

Thinking of **AI**
Thinking of **IST**



"What flows
easily lasts"

HANDBOOK

SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY (IST)
VIDYASIRIMEDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (VISTEC)

Welcome to

VIDYASIRIMEDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (VISTEC) SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY (IST)

is a privately funded research institute located in Rayong, Thailand.

The best education for an individual occurs when they have the opportunity to build a strong foundation by developing in-depth specialized knowledge and being self-motivated to solve the world's open challenges at the highest standard with a learning-by-doing approach. We encourage our researchers and students by providing such opportunities and motivation.



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INTRODUCTION TO

VIDYASIRIMEDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (VISTEC)

Founded in 2015 by PTT PLC, Thailand's largest corporation and a Fortune Global 500 company, is located at the Eastern Economic Corridor of Innovation (EECi) in Wangchan Valley, Rayong, Thailand. Vidyasirimedhi Institute of Science and Technology (VISTEC) is an advanced research institute offering postgraduate-level degrees (Ph.D. and master's degrees) in Science and Engineering. VISTEC is designed to be autonomous and academically independent; the institute is sponsored by PTT group (PTT, GC, PTTEP, ThaiOil, IRPC, GPSC, OR) and co-founders, Kasikornbank and SCB. With our focus in cutting-edge research in combination with user-inspired innovations, VISTEC research programs are ideal for training future generations of scientists and engineers to address national demands and global challenges. In addition to degree giving programs, we also offer postdoctoral research training to provide a basis for early-stage researchers to develop their independent careers while working with experts in the field.

We offer two types of postdoctoral fellowships; one for pursuing challenges in making cutting-edge discoveries and another for undertaking projects in collaboration with industry.

VISTEC research programs strive towards world-class excellence. In the year 2025, our research and innovation outputs are currently ranked first in Thailand for SCImago Institutions Rankings (SIR), Nature Index, and CSRankings. Our faculty members are internationally recognized in their research areas and excel in high-quality, high-impact and cutting-edge research. With a core focus on four areas—materials, energy, biotechnology, and digital technology—researchers at VISTEC have access to state-of-the-art facilities and are well-supported to conduct research and create innovations for industry and society. VISTEC maintains close linkages with industry and supports students, alumni and researchers in undertaking entrepreneurial pursuits. This is aligned with our vision to develop proprietary, commercially viable technologies that solve real-world problems.



VISION AND MISSION

VIDYASIRIMEDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (VISTEC)



VISION

VISTEC's vision is to become a world-class frontier science and innovation hub.



MISSION

VISTEC's mission is to provide a world-class research and education platform for creating excellent science and impactful innovations for industry, society, and the environment.

OUR GOAL :

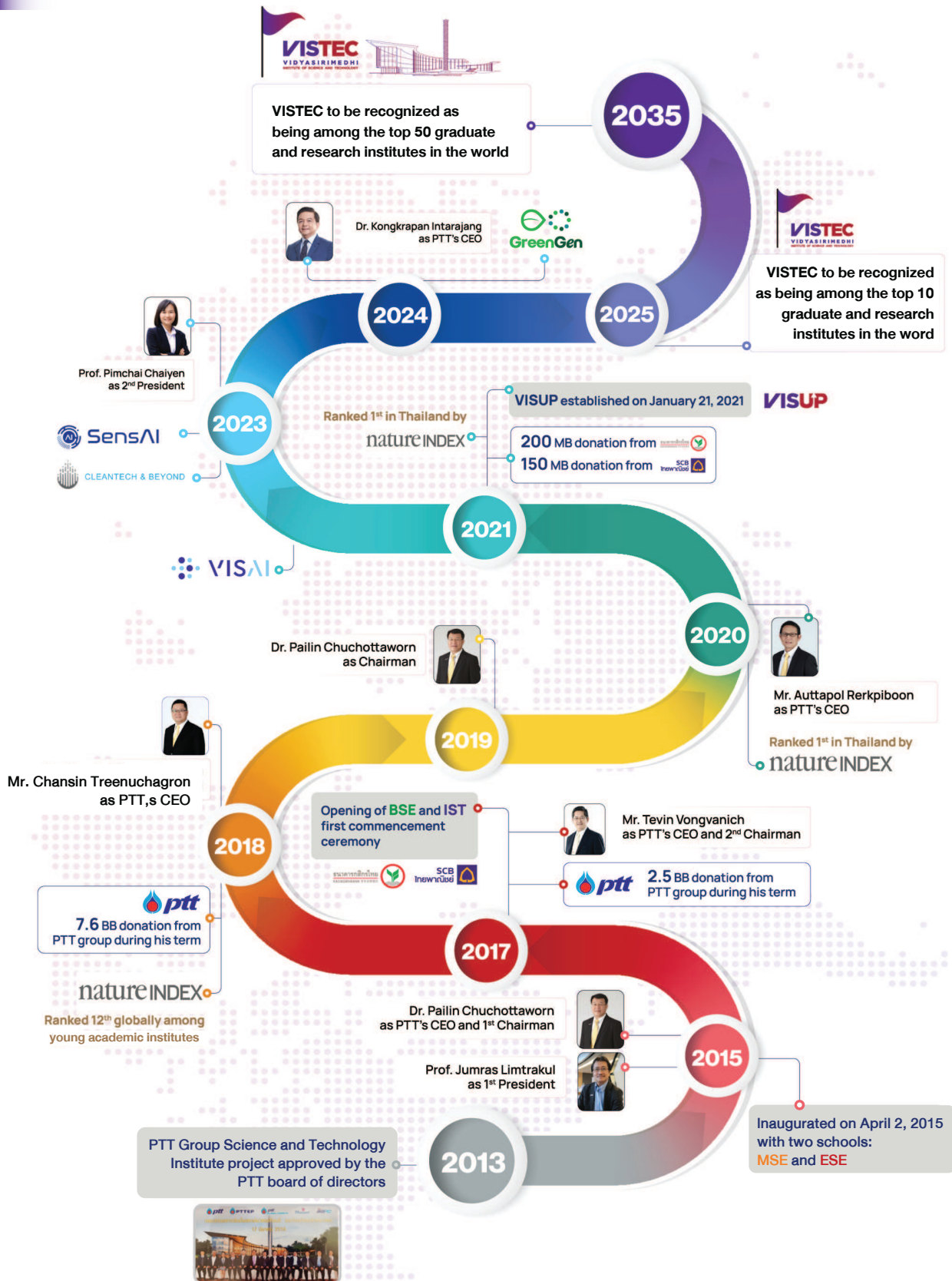
- Providing excellent education and conducting cutting-edge research, leading to high-impact discoveries and proprietary innovations.
- Enabling close collaborations and linkages between our talented researchers and industry.
- Fostering entrepreneurship opportunities.
- Creating the path from research into usable innovations and ultimately, a commercially viable and scalable products.



OUR STRATEGY: THE THREE PILLARS MODEL



TIMELINE



INTRODUCTION TO IST

IST offers research-intensive informatics programs at the M.Eng. and Ph.D. levels with a focus on advanced automation and machine intelligence. Specifically, the school comprises five research groups, each focusing on a specific topic, namely natural language processing and representation learning, computer vision, networking, robotics, and brain-computer interfaces.



VISION AND MISSION



VISION

Our vision is to become a world-class informatics school, empowering Thailand with advanced knowledge in computer science and automation technology. We are committed to fostering innovation and sustainable technology development practices across various industrial sectors while ensuring our graduates are equipped to contribute positively to their communities and the economy.



MISSION

Our mission is to advance knowledge and train learners in information science and technology to best serve Thailand and the world in academia and industry.

- Becoming a role model for achieving academic excellence and translating it into industrial and business success in Thailand while collaborating with other institutions and the industrial sector to improve the country's standards.
- Fostering next-generation faculty members and industrial researchers in Thailand to ensure exponential growth of the human workforce in frontier research and technology.
- Leveraging world-class research to enhance Thailand's industrial capabilities and create an impact on international research communities.



MESSAGE FROM THE DIRECTOR

Welcome

to the School of Information Science and Technology (IST)

Founded in 2017, IST is home to multidisciplinary scholars, researchers, and faculty members in the fields of artificial intelligence, natural language processing, computer vision, robotics, computer networking, and human-machine interfaces. We offer research-intensive master's and doctoral programs in Information Science and Technology with international and industrial experience and provide a playground with cutting-edge facilities for research, innovation, and technology development, from academic research to capabilities for addressing real-world challenges.

We aim to perform our frontier research and translate it to real-world benefits and utilization across the entire Technology Readiness Level (TRL) spectrum, from basic science (TRL 1-3) to technology demonstration (TRL 4-6) and real-world system operation (TRL 7-9).

Aligning with VISTEC's vision of academic excellence and impactful innovations for industry, society, and the environment, we have established five research labs for conducting cutting-edge research dedicated to core AI, robotics, sensing, and networking technologies (TRL 1-3).

- ▶▶ Natural Language Processing and Representation Learning Lab
- ▶▶ Vision and Learning Lab
- ▶▶ BRAIN-Robotics Lab
- ▶▶ BRAIN-Interfaces Lab
- ▶▶ Network and Decision Systems Lab



We go beyond basic research by translating its discoveries into industrial capabilities (TRL 4-6) through the Wangchan Advanced Industrial Labs (WAI). The WAI Labs specialize in creating intelligent “sense-think-act” machines that can sense the environment, carry out thinking tasks, and perform complex actions for real-world and industrial applications. They also act as an innovation hub enabling close research collaborations and linkages between talented researchers and industry. To bridge the gap between research and real-world benefits, we foster entrepreneurship opportunities by creating spin-off companies like VISAI and SenseAI, bringing our research and development into real usage (TRL 7-9).

At IST, in addition to pursuing scientific and educational excellence, we also cultivate a proactive and collaborative “together we can” culture for operational excellence and a friendly and supportive work atmosphere.

On behalf of the entire IST team, I encourage everyone around the world to explore IST, a dynamic home for scientific discovery and collaboration, and to join our exciting journey. We have an energetic and interactive community of passionate people who push the boundaries of knowledge.

Yours faithfully,

(Prof. Dr. Poramate Manoonpong)

Director,

School of Information Science and Technology (IST)

INTERNATIONAL STUDY PROGRAMS

IST EDUCATIONAL PHILOSOPHY

The best education for An individual secures the best education when they have the opportunity to build a strong foundation through the development of in-depth specialized knowledge and is self-motivated to solve the world's open challenges at the highest standard with a learning-by-doing approach. We encourage our researchers and students by providing such opportunities, guidance, and motivation.



MASTER OF ENGINEERING PROGRAM (M.Eng.)

in Information Science and Technology (2-Year Program)



Program A1 (2-Year Program)

Research Oriented Projects (Total 40 Credits) :
Thesis 38 Credits and Core Course 2 Credits.

Program A2 (2-Year Program)

Research and Coursework (Total 40 Credits) :
Thesis 18 Credits, Core Course 11 Credits,
Seminar 2 Credits and Elective Course 9 Credits.



DOCTOR OF PHILOSOPHY PROGRAM (Ph.D.)

in Information Science and Technology (3-Year or 5-Year Program)



Program 1.1 (3-Year Program)

Research Oriented Projects (Total 51 Credits) : Thesis 50 Credits and Core Course 1 Credit.

Program 1.2 (5-Year Program)

Research Oriented Projects (Total 79 Credits) : Thesis 76 Credits and Core Course 3 Credits.

Program 2.1 (3-Year Program)

Research and Coursework (Total 51 Credits) : Thesis 36 Credits, Core Course 1 Credit,
Seminar 2 Credits, and Elective Course 12 Credits.

Program 2.2 (5-Year Program)

Research and Coursework (Total 79 Credits) : Thesis 48 Credits, Core Course 12 Credits,
Seminar 4 Credits, and Elective Course 15 Credits.



SCHOLARSHIP AND SUPPORT

Students enrolled at VISTEC receive full scholarships and academic support. Students receive a monthly stipend of 15,000-20,000 THB per month and funding to attend international conferences. All Ph.D. students also receive up to one year of research training at a leading international laboratory. Students also receive support for tuition fees and research expenses.

TYPES OF SCHOLARSHIPS IN VISTEC

1. VISTEC SCHOLARSHIP BY PTT AND SPONSORS

The default scholarship for all Ph.D. and master's degree students.

2. VISTEC-NSTDA SCHOLARSHIP

A scholarship for conducting doctoral dissertation with NSTDA researchers. Only for scholars, selected by VISTEC-NSTDA Committee, between the academic years of 2020 and 2023.

3. SRIMEDHI ROYAL SCHOLARSHIP

An extra 1,000,000 THB overseas scholarship added from the VISTEC overseas scholarship of 1,000,000 THB.

4. FRONTIER TALENTS PROGRAM (FTP) OR VISTEC-RGJ Ph.D. SCHOLARSHIP

An additional scholarship for Ph.D. students, whose advisors and scholars are selected are selected by National Research Council of Thailand (NRCT).

5. OTHER OVERSEAS SCHOLARSHIPS

Other scholarships supported by collaborating universities or institutions.

6. OTHER SCHOLARSHIPS

Other sponsors, such as private companies, support scholarships to VISTEC students such as the VISTEC-ARV. Also, VISTEC accepts other sponsors to support scholarships to VISTEC students.

VISTEC provides accommodation on campus for students throughout the period of their studies. transportation to Bangkok is also available twice a week, on Wednesdays and Fridays.

All support is provided without any bond or obligation upon graduation. VISTEC and its donors want their alumni to realize their full potential and become global leaders in research and innovation.

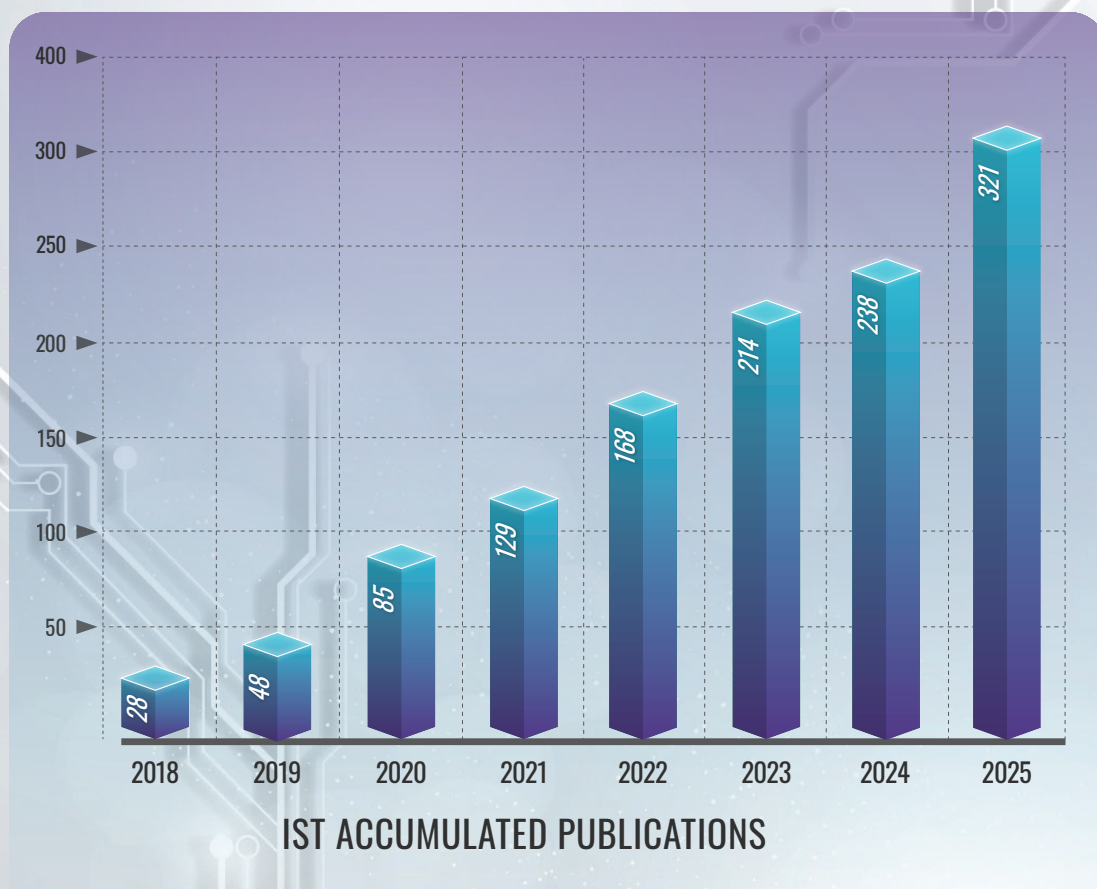


RESEARCH EXCELLENCE

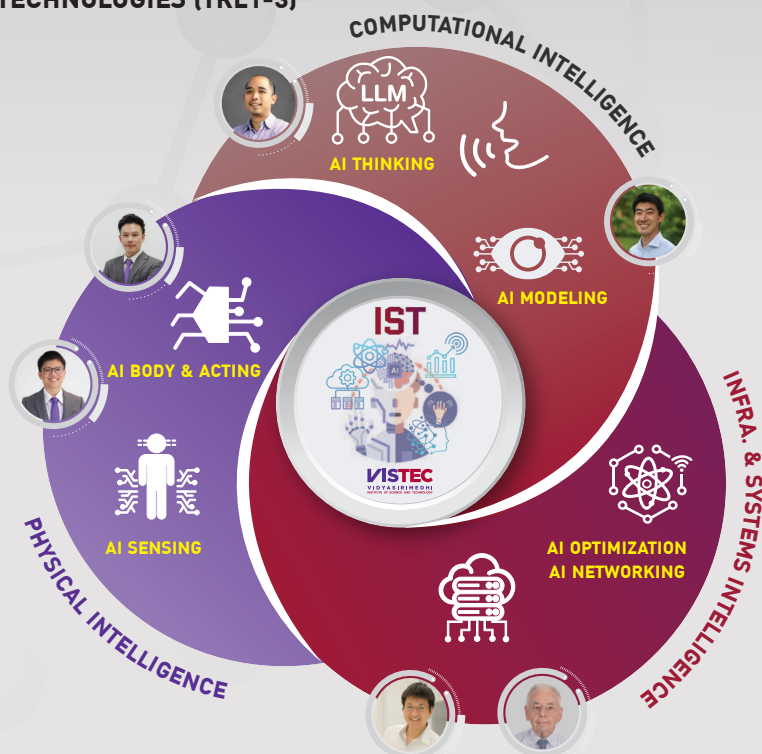
Over 300 research articles published since 2018; 40+ A*/CSRankings publications (CVPR, ICCV, EMNLP, ACL, SIGCOMM, ICLR, ICRA, IROS, etc.); 120+ high-impact journal articles (Q1, IEEE TPAMI, Nat. Mach. Intell., IEEE IoT, TACL).

CS

Ranked **#1** in Thailand for
COMPUTER SCIENCE
in the 2025 CSRankings.



EMERGING AI TECHNOLOGIES (TRL1-3)

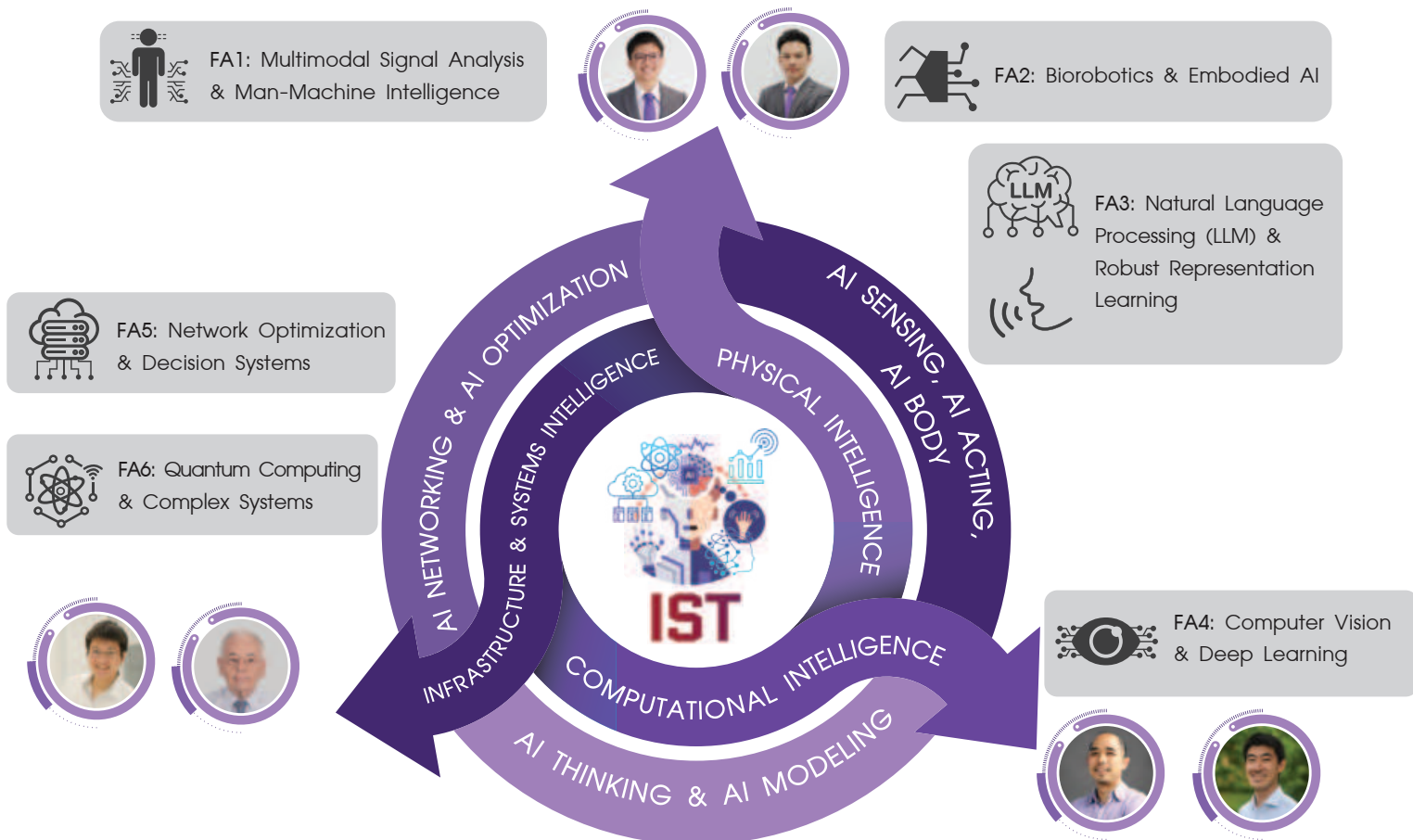


TECHNOLOGY TRANSFER (TRL>5)



IST-STRATEGIC FLAGSHIP AREAS

"To lead the development of NETworked, Multimodal, physically embODied (NEMO) AI that autonomously learns and scales from complex physical actions to human-centric interaction, addressing the uncertainty of real-world environments for the benefit of industry and society."



IST-AI APPLICATIONS



OUTSTANDING RESEARCH PROJECTS

IST-Strategic Flagship Areas (FA1-6) & Industrial Needs

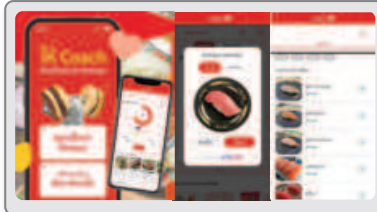
PHYSICAL INTELLIGENCE

DIGITALLY SUPPORTED LIFESTYLE MODIFICATION PROGRAM IN THAILAND (TRL8-9, FA1)



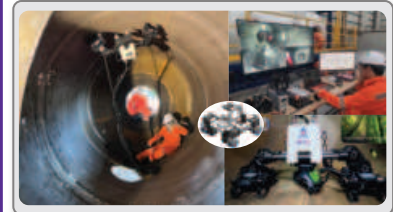
Funding/Support: FITSloth
Tech. adv.: AI-powered, human-led digital therapy
Outputs: Software AI model (on-going dev.)
Applications: Health, Medicine

THAILAND'S PERSONALIZED PLATFORM FOR OBESITY PREVENTION AND CARE (TRL8-9, FA1)



Funding/Support: SCB
Tech. adv.: AI-based co-pilot system for nutritionists
Outputs: Software AI model (on-going dev.)
Applications: Health, Medicine

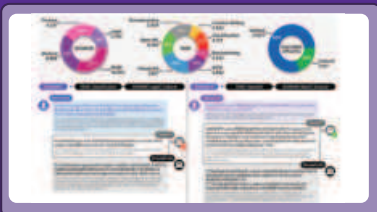
HERO, HERO2.1: ADVANCED ROBOTS FOR INTERNAL VESSEL INSPECTION (TRL5-6, FA2)



Funding/Support: PTTEP
Tech. adv.: Inspection robots with NDT
Outputs: Robot prototypes, 1 x patent, and 2 x papers (on-going dev.)
Applications: Industrial Services

COMPUTATIONAL INTELLIGENCE

WANGCHAN THAIINSTRUCT (TRL3-4, FA3)



Funding/Support: AI Singapore
Tech. adv.: Multi-stage QC & annotation pipeline for Thai LLM
Outputs: 1 x EMNLP (CSRatings), dataset for NLP
Applications: Legal, Finance, Medical, Retail

NITIBENCH (TRL3-4, FA3)



Funding/Support: SCBX
Tech. adv.: Novel benchmark dataset, NitiBench, for Thai Legal QA systems
Outputs: 1 x EMNLP paper (CSRatings), dataset & code for Thai legal QA
Applications: Legal

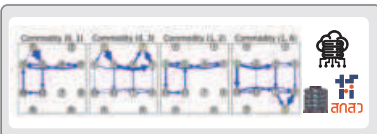
PHOTOREALISTIC TALKING AVATARS FROM AUDIO (TRL3-4, FA4)



Funding/Support: SCBX
Tech. adv.: Real-time neural rendering from audio for talking avatars
Outputs: Software for the avatar prototype (on-going dev.)
Applications: Communication & Training for Finance

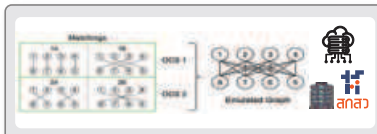
INFRA. & SYSTEMS INTELLIGENCE

OPTIMAL COMPACT OBLIVIOUS ROUTING FOR DATA CENTER NETWORKS (TRL2-3, FA5)



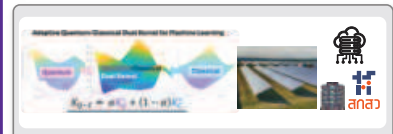
Funding/Support: TSRI
Tech. adv.: Methods for designing optimal oblivious routing for data center networks
Outputs: 1x IEEE Trans. Netw., 1x INFOCOM, (A*) for correct spacing and punctuation.
Applications: Data Centers for AI training

DEMAND-AWARE RECONFIGURABLE DATA CENTER NETWORKS (TRL2-3, FA5)



Funding/Support: FF-TSRI
Tech. adv.: The system design & algorithm for reconfigurable data center networks
Outputs: Publication under review, code
Applications: Data Centers for AI training

MODERN POWER GRID FAULT CLASSIFICATION USING QUANTUM ML (TRL2-3, FA6)



Funding/Support: FF-TSRI
Tech. adv.: Quantum machine learning enables enhanced data separability
Outputs: Paper & prototype (on-going dev.)
Applications: Power grid monitoring

RESEARCH FACILITIES

IST provides a playground with cutting-edge facilities for research, innovation, and technology development, from academic research to capabilities for addressing real-world challenges.



Automated Gait Lab



Pilot Plant-N3



Inspection Testbed



Multi-projector System for Digitally Transformable Virtual Environments



**High Performance
Computing Cluster**



**Mechanical and Electronic Workshops
and 3D Print Farm**



Robotics Research Platforms

FACULTY MEMBERS & ADJUNCT PROFESSOR



FACULTY MEMBERS

- 1 Prof. Dr. Poramate Manoonpong**
Director / Faculty Member
- 2 Assoc. Prof. Dr. Sarana Nutanong**
Faculty Member
- 3 Assoc. Prof. Dr. Theerawit Wilaiprasitporn**
Faculty Member
- 4 Assist. Prof. Dr. Supasorn Suwajanakorn**
Faculty Member
- 5 Assist. Prof. Dr. Sucha Supittayapornpong**
Faculty Member



ADJUNCT PROFESSOR

- 6 Prof. Dr. Stephen John Turner**
Adjunct Professor



RESEARCH LABS

IST has five research labs for conducting cutting-edge research in the fields of artificial intelligence, natural language processing, computer vision, robotics, computer networking, and human-machine interfaces.

- ▶▶ BRAIN-Robotics Lab
- ▶▶ Natural Language Processing and Representation Learning Lab
- ▶▶ BRAIN-Interfaces Lab
- ▶▶ Vision and Learning Lab
- ▶▶ Network and Decision Systems Lab



**Prof. Dr. Poramate Manoonpong**

Director / Faculty Member



Poramate Manoonpong



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*We use nature to
create robots that
can be our friends.*

Poramate Manoonpong is an internationally renowned researcher in the fields of Biorobotics and Embodied Artificial Intelligence (EAI). He leads the BRAIN-Robotics Lab and the Research Center for Advanced Robotics and Intelligent Automation (ARIA) of IST. Over the past 20 years, he has conducted in-depth research on embodied or physical AI, biomechanics, and bio-inspired neural mechanisms to develop intelligent machines or robots capable of efficiently moving, learning, adapting, and interacting with different environments, similar to living creatures. The central goal of his research is to understand how brain-like mechanisms and biomechanics can be realized in robots so they can become as intelligent as living creatures. His research team has also expanded their research scope to cover seven key disciplines, collectively referred to as the “Seven Wonders of Robotics”:

- i) Bio-inspired Robotics,
- ii) Soft Robotics,
- iii) Medical Robotics,
- iv) Inspection Robotics,
- v) Service Robotics,
- vi) Industrial Robotics, and
- vii) Cognitive Robotics.



This expansion aims not only to create in-depth scientific knowledge but also apply it for both academic and industrial purposes.

As an author or co-author, he has published over 200 publications in top-tier international journals (e.g., Nature Physics, Nature Machine Intelligence, Advanced Science, Advanced Intelligent Systems, IEEE Transactions on Cybernetics, IEEE Transactions on Neural Networks and Learning Systems, IEEE Robotics and Automation Letters) and conferences (e.g., IROS, ICRA, RSS, NeurIPS, ICLR), reflecting the quality and significant contributions of his research team.



SCIENTIFIC FOCUS AREAS:

Embodied Artificial Intelligence, Bio-inspired Robotics, Soft Robotics, Service Robotics, Medical Robotics, Control of Assistive Systems (Exoskeletons), Explainable Artificial Intelligence, Machine Learning for Robotics, Autonomous Lifelong Learning, Neural Control, Neural Learning and Memory, Human-Robot Interaction.



FROM FUNDAMENTAL BIOLOGICAL KNOWLEDGE TO BIO-INSPIRED ROBOTICS AND PHYSICAL AI

Our research team studies complex animal behaviors, such as the locomotion of insects and millipedes on complex terrains, the proactive obstacle avoidance of cats, and the climbing abilities of geckos, to derive fundamental principles.



THESE PRINCIPLES INFORM THE DEVELOPMENT OF:

BIO-INSPIRED NEURAL MECHANISMS:

We develop control, learning, and memory mechanisms to create an "artificial brain" that enables robots to behave, learn from minimal data, and adapt automatically to changing environments, mimicking biological intelligence.

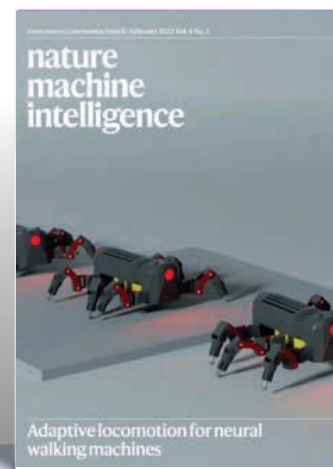
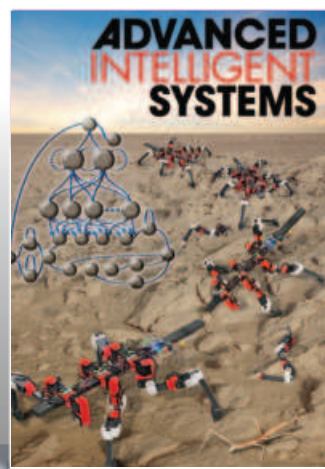
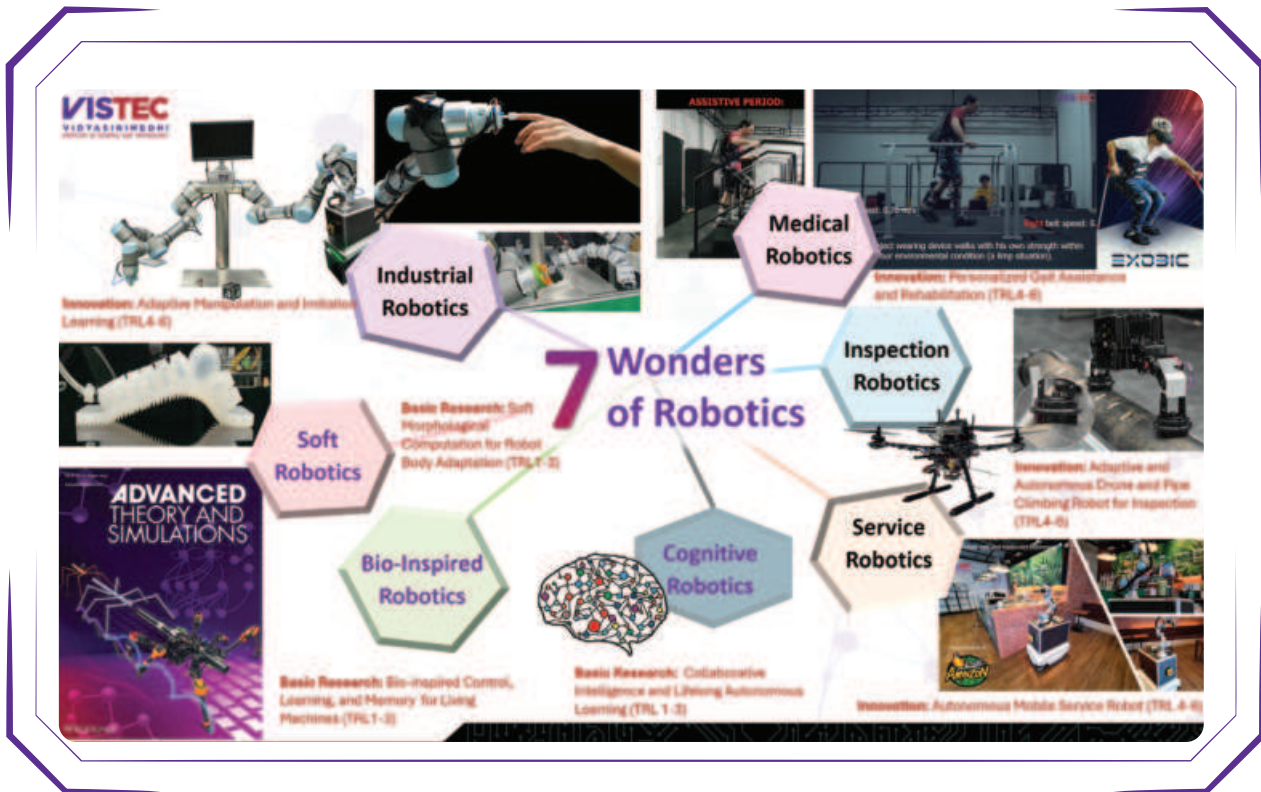


BIO-INSPIRED PHYSICAL BODIES:

We focus on developing physical structures that serve the primary interface between the robot's brain and its environment, facilitating efficient data acquisition and effective real-world interaction.



The ultimate goal is to integrate this artificial brain with a bio-inspired body to create "living-machine" : machines with intelligence comparable to that of living organisms. Additionally, we utilize robots as experimental platforms to test and understand how living organisms themselves function.





BIO-INSPIRED ROBOTICS TECHNOLOGY FOR INDUSTRIAL AND MEDICAL APPLICATIONS

We have successfully extended our fundamental knowledge to develop versatile, intelligent, bio-inspired robotics technology for real-world industrial and medical applications. Notable achievements include:



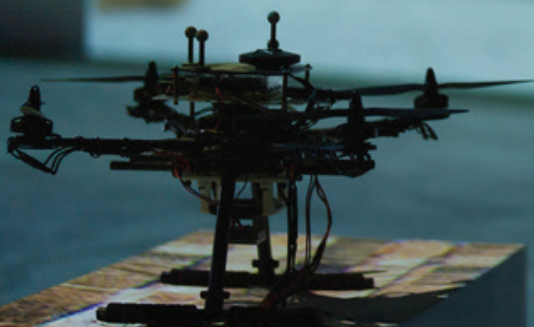
INDUSTRIAL INSPECTION:

The development of versatile, intelligent, bio-inspired robots for inspecting pipes and pressure vessels, paving the way for a new era of intelligent maintenance and operations systems in future energy industries.



PERSONALIZED HEALTHCARE:

The development of the EXOVIS intelligent system for learning and controlling the movement of a lower-limb exoskeleton. This intelligent system enables the exoskeleton to automatically learn the walking patterns of individual patients, assisting those with mobility impairments towards future 5.0 healthcare (personalized healthcare, emphasizing preventive care and individual needs).



SELECTED PUBLICATIONS



Chuthong, T., Buscher, T.H., Gorb, S.N. and Manoonpong, P., 2025. Insect-Inspired Resilient Machines. *Advanced Intelligent Systems*, p. 2500270.



Leung, B., Gorb, S. and Manoonpong, P., 2024. Nature's All in One: Multitasking Robots Inspired by Dung Beetles. *Advanced Science*, 11(47), p. 2408080.



Homchanthanakul, J. and Manoonpong, P., 2023. Proactive Body Joint Adaptation for Energy-efficient Locomotion of Bio-inspired Multi-segmented Robots. *IEEE Robotics and Automation Letters*, 8(2), pp. 904—911.



Akkawutvanich, C. and Manoonpong, P., 2023. Personalized Symmetrical and Asymmetrical Gait Generation of a Lower Limb Exoskeleton. *IEEE Transactions on Industrial Informatics*, 19(9), pp. 9798—9808.



Thor, M. and Manoonpong, P., 2022. Versatile Modular Neural Locomotion Control with Fast Learning. *Nature Machine Intelligence*, 4(2), pp. 169—179.

**Assoc. Prof. Dr. Sarana Nutanong**

Faculty Member



Sarana Nutanong



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Understanding how a model learns and represents knowledge matters as much as how well it performs.

Sarana Nutanong is a faculty member in the School of Information Science and Technology (IST) at the Vidyasirimedhi Institute of Science and Technology (VISTEC), Thailand. He leads the Natural Language Processing and Representation Learning Lab, where his research focuses on understanding and improving the reasoning, generalization, and robustness of modern artificial intelligence systems, particularly large language models (LLMs).

His research examines how learning systems acquire, represent, and apply patterns under limited supervision, distribution shift, and real-world constraints. A central theme of his work is treating reasoning as a form of structured pattern recognition and developing data-centric, evaluation-driven methodologies that expose both the capabilities and limitations of current AI models. His work places particular emphasis on multilingual and low-resource settings, especially Southeast Asian languages, where challenges of data scarcity and generalization are most acute.

In parallel with his core research, he is actively involved in domain-specific applications of AI, particularly in legal and regulatory contexts. These applications serve as high-stakes testbeds for studying reasoning, robustness, and transparency in language models, where errors carry normative and societal consequences. Insights from these applications inform the design of principled evaluation frameworks and human-centered AI systems.

Sarana has been published extensively in top-tier international venues in natural language processing, and his work has received multiple research and best-paper awards for contributions to model generalization, bias, and shortcut analysis, and reasoning-oriented evaluation.

SCIENTIFIC FOCUS AREAS:

Natural Language Processing, Representation Learning, Large Language Models, Machine Reasoning, Data-Centric AI, Evaluation and Benchmarking, Bias and Shortcut Learning, Multilingual and Low-Resource NLP, Legal and Regulatory AI, Responsible AI.



ROBUST LEARNING ALGORITHMS

This research direction focuses on developing robust learning algorithms that maintain reliable performance under distribution shift, limited supervision, and real-world uncertainty. Rather than optimizing for peak in-distribution accuracy, the goal is to design learning mechanisms that generalize across variations in language, domain, and context.

A key emphasis is on data-centric and representation-aware learning, where robustness is induced through controlled data variation, principled augmentation, and careful analysis of learned representations. This includes studying how models rely on unintended shortcuts, how such shortcuts emerge from data and training objectives, and how learning algorithms can be guided toward more stable and transferable patterns.



The work also explores robustness in multilingual and low-resource settings, where training signals are inherently sparse and heterogeneous. By treating robustness as a first-class design objective, this research aims to produce learning algorithms that are not only effective but also predictable and trustworthy when deployed in societally sensitive environments.



The work develops evaluation frameworks and benchmarks that move beyond single-task accuracy, emphasizing behavioral analysis, consistency under perturbation, and performance under distribution shift. These evaluations are designed to expose model reliance on shortcuts, brittleness in reasoning chains, and sensitivity to linguistic or contextual variation.



EVALUATION AND BENCHMARKING OF REASONING SYSTEMS

This research direction addresses the evaluation of modern AI systems, with particular focus on reasoning, generalization, and failure modes. As large language models increasingly exhibit strong surface performance, robust evaluation becomes essential for understanding what models have learned and how they arrive at their outputs.

A distinctive aspect of this direction is the use of domain-specific testbeds, particularly in legal and regulatory contexts, where correctness, consistency, and interpretability are critical. Insights from these high-stake evaluations inform both model development and responsible deployment, contributing to a deeper understanding of the limits and potentials of contemporary AI reasoning systems.

SELECTED PUBLICATIONS



Akarajadwong, P., Pothavorn, P., Chaksangchaichot, C., Tasawong, P., Nopparatbundit, T., Pratai, K. and Nutanong, S., 2025. NitiBench: Benchmarking LLM frameworks on Thai legal question answering capabilities. In Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing (EMNLP 2025), pp. 34292—34315.



Limkonchotiwat, P., Tuchinda, P., Lowphansirikul, L., Nonesung, S., Tasawong, P., Aji, A.F., Udomcharoenchaikit, C. and Nutanong, S., 2025. WangchanThailnstruct: An instruction-following Dataset for Culture-Aware, Multitask, and Multi-domain Evaluation in Thai. In Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing (EMNLP 2025), pp. 3535—3558.



Payoungkhamdee, P., Limkonchotiwat, P., Baek, J., Manakul, P., Udomcharoenchaikit, C., Chuangsuwanich, E. and Nutanong, S., 2024. An Empirical Study of Multilingual Reasoning Distillation for Question Answering. In Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP 2024), pp. 7739—7751.



Tasawong, P., Limkonchotiwat, P., Manakul, P., Udomcharoenchaikit, C., Chuangsuwanich, E. and Nutanong, S., 2024. Efficient Overshadowed Entity Disambiguation by Mitigating Shortcut Learning. In Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP 2024), pp. 15313—15321.



Sawatphol, J., Udomcharoenchaikit, C. and Nutanong, S., 2024, Addressing Topic Leakage in Cross-topic Evaluation for Authorship Verification. Transactions of the Association for Computational Linguistics, 12, pp. 1363—1377.



*What flows
easily lasts.*



Assoc. Prof. Dr. Theerawit Wilaiprasitporn

Faculty Member

-  Theerawit Wilaiprasitporn
-  theerawit.w@vistec.ac.th



Theerawit Wilaiprasitporn received his Ph.D. in Engineering from the Graduate School of Information Science and Engineering at the Tokyo Institute of Technology, Japan, in 2017. He specializes in AI applications for health and medical purposes. He founded Interfaces, an AI-driven health research team at the Vidyasirimedhi Institute of Science and Technology (VISTEC) in Thailand.

Since establishing Interfaces at VISTEC in 2019, Theerawit's contributions have been instrumental in developing remote health monitoring systems, supporting over 30,000 individuals during the COVID-19 pandemic. This achievement led to his nomination for the 2022 IEEE R10 Humanitarian Technology Activities Outstanding Volunteer Award. Most recently, Theerawit was honored with the prestigious Young Scientist Award 2024 by the Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King, recognizing him as one of Thailand's leading young professionals. He was subsequently awarded the Outstanding Research Award 2025 from the National Research Council of Thailand (NRCT) for his long-term work (2019-2025) on advancing multi-task and multi-objective AI architectures for EEG and PPG signal processing.

Theerawit served as an Associate Editor for the IEEE Internet of Things Journal and the IEEE Sensors Journal for four years. Since 2025, he has been involved in Thailand's first digital therapeutic service, FitSloth.

SCIENTIFIC FOCUS AREAS:

Biomedical Signal Processing, Brain-Computer Interfaces, AI in Sleep Medicine, Digital Therapeutics, Computational Pathology, Spatial Proteomics, Spatial Transcriptomics



MULTI-TASK AND MULTI-OBJECTIVE AI FOR BIOMEDICAL SIGNAL INTELLIGENCE

This research direction aims to advance artificial intelligence architectures for biomedical signal processing, focusing on electroencephalography (EEG) and photoplethysmography (PPG). The core objective is to design multi-task and multi-objective learning frameworks that can robustly model complex, noisy, and highly individualized physiological signals without requiring subject-specific calibration.

By enabling shared representation learning across related tasks, the proposed AI frameworks improve generalization, adaptability, and clinical usability across diverse health applications, including brain-computer interfaces, sleep medicine, epileptic seizure detection, and cognitive assessment. This direction establishes a foundational AI infrastructure for scalable, real-world health monitoring systems, supporting both clinical translation and commercialization while positioning Thailand as a contributor to global leadership in AI for biomedical signal intelligence.

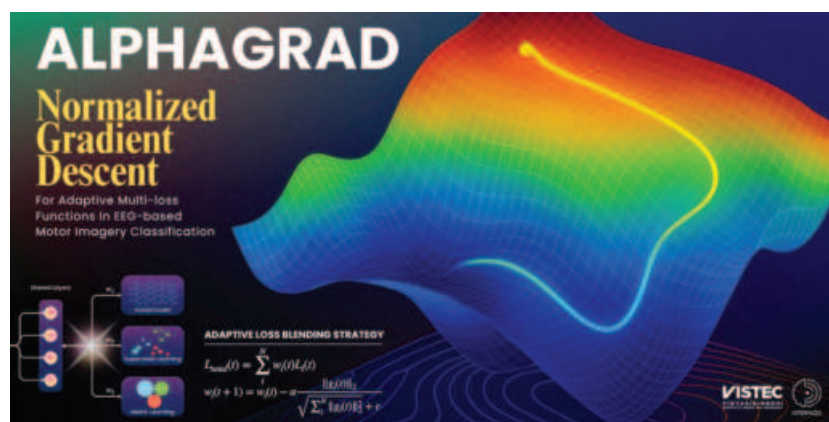
BrainX Computer Interfaces





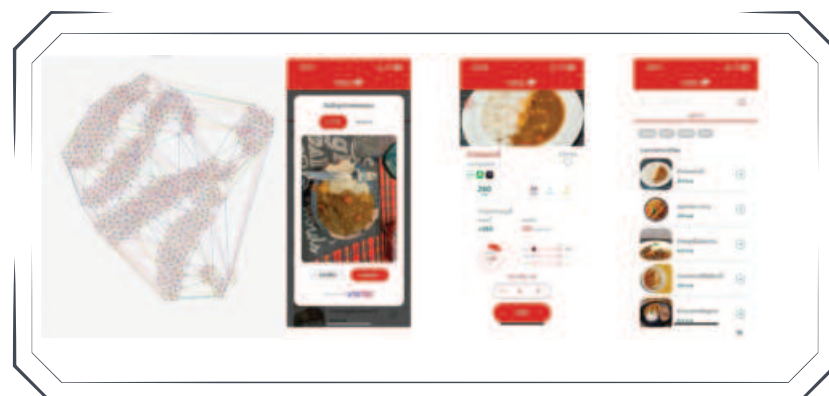
AI-DRIVEN PERSONALIZED NUTRITION FOR DIGITAL THERAPEUTICS

This research direction focuses on developing AI-based nutrition co-pilot systems that support nutritionists in delivering personalized interventions within digital therapeutics. By integrating real-world dietary behavior data with outcome-driven analysis, the work highlights how the macronutrient structure, particularly the balance between protein and carbohydrates, interacts with total energy intake to influence the effectiveness of weight loss. The long-term goal is to build intelligent and adaptive nutrition recommendation systems that translate behavioral data into actionable, personalized guidance for sustainable metabolic health outcomes.



FROM TISSUE TO TUMOR ECOSYSTEMS: AI FOR SPATIAL CANCER ANALYSIS

The Interfaces team at VISTEC is expanding its research into medical biology and computational pathology, establishing two core baselines: (1) spatial proteomics for characterizing tumor microenvironments using graph deep learning, and (2) histopathology image analysis with a focus on unsupervised domain adaptation to address cross-site variability. These foundations are being strengthened through international collaborations, including access to large-scale, high-quality spatial multi-omics datasets across multiple cancer types, forming an emerging pan-cancer resource. In parallel, partnerships with leading medical schools in Thailand enable the integration of local clinical data with international cohorts. Moving forward, the direction aims to advance AI methodologies for spatial biology, multi-omics integration, and translational pathology, while building a strong global research network through joint projects and international PhD training.



SELECTED PUBLICATIONS



Banluesombatkul, N., Mignot, E. and Wilaiprasitporn, T., 2025. Comprehensive Evaluation of Odds Ratio Product and Spectral Slope as Continuous Sleep Depth Measures: Advancing Sleep Staging and Clinical Applications. *Sleep*, p.zsaf130, <https://doi.org/10.1093/sleep/zsaf130>



Chaisaen, R., Autthasan, P., Ditthaporn, A. and Wilaiprasitporn, T., 2025. AlphaGrad: Normalized Gradient Descent for Adaptive Multi-loss Functions in EEG-based Motor Imagery Classification. *IEEE Journal of Biomedical and Health Informatics*, 29(10), pp. 7116—7128, doi:10.1109/JBHI.2025.3572197.



Kumchaiseemak, N., Fioranelli, F. and Wilaiprasitporn, T., 2025. Capturing Head Poses Using FMCW Radar and Deep Neural Networks. *IEEE Transactions on Aerospace and Electronic Systems*, 61(3), pp. 6748—6759, doi: 10.1109/TAES. 2025.3529412.



Choksatchawathi, T., Sawadwuthikul, G., Thuwajit, P., Kaewlee, T., Mateepithaktham, T., Saisaard, S., Sudhawiyangkul, T., Chaitusaney, B., Saengmolee, W. and Wilaiprasitporn, T., 2024. Apsense: Data-driven Algorithm in PPG-based Sleep Apnea Sensing. *IEEE Internet of Things Journal*, 11(20), pp. 33915—33926, doi: 10.1109/JIOT.2024.3433500.



Autthasan, P., Chaisaen, R., Phan, H., De Vos, M. and Wilaiprasitporn, T., 2024. MixNet: Joining Force of Classical and Modern Approaches Toward the Comprehensive Pipeline in Motor Imagery EEG Classification. *IEEE Internet of Things Journal*, 11(17), pp. 28539—28554.



*Bringing computer vision
from the lab to
the real world.*



Assist. Prof. Dr. Supasorn Suwajanakorn

Faculty Member

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**Vision &
Learning**
Laboratory

Supasorn Suwajanakorn is an Assistant Professor in the School of Information Science and Technology (IST) at VISTEC, Thailand. He leads the Vision & Learning Lab, where his research lies at the intersection of computer vision, deep learning, and computer graphics. Prior to joining VISTEC, Supasorn was a Research Resident at Google Brain, and received his Ph.D. from the University of Washington. His doctoral work was recognized with multiple awards, including the William Chan Memorial Dissertation Award and the Innovation of the Year Award (2016), and was presented at TED Vancouver in 2017.

Over the past decade, Supasorn's research has focused on developing robust and scalable visual learning systems that operate beyond controlled laboratory settings. His work spans 3D reconstruction, geometric reasoning, and image and video synthesis, with an emphasis on distilling and repurposing generative models through self-supervised and unsupervised learning. A central theme of his research is extracting structure, such as geometry, correspondence, and physical properties, from data-driven models to enable reliable perception, reasoning, and synthesis in real-world scenarios.

Supasorn has published extensively in top-tier international venues, including CVPR, ICCV, ECCV, NeurIPS, ICLR, and SIGGRAPH. His work has received multiple oral presentations, contributing to advances in neural rendering, video manipulation, and visual representation learning. He actively serves the research community as an Area Chair and has received multiple Outstanding Reviewer Awards from top conferences such as CVPR.



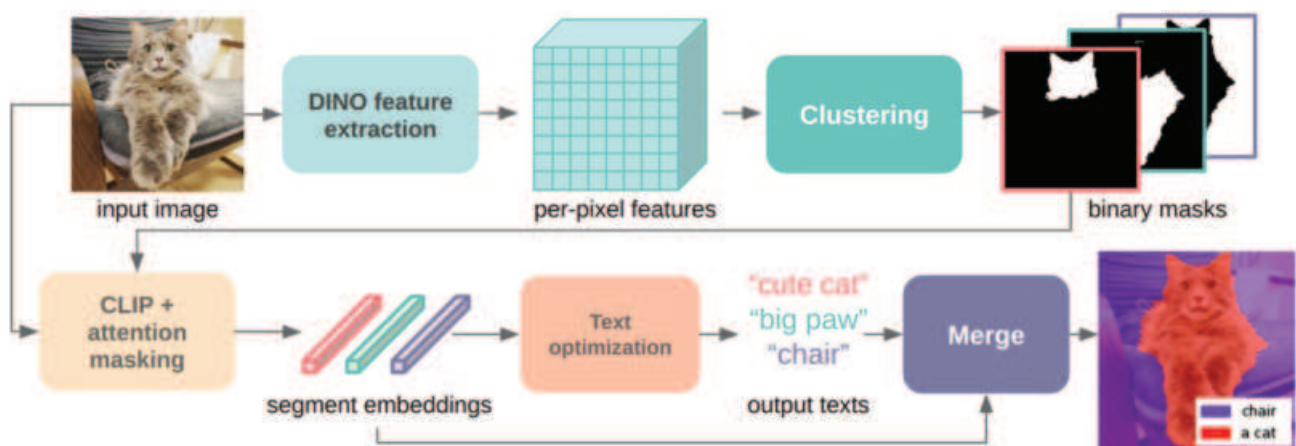
SCIENTIFIC FOCUS AREAS:

Computer Vision, Deep Learning, Visual Representation Learning, 3D Reconstruction, Geometric Vision, Neural Rendering, Image and Video Synthesis, Generative Models (Diffusion Models), Self-Supervised and Unsupervised Learning, Multiview Geometry, Visual Correspondence and Tracking, Learning-based Graphics, Vision Systems for Real-World Deployment.



FROM GENERATIVE MODELS TO VISUAL UNDERSTANDING AND REASONING

Our research involves modern image and video generative models, not only as synthesis engines, but as rich representations of visual structure. By analyzing and distilling knowledge embedded in large generative models, we aim to extract geometry, correspondence, motion, and physical cues that are implicitly learned during generation. These principles have led to the following developments:





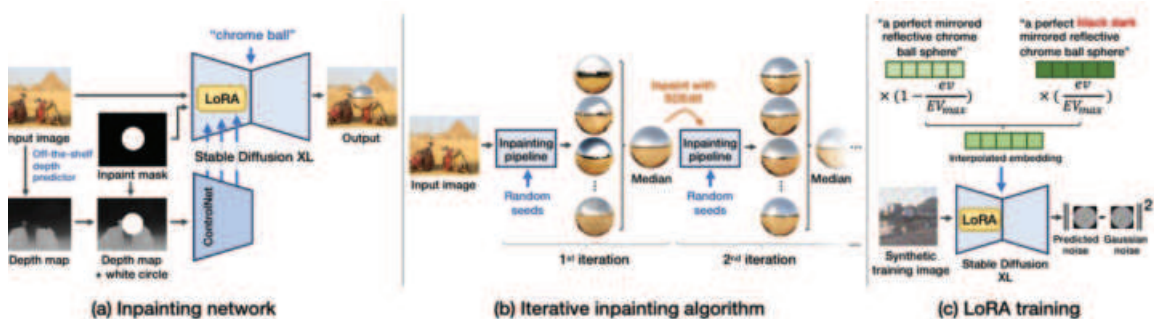
DISTILLATION AND REPURPOSING OF GENERATIVE MODELS:

We develop methods to distill large generative models into compact, task-specific representations that can be repurposed for visual understanding, geometric reasoning, and perception beyond generation, enabling tasks such as 3D reconstruction, semantic segmentation, spatial relationship modeling, as well as lighting estimation and manipulation.



LEARNING-BASED GEOMETRY AND VISUAL REASONING:

We integrate distilled representations with geometric constraints, such as multi-view consistency and spatial structure, to build models that reason about the 3D world from visual data. These approaches reduce reliance on supervision while improving robustness and interpretability in real-world settings.

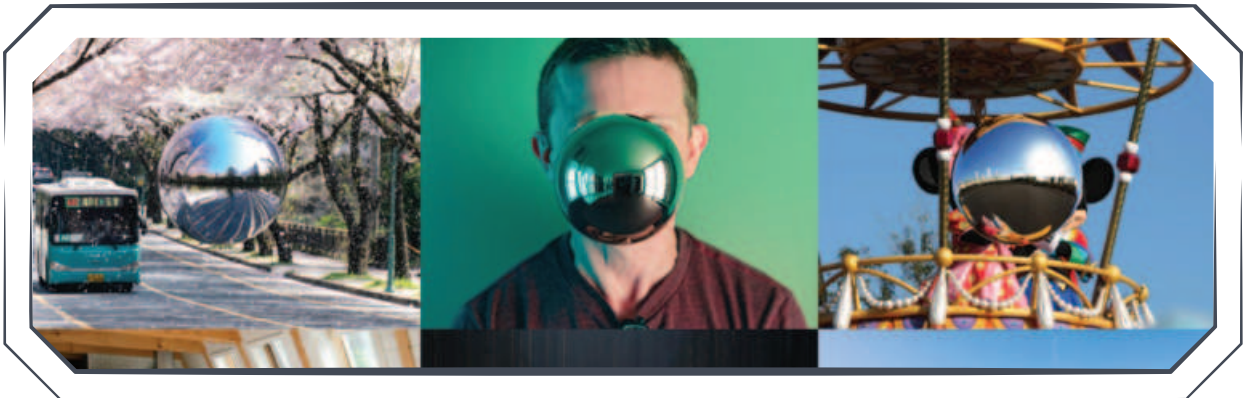


The ultimate goal is to transform generative models into general visual reasoning engines that operate reliably beyond curated datasets.



VISION AND LEARNING TECHNOLOGIES FOR REAL-WORLD DEPLOYMENT

We translate these ideas into practical vision systems that operate outside controlled laboratory environments, where data are noisy, incomplete, and unconstrained.



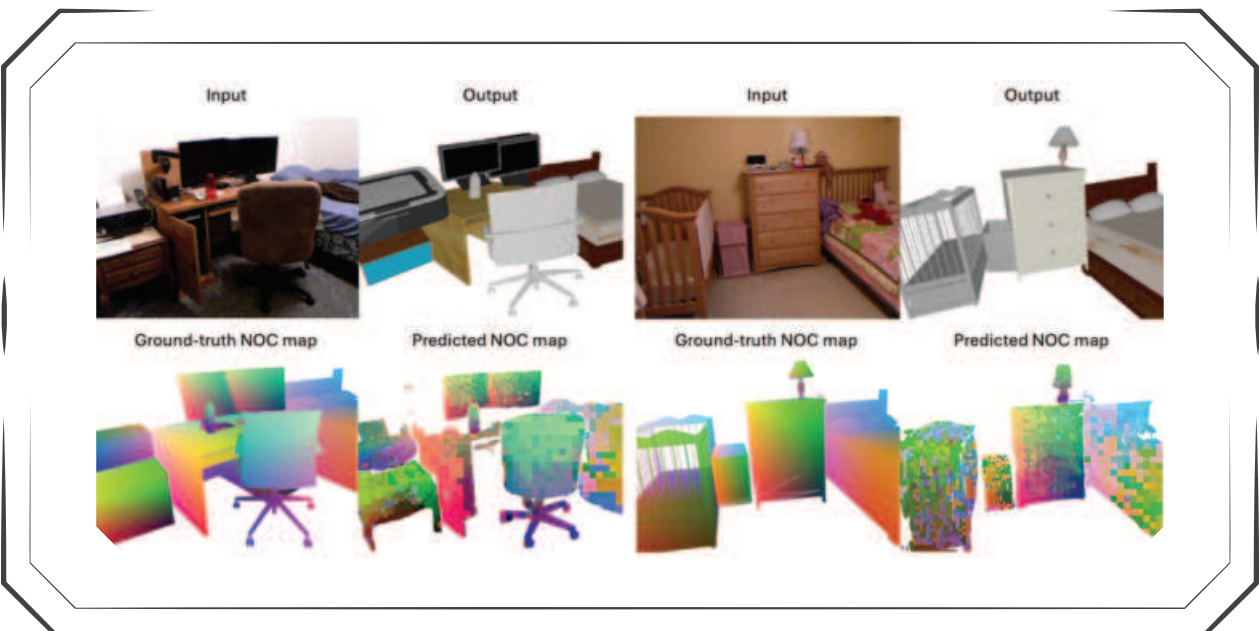
NEURAL RENDERING AND VISUAL SYNTHESIS:

We study neural rendering and visual synthesis, where factors such as viewpoint, illumination, identity, and appearance are modeled and controllable, enabling consistent manipulation and visually convincing generation.



EFFICIENT AND DEPLOYABLE VISION SYSTEMS:

We design efficient, scalable perception systems for real-world deployment, including methods that distill large models into compact, robust representations and multimodal systems that combine vision with FMCW radar to handle sparse, noisy, or visually challenging conditions where vision alone is insufficient.



SELECTED PUBLICATIONS



Tritrong, N., Rewatbowornwong, P. and Suwajanakorn, S., 2021. Repurposing GANs for One-Shot Semantic Part Segmentation. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 4475—4485.



Wizadwongsa, S., Phongthawee, P., Yenphraphai, J. and Suwajanakorn, S., 2021. Nex: Real-time View Synthesis with Neural Basis Expansion. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 8534—8543.



Preechakul, K., Chatthee, N., Wizadwongsa, S. and Suwajanakorn, S., 2022. Diffusion Autoencoders: Toward a Meaningful and Decodable Representation. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 10619—10629.



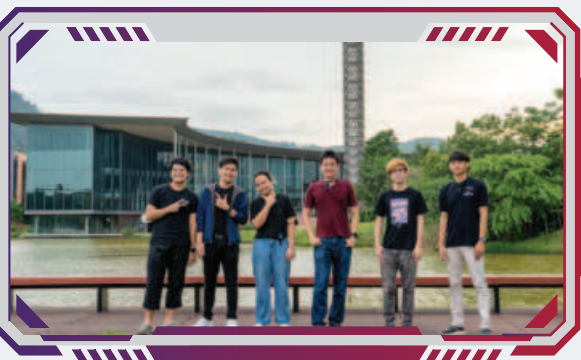
Phongthawee, P., Chinchuthakun, W., Sinsunthithet, N., Jampani, V., Raj, A., Khungurn, P. and Suwajanakorn, S., 2024. Diffusionlight: Light Probes for Free by Painting a Chrome Ball. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 98—108.



Arsomngern, P., Khwanmuang, S., Niessner, M. and Suwajanakorn, S., 2025. Zero-shot Inexact CAD Model Alignment from a Single Image. In Proceedings of the IEEE/CVF International Conference on Computer Vision, pp. 6231—6241.

**Assist. Prof. Dr. Sucha Supittayapornpong**

Faculty Member

 Sucha Supittayapornpong sucha.s@vistec.ac.th

Laboratory for
**Network & Decision
Systems**

*Insights into complex networks
can be developed through the
lens of operations research.*

Sucha Supittayapornpong is a full-time faculty member in the School of Information Science and Technology (IST) at VISTEC, Thailand. He leads the Network and Decision Systems Lab, where his research lies at the intersection of computer networking and operations research, with applications in data center networking for AI, federated learning algorithms, and network performance optimization. Before joining VISTEC, Sucha was a postdoctoral researcher at the Networked Systems Lab in the Department of Computer Science at the University of Southern California. He received his Ph.D. from the Department of Electrical Engineering at the University of Southern California.

Sucha's research has been focusing on network performance optimization. A networked system is modeled by mathematics, and its insights are derived through mathematical tools, such as convex optimization and game theory, or simulation, leading to new algorithms with intuitive justification. His recent research theme focuses on networking for AI, including static and dynamic data center networks, collective communications in AI training, and federated learning algorithms.

Sucha has been published in top-tier international venues, including ACM SIGCOMM, USENIX NSDI, and IEEE INFOCOM, as well as in top-tier international journals, such as IEEE/ACM Transactions on Networking (TON) and IEEE Transactions on Mobile Computing (TMC). He has received multiple best-paper awards from USENIX NSDI and other international conferences. He actively serves as a Technical Program Committee member for the Asian Internet Engineering Conference (AINTEC) in the Asia-Pacific region.

SCIENTIFIC FOCUS AREAS:

Reconfigurable Datacenter Networking, Oblivious Routing, Congestion Control Algorithms, Collective Communications in Large-scale AI Training, Federated Learning Algorithm and Convergence, Scheduling Algorithms for Information Freshness, Game Theory and Pricing for Communication Networks.



FROM NETWORK INFRASTRUCTURE TO AI AND DIGITAL SERVICES

Our research addresses open issues in modern and frontier data center networks, designed for AI and digital services. By analyzing network structures through mathematical optimization and graph theory, we tackle the routing and scheduling challenges of static and reconfigurable data center networks, respectively.

Oblivious routing as
robust optimization

Formulation
transformation

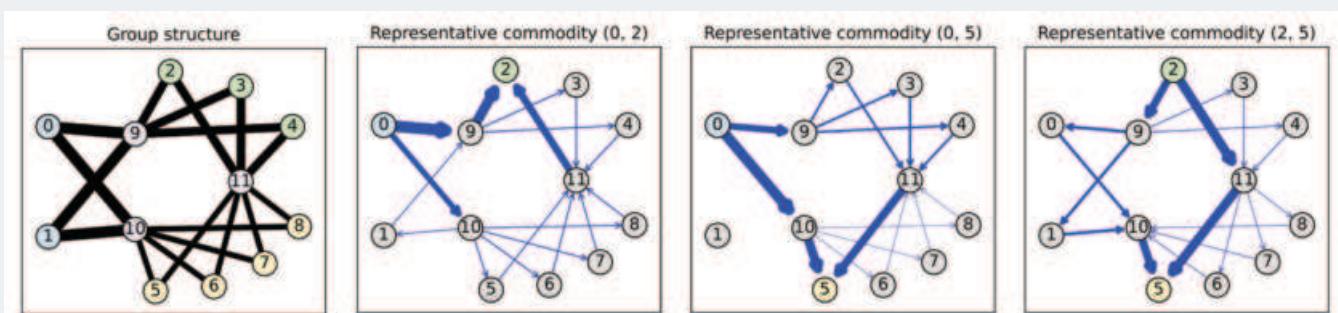
Linear program

Repeated-structure
exploitation

Scalable
linear program

Forwarding-rule
grouping

Compact
forwarding rules





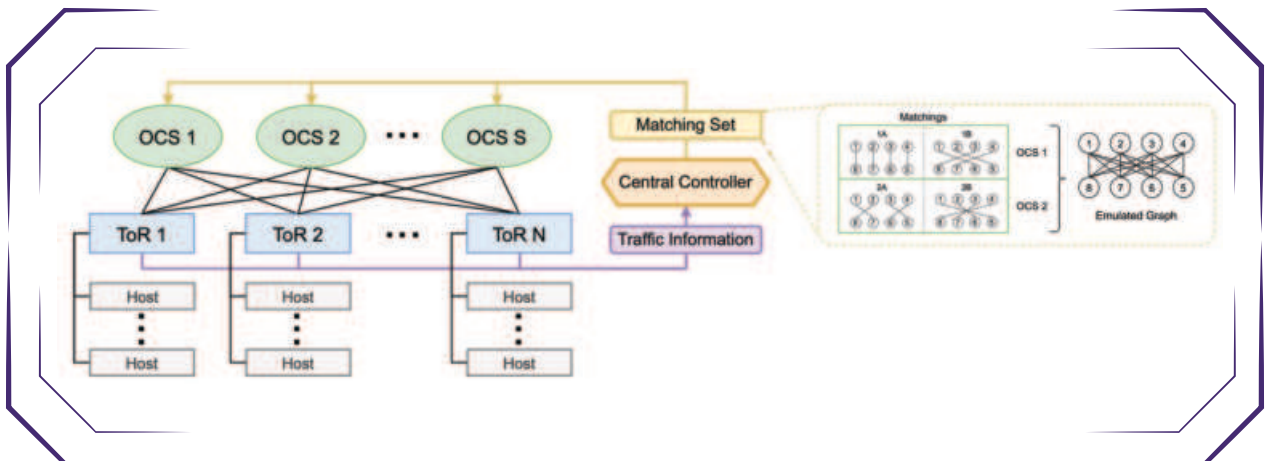
OPTIMAL OBLIVIOUS ROUTING FOR DATA CENTER NETWORKS:

Many modern data center networks with static topologies have no optimal routing paths that minimize traffic congestion. While optimal routing can be derived from the solution to robust optimization, solutions for small-scale networks are the only ones that are tractable. We exploit the repeated structures in modern data center networks via graph automorphism to reduce problem sizes. In conjunction with the duality technique in convex optimization, we develop a process to obtain optimal oblivious routing for large-scale data center networks.



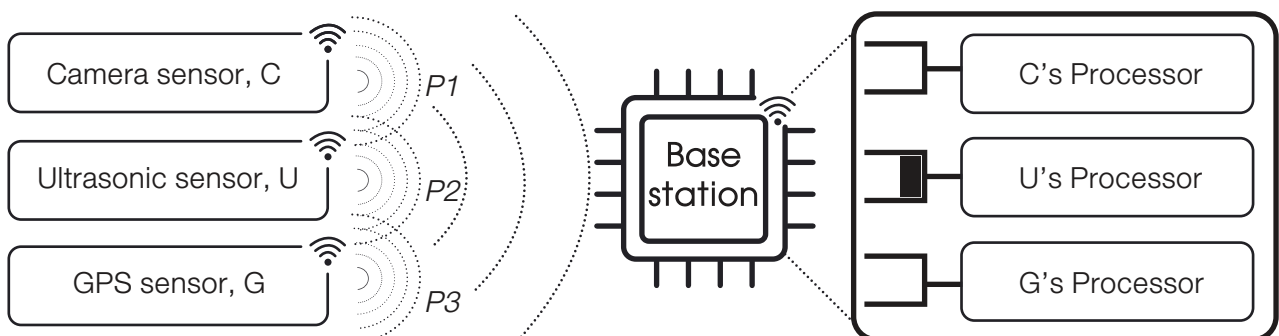
MICROSECOND RECONFIGURABLE DATA CENTER NETWORKS FOR SKEWED TRAFFIC:

Frontier data center networks can change their topology every microsecond interval to match current traffic patterns. Their challenge is the millisecond time budgets for routing and scheduling computation. We design a periodic topology reconfiguration that serves skewed traffic better than a state-of-the-art system. Our design exploits graph isomorphism to reduce routing and scheduling complexity, allowing their computation to be within budget.



FROM MATHEMATICAL OPTIMIZATION TO INFORMATION FRESHNESS AND DATA ACQUISITION PRICING

For those who love mathematics and optimization, our research examines the fundamental questions of new models and systems as follows:





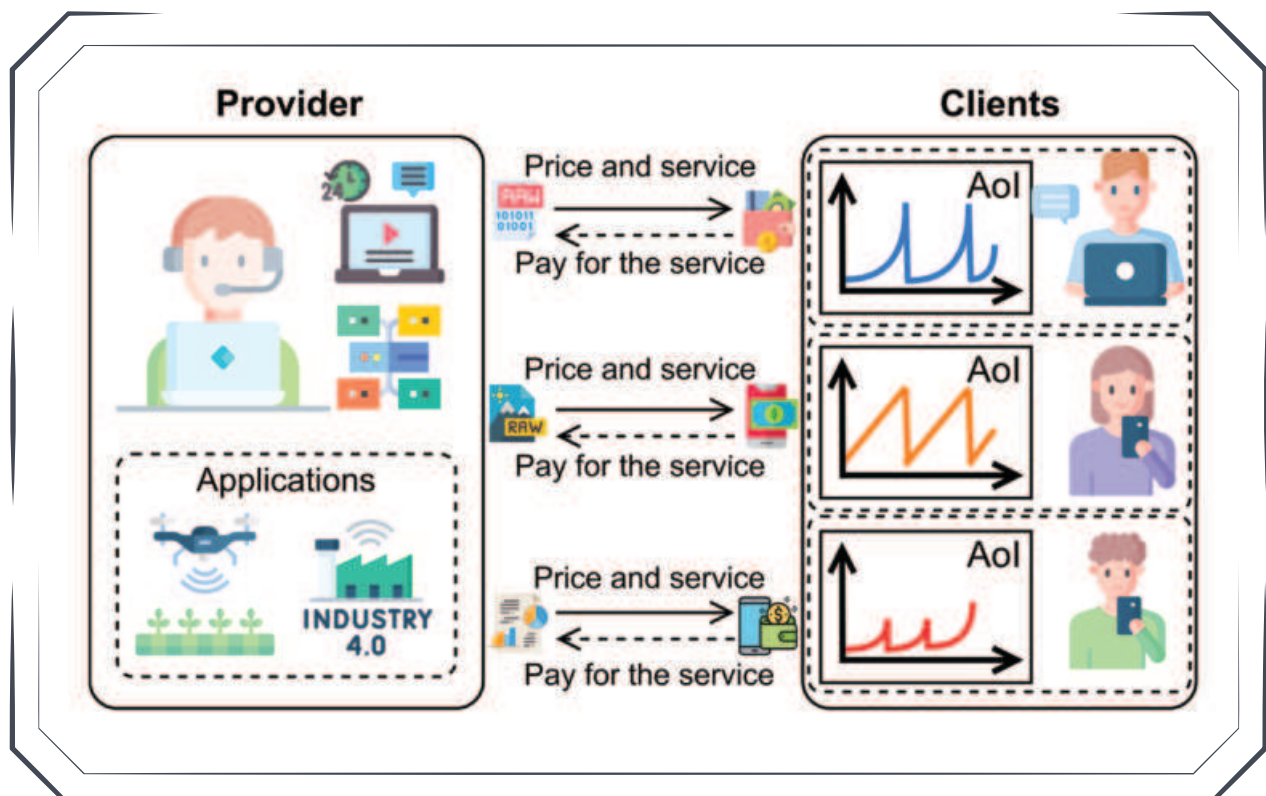
TWO-OPTIMAL SCHEDULING FOR AGE OF PROCESSED INFORMATION:

The age of processed information is the time elapsed since the generation of the packet at a sensor that a processor most recently processed. The freshness of this information is crucial for many applications, including flight control and autonomous vehicles. We design a stationary randomized policy and a Max-Weight policy for two queueing disciplines: no queues and single-packet queues, to minimize this age. Our policies perform within a factor of two of the optimum.



PRICING FOR FRESH DATA ACQUISITION SERVICES

Data generated through interconnected devices enable the delivery of fresh data acquisition services. A service provider utilizes limited resources to gather new data for multiple clients, and each client pays according to the price set by the provider. We develop the understanding of 1) how often a client uses the service in the presence of acquisition time and price, and 2) how the provider prices the service based on limited resources, acquisition time, and incomplete information about the clients. We model this system using game theory and optimization to develop the insights.



SELECTED PUBLICATIONS



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Ngoenriang, N., Niyato, D. and Supittayapornpong, S., 2025. Towards Pricing for Fresh Data Acquisition Services. *IEEE Transactions on Vehicular Technology (TVT)*, 74(3), pp. 5022—5037.



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Supittayapornpong, S., Raghavan, B. and Govindan, R., 2019. Towards Highly Available Clos-based WAN Routers. *ACM Special Interest Group on Data Communication (SIGCOMM)*, pp. 424—440.

INDUSTRIAL AND GOVERNMENT COLLABORATIONS



IST collaborates extensively with Thai industries and the private sector. Housed within IST, our Wangchan Advanced Industrial Labs act as a cluster of three R&D labs for translating IST's basic research into innovative solutions and creating the next generation of sense-think-act machines for industrial problems and applications.

OUR INDUSTRIAL COLLABORATORS



IST GRADUATE CAREER PATHS



(POSTDOC)



(RESEARCHER)



SIIT
SINCE 1992

(LECTURER)



(DATA SCIENTIST)



(POSTDOC)



(SENIOR DEVELOPER)



(AI ENGINEER)



(AI ENGINEER)

(CEO-STARTUP)



(QA SOFTWARE ENGINEER)



(POSTDOC)



(RESEARCHER)



(AI ENGINEER)



(POSTDOC)



(AI ENGINEER)



(AI ENGINEER)



An aerial photograph of the School of Information Science and Technology (IST) campus at dusk. The image shows a large, modern building with a prominent orange and green facade. To the left, there is a circular structure with a white roof. The campus is surrounded by greenery and a winding road. The text "Opportunity & life at IST" is overlaid in a white, handwritten-style font.

Opportunity & life at IST

SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY (IST)

Opportunity & life at IST



IST Knowledge Dissemination



IST Knowledge Dissemination



Mission X



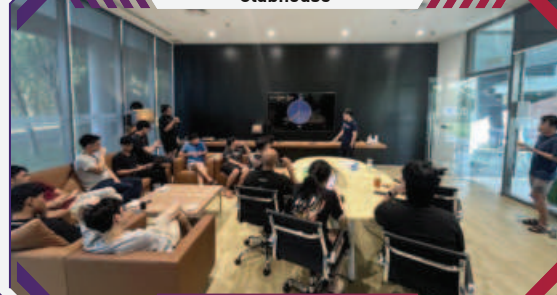
International Conference



IST New Student Orientation



Clubhouse



International Conference



Industrial Collaboration



International Conference



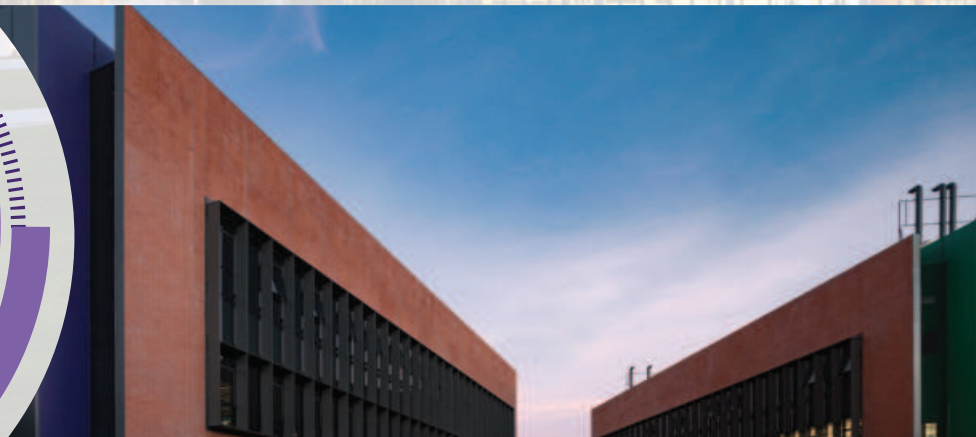
International Conference



International Conference



International Conference



IST Workshop



IST AI Talk



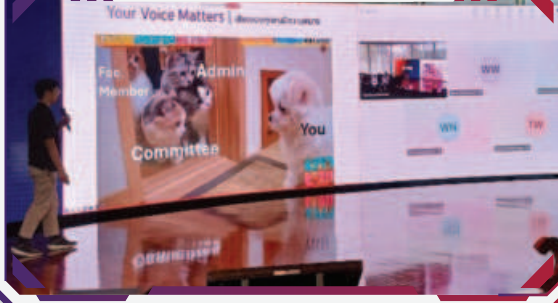
IST Townhall & Research talks



IST Townhall & Research talks



IST Townhall & Research talks



International Conference





IST Knowledge Dissemination



IST Knowledge Dissemination



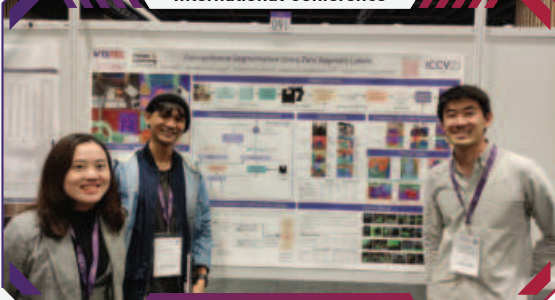
Communication with Industry Stakeholder



Communication with Industry Stakeholder



International Conference



International Conference



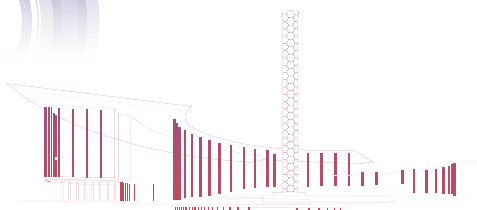
*Leading the development and deployment
of networked, multimodal, physically embodied AI
technologies that transform industry and society.*



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