Self-Driving Car using Imitation Deep Learning*, to imitate human driving behavior in a car simulator.
- Constructed a dataset from CARLA (autonomous vehicle driving simulator) and augmented the data for training.
- Trained a CNN + RNN model to imitate human driving in the simulator, achieving lane following, turns, and traffic light compliance in new, unseen environments.

## TEACHING EXPERIENCE

**Teaching Assistant**, Computer Science, Kasetsart University 2018
*Algorithm Design and Analysis*

- Designed lab quizzes, including questions and answer keys, for each algorithm lesson, ensuring comprehensive understanding and assessment of key concepts.

## HONORS & AWARDS

**MOE Taiwan Scholarship Directions for Thai Students** 2019-2021

Awarded to top candidates from Thailand to pursue graduate studies at Taiwanese universities, based on academic merit and selection through a competitive application process.

**Certificate of Academic Excellence** 2017, 2018

Recognized for maintaining high academic standing at Kasetsart University.

**KU King Bhumibol Scholarship (Excellent Academic Achievement Award)** 2017

Awarded to the top 5 students with the highest academic performance in each faculty at Kasetsart University.

## PROFESSIONAL EXPERIENCE

**Machine Learning Engineer** Sep. 2021 - Apr. 2024
*Appman Co, Ltd.* Bangkok, Thailand

- Researched, developed, and deployed information extraction models for processing image documents (invoices, bank statements, car registrations), automating data extraction from OCR outputs. The models were successfully deployed into production and contributed to commercial services.
- Conducted research and data collection to develop a Thai-English and English-Thai machine translation system, focusing on spoken language using the BART model for pre-training and fine-tuning.
- Developed a prototype Thai spell correction tool using a pre-trained text generation model from the machine translation project, improving text clarity and accuracy in Thai language applications.
- Created a grounded chatbot using a large language model (ChatGPT) for scenarios like condo sales, integrating information retrieval and semantic similarity to generate relevant, knowledge-based responses.

## PRESENTATIONS

[P2] Oral Presentation, "Question-Answer Pairing from IM Conversations via Message Merging and Reply-to Prediction", PACLIC 2022, 2022, Online.

[P1] Oral Presentation, "Chat-log Disentanglement via Same-Thread Classification and Direct-Reply Prediction", PACLIC 2022, 2022, Online.

## PUBLICATIONS

### Journal Articles (peer-reviewed, archival)

[J1] Chun-Nan Hsu, Chia-Hui Chang, **Thamolwan Poopradubsil**, Amanda Lo, Karen A. William, Ko-Wei Lin, Anita E. Bandrowski, Ibrahim Burak Özyurt, Jeffrey S. Grethe, Maryann E. Martone: Antibody Watch: Text mining antibody specificity from the literature. *PLoS Comput. Biol*. 17(5) (2021)

### Conference Proceedings (peer-reviewed, archival)

Note: Conference proceedings are considered top-tier publication venues for computing.

[C2] **Thamolwan Poopradubsil**, Chia-Hui Chang: Question-Answer Pairing from IM Conversations via Message Merging and Reply-to Prediction. *PACLIC 2022*: 10-19

[C1] Chia-Hui Chang, ZhiXian Liu, **Thamolwan Poopradubsil**, Yu-Ching Liao, Yu-Hao Wu: Chat-log Disentanglement via Same-Thread Classification and Direct-Reply Prediction. *PACLIC 2022*: 93-101

**Manuscripts Submitted**

[M2] IntelliMatch: Translating Research Intentions into Precision Dataset Recommendations with Contrastive Learning and LLM Re-Ranking, submitted to *Neurocomputing*, under revision.

[M1] ScanClimatePolicy: A Framework for Analyzing Sectoral Climate Policies and Their Environmental Impact, submitted to *Ecological Economics*, awaiting review.

## REFERENCES

Dr. Tipajin Thaipisutikul – Faculty of ICT, Mahidol University
Email: tipajin.tha@mahidol.edu

Dr. Chia-Hui Chang - Computer Science and Information Engineering, National Central University
Email: chiahui@g.ncu.edu.tw

Dr. Chakrit Watcharopas – Computer science, Kasetsart University
Email: chakrit.w@ku.th