

Romrawin (Jin) Chumpu

Master of Science,
Engineering and Technology (Computer Science)

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👤 Google Scholar

EDUCATION

Graduate Visiting Student

📅 2023

- 📍 Stanford University
- 💰 Summer Session tuition grant
- 📖 CS148, CS229, EFSLANG698S, ME344S

Master of Science, Engineering and Technology (Computer Science)

📅 2019-2022

- 📍 Sirindhorn International Institute of Technology, Thammasat University
- 💰 Junior Science Talent Project (Mathematics) and Excellence Thai Students scholarship
- 🏢 Lab: Functional Advanced Materials Engineering laboratory (FAME)
- 📖 Simulation and Control of Drug Release on Microneedle using Machine Learning Technique
- 👤 Supervisors: Assist. Prof. Shu-Han Hsu and Dr. Sanparith Marukatat

Bachelor of Engineering (First-Class Honors), Chemical Engineering

📅 2015-2019

- 🎓 Minor in Bio-Chemical Engineering
- 📍 Sirindhorn International Institute of Technology, Thammasat University
- 💰 Junior Science Talent Project (Mathematics) scholarship

Exchange Student, Chemical Engineering

📅 2018-2019

- 📍 University of Waterloo, Canada
- 💰 Junior Science Talent Project (Mathematics) research grant and Nishino scholarship
- 🏢 Lab: Computational MultiPhysics (CoMPhys) research group
- 📖 Simulation-based Design of Aeroponics Nutrient Distribution System Using multiple CFD
- 👤 Supervisor: Assoc. Prof. Nasser Mohieddin Abukhdeir

WORK EXPERIENCE

Research Assistant - Image Processing and Understanding Research Team

📅 4/2022-6/2023

- 📍 National Electronics and Computer Technology Center (NECTEC)
 - **Image captioning** - experimented state-of-the-art image captioning in Thai
 - **Image generation** - trained generative model on a large image dataset (e.g. a food dataset)
 - **Character-based encoder Transformers**
 - experimented how Thai characters encode in Transformer training
 - **Multimodal image and text models**
 - finetuned CLIP and CoCa using Thai captions translated from MSCOCO dataset
 - **Image multi-captioning**
 - experimented trained image captioning models with multi-caption input
 - **Cross-language latent relation**
 - investigated the connection between latent spaces across multi-language models
 - **Facial component swapping** | Paper
 - conducted a novel method of face component swapping for a more realistic facial appearance
 - **End-to-end machine learning project**
 - carried out a project that includes generating a dataset, training a model, and deploying models to a demo/API
 - **Dataset web scraping** - scraped and generated dataset from public websites
 - **High performance computing**
 - used supercomputers TARA and LANTA to train and optimize large models
 - **Huge Hugging Face user** - utilized all of Hugging Face's services during the work

Graduate Co-Researcher - Image Processing and Understanding Research Team 📅 3/2021-2/2022

📍 National Electronics and Computer Technology Center (NECTEC)

- **Face texture blending** | Poster
 - experimented face texture blending technique using pretrained UNet and GANs
- **Face's components clustering**
 - created an automatic extraction from facial key points and grouped face component types
- **3D face generation**
 - researched with 3D face models and programmed automatic generative 3D face
 - experimented on face UV mapping and improved realistic texture
- **Face composition**
 - programmed face swapping composition collaborated with the Royal Thai Police

AI Engineer - Super AI Engineer Development Program

📍 Artificial Intelligence Association of Thailand (AIAT)

- 👤 **Project Manager** - Image Processing with Southern Palm company 📅 2/2022-8/2022
- 🖥️ **AI Developer** - Super AI Engineer Development Program Season 1 📅 6/2020-7/2021
 - solved Thailand's societal problems with NLP, signal processing, image processing, and data science

Summer Research Internship - Department of Chemical Engineering 📅 6/2018-8/2018

📍 University of Waterloo, Canada

- 💰 Nishino scholarship
- 📊 Computational Fluid Dynamics (CFD) analysis of an antibiotic drug eluting on orthopedic implants simulation
- 👤 Supervisor: Prof. Peter L. Douglas

PUBLICATIONS

1. **R. Chumpu**, "Insight findings from materials simulation guided physics features on graph attention networks," submitted to AI4Mat Workshop at NeurIPS 2023.
2. **R. Chumpu**, T. Treeratanaphitak, S.-H. Hsu, and S. Marukatat, "MN-SIM: Microneedle Simulation Dataset and Benchmark Models," submitted to NeurIPS 2023 Datasets and Benchmarks Track. (Full dataset paper)
3. **R. Chumpu**, C.-L. Chu, T. Treeratanaphitak, S. Marukatat, and S.-H. Hsu, "Physics-informed graph neural networks accelerating microneedle simulations towards novelty of micro-nano scale materials discovery", Engineering Applications of Artificial Intelligence, vol. 126, p. 106894, 2023.
4. **R. Chumpu**, P. Temniranrat and S. Marukatat, "Synthetic face generation from in-the-wild face components swapping," The 17th International Joint Symposium on Artificial Intelligence and Natural Language Processing (iSAI-NLP), Chiang Mai, Thailand, 2022, pp. 1-6, doi: 10.1109/iSAI-NLP56921.2022.9960274.
5. W. Bholsithi, N. Wongwaen, C. Sinthanayothin, **R. Chumpu**, P. C. Nitiphat and P. C. C. Burana, "Z-Face Sketch : Automatic Placement of Face Composites for Composite Sketches," 2022 International Conference on Digital Government Technology and Innovation (DGTi-CON), Bangkok, Thailand, 2022, pp. 96-100, doi: 10.1109/DGTi-CON53875.2022.9849208.
6. **R. Chumpu**, "Simulation and control of drug release on microneedle using machine learning technique," Thammasat University, 2021.
7. **R. Chumpu**, S.-H. Hsu, and C.-L. Chu, "Two-Way Coupling Computational Fluid Dynamics with Explicit Dynamics Modeling and Simulation of Microneedle," The International Conference in Mathematics and Applications (ICMA-MU), Bangkok, Thailand, 2020.
8. **R. Chumpu**, N. Khamsemanan, and C. Nattee, "The association between dengue incidences and provincial-level weather variables in Thailand from 2001 to 2014," PLOS ONE, vol. 14, no. 12, pp. 1-27, 12 2019.

9. **R. Chumpu**, N. Khamsemanan, and C. Nattee, "Influenza Activity and Province-level Weather Variations in Thailand, 2009 to 2014, Using Random Forest Time-series Approach," Chiang Mai Journal of Science, Vol. 45, No.6, 2509 – 2514, 2018.

CONFERENCE PRESENTATIONS

1. **R. Chumpu**, P. Temniranrat, S. Marukatat, "Synthetic face generation from in-the-wild face components swapping," Presented online at OAMLS: Online Asian Machine Learning School as a part of 14th Asian Conference on Machine Learning (ACML 2022), Hyderabad, India.
2. **R. Chumpu**, SH. Hsu and CL. Chu, "Numerical Simulation of Microneedle Materials," Presented at the 21st International Union of Materials Research Societies - International Conference in Asia (IUMRS-ICA 2021), Bangkok, Thailand.
3. **R. Chumpu**, N. Khamsemanan , and C. Nattee, "Prediction of dengue incidences in Thailand using a quasi-likelihood generalized linear model," Presented at the 10th Anniversary Conference on Nonlinear Analysis and Convex Analysis (NACA 2017) at Chitose City Cultural Center Hokkaido, Chitose, Japan.

AWARDS AND HONORS

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|  Best Project Award - CS148 Introduction to Computer Graphics
📍 Stanford University |  2023 |
|  Super AI Engineer - The Reality Show (10/8000 participants)
📍 Artificial Intelligence Association of Thailand (AIAT)
» A new TV show completing with AI coding and problem-solving skills for social challenges |  2022 |
|  One of Thirty People who Contributed SIIT Reputation
★ In celebration of SIIT 30th year
📍 Sirindhorn International Institute of Technology, Thammasat University |  2022 |
|  The 10th of Global Young Scientist Summit (GYSS)
📍 National Science Foundation of Singapore (NSF)
» Joined a panel in AI, Ethics and Governance with Prof. Cédric Villani and Prof. Leslie Valiant |  2022 |
|  Outstanding Submission - ML for predicting materials property (1/100 groups)
📍 Thailand Machine Learning for Chemistry Competition |  2021 |
|  Silver Medal - Advanced AI Certificate (10/3500 participants)
📍 Artificial Intelligence Association of Thailand (AIAT) |  2021 |
|  Best Poster Award - Face Generation Project (3/3500 participants)
📍 Artificial Intelligence Association of Thailand (AIAT) |  2021 |
|  Outstanding Performance Award - Global Leadership Program
📍 Sirindhorn International Institute of Technology, Thammasat University
★ Award to students who have contributed to SIIT Reputation |  2020 |
|  First-Class Honors in Bio-Chemical Engineering and Technology
📍 Sirindhorn International Institute of Technology, Thammasat University |  2019 |
|  Long-term Junior Science Talent Project scholarship in Mathematics
★ Best mathematics project (1/65 projects, 1/1000 proposals)
📍 National Science and Technology Development Agency (NSTDA)
» Awarded scholarship and research grant up to the doctoral level in Thailand institution |  2016 |