Curriculum Vitae
Romrawin (Jin) Chumpu

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Google Scholar

Research Interests	physical simulation, computer vision, computer graphics, geometry processing, computational design, machine learning

Education

Stanford University, CA, USA
Graduate Visiting Student — **2023**
· Support – Summer Session tuition grant

Sirindhorn International Institute of Technology (SIIT), Thammasat University
MSc in Engineering and Technology (focus Computer Science) — **2019-2022**
· Thesis – Simulation and Control of Drug Release on Microneedle using Machine Learning Technique
· Advisors – Assist. Prof. Shu-Han Hsu and Dr. Sanparith Marukatat
· Lab – Functional Advanced Materials Engineering (FAME) laboratory
· Support – Junior Science Talent Project (Mathematics) and Excellence Thai Students scholarship

BEng in Chemical Engineering (First Class Honors) — **2015-2019**
· Minor in Bio-Chemical Engineering
· Support – Junior Science Talent Project (Mathematics) scholarship

University of Waterloo, ON, Canada
Exchange Student, Chemical Engineering — **2018-2019**
· Final Year Project – Simulation-based Design of Aeroponics Nutrient Distribution System Using multiple CFD
· Advisor – Assoc. Prof. Nasser Mohieddin Abukhdeir
· Lab – Computational MultiPhysics (CoMPhys) Research Group
· Support – Junior Science Talent Project (Mathematics) research grant and Nishino scholarship

Research Position and Work Experience

Research Assistant - Vidyasirimedhi Institute of Science and Technology (VISTEC) — **August 2024 – present**
· Projects – Multimodal LLMs and WangchanX

Graduate Researcher - Functional Advanced Materials Engineering (FAME) — **January 2024 – present**
· Project – Geometry and materials properties relation
· Analysis of microneedle geometry in material-engineering design

Research Assistant - Image Processing and Understanding Research Team, National Electronics and Computer Technology Center (NECTEC) — **April 2022 – June 2023**
· Project – Image captioning – experimented state-of-the-art image captioning in Thai
· Image generation – trained images on a large and specific Thai

- 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
- High performance computing – utilized supercomputers TARA and LANTA to train and optimize large models

Graduate Co-Researcher – Image Processing and Understanding Research Team, National Electronics and Computer Technology Center (NECTEC)

March 2021 – February 2022

- Facial component swapping – experimented a novel method of face component swapping for face privacy and realism
- Face texture blending – experimented face texture blending technique using pretrained UNet and GANs
- 3D face generation
  - programmed an automatic 3D face from an image
  - experimented on face UV mapping and improved realistic texture
- Automatic face composition software – integrated face blending to the face composition with the Royal Thai Police

AI Engineer/Project Manager – Artificial Intelligence Association of Thailand (AIAT)

June 2020 – August 2022

- Palm kernel classification with Southern Palm company
- Super AI Engineer Development Program Level 2 – company projects
  - Credit card recommendation (KBTG)
  - 3D point cloud reconstruction (Department of Rural Roads)
  - Question and answering system (SCG)
  - Robot arm movement (CU)
  - Image classification and detection (DENSO, Wazzadu, AI Mask)
  - Automatic speech recognition (NECTEC)
  - Failure detection from industrial line signal (IRPC)

Summer Research Internship – Department of Chemical Engineering, University of Waterloo, ON, Canada

June 2018 – August 2018

- Project – Computational Fluid Dynamics (CFD) analysis of an antibiotic drug eluting on orthopedic implants simulation
- Support – Nishino scholarship
- Advisor – Prof. Peter L. Douglas

Web Developer – PISA Examination Website

June 2017 – September 2017

- Project – PISA examination for Thailand at Institute for the Promotion of Teaching Science and Technology (IPST)
- Structured with HTML, CSS, and JavaScript

Teaching Experience

Instructor – Super AI Engineer Development Program Season 4
Artificial Intelligence Association of Thailand (AIAT)
Course – Modern Image Search (https://github.com/romrawinjp/modern-image-search)

January 2024

Teaching Assistant – Super AI Engineer Development Program
Artificial Intelligence Association of Thailand (AIAT)
· Super AI Engineer Development Program Season 3 and 4 – Pangpuriye
· Super AI Engineer Development Program Season 2 – Observer
  Guiding a new generation of AI developers through hackathons and other AI-related projects

February 2022 – June 2024

Teaching Assistant – Main TA
Sirindhorn International Institute of Technology, Thammasat University
· ITS100 Introduction to Programming
· TU103 Life and Sustainability
· TU106 Creativity and Communication
· GTS111 Probabilistic for Technologists
  Teaching first-year laboratory and communicating between classrooms with multiple instructors

August 2019 – July 2021

Grader – Main Grader
Sirindhorn International Institute of Technology, Thammasat University
· GTS116 Mathematics I
· GTS112 Linear Algebra
· SCS126 Chemistry for Engineers (Co-grader with Choney)
· GTS111 Probabilistic for Technologists
  Grading assignments and providing correction

August 2019 – July 2021

Tutor System Administrator
Sirindhorn International Institute of Technology, Thammasat University
· Assisting students with their homework and providing guidance for all first-year courses
· Advising students on how to adjust to university-level classes

September 2019 – July 2021

Services and Activities

Conference Volunteer Staff
· NeurIPS 2023, New Orleans, LA (Online) – Student Volunteer
· The 7th Asian Symposium on Emulsion Polymerization and Functional Polymeric Microspheres (ASEPFMP7), Chiang Mai, Thailand – Volunteer
· SIGGRAPH 2024, Denver, CO – ACM SIGGRAPH Student Volunteer Program
· ACL 2024, Bangkok, Thailand – Local Student Volunteer

2023
2024

2024
2024

Judge in Round 2 – National Software Contest (NSC) 2022
National Science and Technology Development Agency (NSTDA)

2023

Volunteer Staff – Junior Science Talent Project (JSTP) in Mathematics and Computer Science
National Science and Technology Development Agency (NSTDA)

2016 – 2024

Awards and Honors

Best Project Award – CS148 Introduction to Computer Graphics and Imaging, Stanford University

2023

Super AI Engineer - The Reality Show - Representative of a Researcher and Woman in AI (10/8000 participants) **2022**
Artificial Intelligence Association of Thailand (AIAT)
– A cast member in TV show competition with AI problem solving challenges

SIIT Talk - One of Thirty People Who Contributed to SIIT Reputation **2022**
Sirindhorn International Institute of Technology, Thammasat University
– The celebration ceremony of SIIT 30th year

The 10th of Global Young Scientist Summit (GYSS) – Thailand's Young Scientist Representative **2022**
National Science Foundation of Singapore (NSF) and National Science and Technology Development Agency (NSTDA)
– Joined a panel discussion in Artificial Intelligence, Ethics and Governance with Prof. Cédric Villani and Prof. Leslie Valiant

Outstanding Submission - ML for predicting MOFs materials property **2021**
Thailand Machine Learning for Chemistry Competition (TMLCC)

Silver Medal - Advanced AI Certificate (10/3500 participants) **2021**
Super AI Engineer Development Program Season 1
Artificial Intelligence Association of Thailand (AIAT)

Best Poster Award – Face Generation (3/3500 participants) **2021**
Super AI Engineer Development Program Season 1
Artificial Intelligence Association of Thailand (AIAT)

Outstanding Performance Award - Global Leadership Program **2020**
Sirindhorn International Institute of Technology, Thammasat University

First-Class Honors in Bio-Chemical Engineering and Technology **2019**
Sirindhorn International Institute of Technology, Thammasat University

Long-term Junior Science Talent Project Scholarship in Mathematics **2014 - present**
Best mathematics project (1/65 projects, 3/1000 proposals)
National Science and Technology Development Agency (NSTDA)
– Awarded academic scholarship and annual research grant up to the doctoral level in Thailand institution

Science Classroom in University Affiliated School Project (SCiUS) Scholarship **2012**
Hosted at Chiang Mai University Demonstration School
Ministry of Science, Thailand and Chiang Mai University

Publications **Physics-informed graph neural networks accelerating microneedle simulations towards novelty of micro-nano scale materials discovery** **2023**
<u>Romrawin Chumpu</u>, Chun-Lin Chu, Tanyakarn Treeratanaphitak, Sanparith Marukatat, Shu-Han Hsu
Engineering Application of Artificial Intelligence

Synthetic face generation from in-the-wild face components swapping
Romrawin Chumpu, Pitchayagan Temniranrat, Sanparith Marukatat
17th International Joint Symposium on Artificial Intelligence and Natural Language Processing (iSAI-NLP), Chiang Mai, Thailand.

Presented online at OAMLS: *Online Asian Machine Learning School as a part of 14th Asian Conference on Machine Learning (ACML 2022)*, Hyderabad, India.

2022

Z-Face Sketch: Automatic Placement of Face Composites for Composite Sketches
Wisarut Bholsithi, Nonlapas Wongwaen, Chanjira Sinthanayothin, Romrawin Chumpu, Police Colonel Nitiphat, Police Colonel Chaiwat Burana
International Conference on Digital Government Technology and Innovation (DGTi-CON), Bangkok, Thailand.

2022

Simulation and Control of Drug Release on Microneedle using Machine Learning Technique
Romrawin Chumpu
Advisors - Shu-Han Hsu, Sanparith Marukatat
Master Thesis, Thammasat University Library

2021

Two-Way Coupling Computational Fluid Dynamics with Explicit Dynamics Modeling and Simulation of Microneedle
Romrawin Chumpu, Shu-Han Hsu, Chun-Lin Chu
International Conference in Mathematics and Applications (ICMA-MU), Bangkok, Thailand.

2020

The association between dengue incidences and provincial-level weather variables in Thailand from 2001 to 2014
Romrawin Chumpu, Nirattaya Khamsemanan, Cholwich Nattee,
PLOS One Open Access

2019

Influenza Activity and Province-level Weather Variations in Thailand, 2009 to 2014, Using Random Forest Time-series Approach
Romrawin Chumpu, Nirattaya Khamsemanan, Cholwich Nattee
Chiang Mai Journal of Science

2018

Conference
Presentation

Oil palm bunch quality classification using semi-supervised approach
Azizun Ussama, Romrawin Chumpu
2nd International Conference on Robotics, Automation and Artificial Intelligence (RAAI), Singapore.

2022

Drone imagery with supervised learning inspired palm tree counting and quality prediction
Nattapol Suwansawang, Romrawin Chumpu
2nd International Conference on Robotics, Automation and Artificial Intelligence (RAAI), Singapore.

2022

Numerical Simulation of Microneedle Materials   **2021**
Romrawin Chumpu, Shu-Han Hsu, Chun-Lin Chu
21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA), Bangkok, Thailand.

Prediction of dengue incidences in Thailand using a quasi-likelihood generalized linear model   **2017**
Romrawin Chumpu, Nirattaya Khamsemanan, Cholwich Nattee
10th Anniversary Conference on Nonlinear Analysis and Convex Analysis (NACA), Hokkaido, Japan.

(Last update August 2024)