

# Worasuchad Haomachai

## Curriculum Vitae

✉ [haomachai@gmail.com](mailto:haomachai@gmail.com)  
🌐 <https://haomachai.com/>

### Research Interests

Machine Learning for Robotics, Bio-inspired Robotics, Information Theory, Bionic Technology

### Education

Sep. 2019 – **PhD, Mechanical Design and Theory**, Nanjing University of Aeronautics and Astronautics

Jun. 2024 :

Thesis : Neural Control with Learning for Locomotion of a Gecko-Inspired Robot with a Bendable Body

Advisor : Prof. Poramate Manoonpong

Sep. 2017 – **Master of Engineering, Robotics and Automation**, King Mongkut's University of Technology

Aug. 2019 : Thonburi

Thesis : An Artificial Hormone System for Adaptable Locomotion in a Sea Turtle-Inspired Robot

Advisor : Dr. Pitiwut Teerakittikul

May. 2008 – **Bachelor of Engineering, Electrical and Communications Engineering**, Mahidol University

Mar. 2012 :

Thesis : Developing a Braille Notetaker for the Blind

Advisor : Asst. Prof. Zeng Lertmanorat

### Publications

#### Journal Articles

- 2024 **Haomachai, Worasuchad**, Zhendong Dai, and Poramate Manoonpong. Transition gradient from standing to traveling waves for energy-efficient slope climbing of a gecko-inspired robot. *IEEE Robotics and Automation Letters*. IEEE, 2024, ( **Impact Factor:5.2** ).
- 2021 **Haomachai, Worasuchad**, Donghao Shao, Wei Wang, Aihong Ji, Zhendong Dai, and Poramate Manoonpong. Lateral undulation of the bendable body of a gecko-inspired robot for energy-efficient inclined surface climbing. *IEEE Robotics and Automation Letters*, volume 6, pages 7917–7924. IEEE, 2021, ( **Impact Factor:4.3** ).

#### Conference Proceedings

- 2024 **Haomachai, Worasuchad**, Zhendong Dai, Yang Li, and Poramate Manoonpong. Neural control and learning with a turning strategy of a gecko-inspired robot with a bendable body. In *2024 9th International Conference on Control and Robotics Engineering (ICCRE)*. IEEE, 2024.
- 2023 Léonard Chanfreau, **Haomachai, Worasuchad**, and Poramate Manoonpong. Neural control and learning of a gecko-inspired robot for aerial self-righting. In *Climbing and Walking Robots Conference*, pages 147–158. Springer, 2023.
- 2021 **Haomachai, Worasuchad**, Potiwat Ngamkajornwiwat, Aihong Ji, Zhendong Dai, and Poramate Manoonpong. A sprawling posture robot with a flexible spine for efficient locomotion in various gravity environments from earth, to mars, and the moon. In *Presented at the 2nd Innovation Aviation & Aerospace Industry-International Conference*, volume 28, page 30, 2021.

2019 **Haomachai, Worasuchad** and Pitiwut Teerakittikul. An artificial hormone system for adaptable locomotion in a sea turtle-inspired robot. In *2019 4th International Conference on Control and Robotics Engineering (ICCRE)*, pages 136–141. IEEE, 2019.

[Extended Abstract](#)

2023 **Haomachai, Worasuchad** and Poramate Manoonpong. Can chaos be utilized as exploration noise for locomotion learning? In *The 11th International Symposium on Adaptive Motion of Animals and Machines (AMAM2023)*, pages 53–54. Adaptive Motion of Animals and Machines Organizing Committee, 2023.

---

## Fellowships & Awards

2023 **The finalist prize** *the International Society for Bionic Engineering, 7th International Conference on Bionic Engineering 2023*, for Haomachai, Shao, Manoonpong, in the work entitled: Gecko-Inspired Robot with a Bendable and Hybrid Soft-Rigid Adhesive Feet for Agile and Versatile Gecko-like Locomotion.

2019 – 2022 **Nanjing Government Scholarship**, Nanjing University of Aeronautics and Astronautics, China.

2017 – 2018 **FIBO Scholarship**, Institute of Field Robotics (FIBO), King Mongkut's University of Technology Thonburi, Thailand.

---

## Professional Experience

Nov. 2022 – **Visiting Ph.D. Student**, Neural Network with Synaptic Plasticity Using the Meta-Learning  
Apr. 2023 : Hebbian Learning Rule.

Advisor: Prof. Sebastian Risi, *Professor* - IT University of Copenhagen/*Co-founder* – modl.ai

Mar – May Internship at the Bio-inspired Structure and Surface Engineering (IBSS) lab, Nanjing University  
2019 of Aeronautics and Astronautics, China.

May. 2012 – **Senior Engineer at AIS-Advanced Info Services Plc.**, Mobile Network Telecommunications  
Aug. 2017 : Engineer, Bangkok, Thailand.

Mar – May Internship at the National Electronics and Computer Technology Center (NECTEC), NSTDA,  
2011 Thailand.

2011 Leader of Mahidol Robotics Club, Faculty of Engineering Mahidol University, Thailand.

2011 Participated with Thailand Humanoid Robot Soccer Championship 2010 – 2011, King Mongkut's University of Technology North Bangkok, Thailand.

2010 Participated with TPA Robot Contest Thailand Championship 2010, Technology Promotion Association (Thailand – Egypt), King Mongkut's Institute of Technology Ladkrabang, Thailand.

2009 Participated with Thailand Rescue Robot 2009, Thai Robotics Society, Faculty of Engineering Mahidol University, Thailand.

---

## Academic Achievements & Recognitions

### Students Supervised

Jul. 2024 – Internship Supervisor: *3D Force Sensors and IMU Integration for Gecko-Inspired Robots*.  
Mar. 2025 : Student: Sanhanat Lertvittayavivat, Computer Engineering, Prince of Songkla University, Thailand.

Jun – Aug Co-supervisor: *Neural control and learning for self-righting of gecko-inspired robots*  
2022 Student: Leonard Chanfreau, Institut Polytechnique de Paris – ENSTA Paris, France and also with Embodied AI and Neurorobotics Lab, SDU Biorobotics, the Mærsk Mc-Kinney Møller Institute, the University of Southern Denmark (SDU), Denmark.

- Jul – Aug 2022 Internship Supervisor: *Path Following and Navigation of a Gecko-Inspired Robot*  
Student: Assawayut Khunmaturod, Korea Advanced Institute of Science & Technology (KAIST), South Korea.
- Jun – Jul 2022 Internship Supervisor: *Training of a Quadruped Robot Using Reinforcement Learning*  
Student: Waritwong Sukprasongdee, Department of Mechanical Engineering, Faculty of Engineering, Chulalongkorn University, Thailand.
- Jun – Jul 2021 Internship Supervisor: *Development of Electronic Systems in a Gecko-Inspired Robot*  
Students: Budsakorn Thaiprasert, Pannawat Chimprasert, Thitiya Boontongloun, Department of Electrical Engineering, Faculty of Engineering, Mahidol University, Thailand.

## Talks

- 2024 Research talk, *Nature's Intelligence for Physical AI: From Biology to AI and Robotics*, Rangsit University, Bangkok, Thailand, 06.12.2024.
- Invited talk, *Robot that Move Like a Gecko*, BrainCode-VISTEC WorkShop, VISTEC, Rayong, Thailand, 27.11.2024.
- Research talk, *Nature's Intelligence for Physical AI: From Biology to AI and Robotics*, The Institute of Field Robotics (FIBO), Bangkok, Thailand, 18.11.2024.
- Research talk, *Nature's Intelligence for Physical AI: From Biology to AI and Robotics*, Faculty of Engineering, Mahidol University, Nakhon Pathom, Thailand, 13.11.2024.
- Oral presentation, *Transition Gradient from Standing to Traveling Waves for Energy-Efficient Slope Climbing of a Gecko-Inspired Robot*, 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Abu Dhabi, UAE, 17.10.2024.
- Oral presentation, *Neural Control and Learning with a Turning Strategy of a Gecko-Inspired Robot with a Bendable Body*, the 2024 9th International Conference on Control and Robotics Engineering, Osaka, Japan, 11.05.2024.
- 2023 Invited talk, *Bio-inspired Climbing Legged Robot Design and Control*, China Nanhu Academy of Electronics and Information Technology, China, 23.10.2023.
- Oral presentation (online), *Neural Control and Learning of a Gecko-Inspired Robot for Aerial Self-Righting*, the 26th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR), Florianópolis, Brazil, 04.10.2023.
- Interactive poster, *Can Chaos Be Utilized as Exploration Noise for Locomotion Learning?*, interactive poster, the 11th International Symposium on Adaptive Motion of Animals and Machines (AMAM), Kobe, Japan, 07.06.2023.
- 2021 Oral presentation (online), *Lateral Undulation of The Bendable Body of a Gecko-Inspired robot for Energy-Efficient Inclined Surface climbing*, 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Prague, Czech Republic, 30.09.2021.
- Oral presentation (online), *A Sprawling Posture Robot with a Flexible Spine for Efficient Locomotion in Various Gravity Environments from Earth, to Mars, and the Moon*, Innovation Aviation & Aerospace Industry – International Conference 2021, Chiang Mai, Thailand, 30.06.2021.
- 2019 Oral presentation, *An Artificial Hormone System for Adaptable Locomotion in a Sea Turtle-Inspired Robot*, the 2019 4th International Conference on Control and Robotics Engineering (ICCRE), Nanjing, China, 23.04.2019.

## Position of Responsibility

- 2025 **Vice-General Chair**, the 1st International Symposium on Physical Artificial Intelligence and Robotics (IS-PAIR2025), January 28-29 2025, Rayong, Thailand.

2024 **Workshop**, BrainCode-VISTEC WorkShop on Bio-Inspired Robots: How to Make Them Walk Like Animals, Rayong, Thailand, 27.11.2024.

2015 – 2016 **Organizer, AIS Employee Volunteer**, AIS - Advanced Info Services Plc., Thailand.

---

## Teaching

### Teaching Assistantship

Fall, 2020 – **0510202F: Adaptive Locomotion Control From Animals to Robots.**

2023 : Nanjing University of Aeronautics and Astronautics (NUAA), China.

Spring, 2018 : **FRA121: Electronic Circuits for Robotics and Automation Engineering.**

Institute of Field Robotics (FIBO), KMUTT, Thailand.

Fall, 2017 : **FRA221: Digital Electronics.**

Institute of Field Robotics (FIBO), KMUTT, Thailand.

---

## Professional Activities and Outreach

### Reviewer

#### Conferences:

IEEE International Conference on Robotics and Automation (ICRA)

International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR)

#### Membership

IEEE (Institute of Electrical and Electronic Engineers)

ISBE (International Society of Bionic Engineering)

---

## Selected Press Coverage

**Addobot** *Slalom: A Gecko-Inspired Robot with Lateral Body Undulation*, Apr 2024

**Weixin** *A Gecko-like Robot with a Bendable Body that Can Climb Hills Stably*, Dec 2021

**IEEE Spectrum** *Lateral Undulation of the Bendable Body of a Gecko-Inspired Robot*, Nov 2021

---

## Language Knowledge

Thai native • English intermediate • Chinese basic