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 **2023**
Graduate Visiting Student
- Support – Summer Session tuition grant

Sirindhorn International Institute of Technology, 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 **2018-2019**
Exchange Student, Chemical Engineering
- 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 - 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 – Super AI Engineer Development Program — **June 2020 – August 2022**

- Palm kernel classification with Southern Palm company
- Super AI Engineer Development Program Level 2 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, Ontario, 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 — **January 2024**
Artificial Intelligence Association of Thailand (AIAT)
Course – Modern Image Search (https://github.com/romrawinjp/modern-image-search)

Teaching Assistant – Super AI Engineer Development Program — **February 2022 – June 2024**
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

Teaching Assistant – Main TA — **August 2019 – July 2021**
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

Grader – Main Grader **August 2019 – July 2021**
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 the correct explanations

Tutor System Administrator **September 2019 – July 2021**
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

Services and Activities

Volunteer Staff
- NeurIPS 2023, New Orleans, LA (Online) **2023**
- SIGGRAPH 2024, Denver, CO – Student Volunteer **2024**

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

Volunteer Staff – Junior Science Talent Project (JSTP) in mathematics and computer science **2016 - 2024**
National Science and Technology Development Agency (NSTDA)

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 **2022**
Artificial Intelligence Association of Thailand (AIAT)
– A cast member in TV show competition with AI problem solving challenges

One of Thirty People Who Contributed to SIIT Reputation – SIIT Talk **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)
– Joined a panel discussion in Artificial Intelligence, Ethics and Governance with Prof. Cédric Villani and Prof. Leslie Valiant

Outstanding Submission - ML for predicting materials property **2021**
Thailand Machine Learning for Chemistry Competition

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**
Romrawin Chumpu, Chun-Lin Chu, Tanyakarn Treeratanaphitak, Sanparith Marukatat, Shu-Han Hsu
Engineering Application of Artificial Intelligence [Q1, IF-7.5]

Synthetic face generation from in-the-wild face components swapping **2022**
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.

Z-Face Sketch: Automatic Placement of Face Composites for Composite Sketches **2022**
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.

Simulation and Control of Drug Release on Microneedle using Machine Learning Technique **2021**
Romrawin Chumpu
Advisors - Shu-Han Hsu, Sanparith Marukatat
Master Thesis, Thammasat University Library

Two-Way Coupling Computational Fluid Dynamics with Explicit Dynamics Modeling and Simulation of Microneedle **2020**
Romrawin Chumpu, Shu-Han Hsu, Chun-Lin Chu
International Conference in Mathematics and Applications (ICMA-MU), Bangkok, Thailand.

The association between dengue incidences and provincial-level weather variables in Thailand from 2001 to 2014 **2019**
Romrawin Chumpu, Nirattaya Khamsemanan, Cholwich Nattee,
PLOS One Open Access [Q1, IF-3.7]

Influenza Activity and Province-level Weather Variations in Thailand, 2009 to 2014, Using Random Forest Time-series Approach **2018**
Romrawin Chumpu, Nirattaya Khamsemanan, Cholwich Nattee
Chiang Mai Journal of Science [Q3, IF-0.6]

Conference Presentation

Oil palm bunch quality classification using semi-supervised approach **2022**
Azizun Ussama, Romrawin Chumpu
2nd International Conference on Robotics, Automation and Artificial Intelligence (RAAI 2022), Singapore.

Drone imagery with supervised learning inspired palm tree counting and quality prediction **2022**
Nattapol Suwansawang, Romrawin Chumpu
2nd International Conference on Robotics, Automation and Artificial Intelligence (RAAI 2022), Singapore.

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 2021), 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 2017), Hokkaido, Japan.

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