Benjamas Panomruttanarug, PhD

Associate Professor

CONTACT INFORMATION

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RESEARCH INTERESTS

Iterative learning control, repetitive control, tracking control in robotic manipulators, autonomous vehicles

EDUCATION

Columbia University New York, NY

Ph.D., Electrical Engineering, October 2006
M.S., Electrical Engineering, May 2002

Mahidol University Nakornprathom, Thailand

B.Eng., Electrical Engineering, May 1999 (2nd class honor)

PROFESSIONAL HONORS

Ernst Mach Follow-up Grant from OEAD **Apr 2023**
One-month research scholarship at TU Graz, Austria

Skill Development Grant from KMUTT **Jun 2018**
One-month research fellowship at Heidelberg University, Germany

ASEA-UNINET staff exchange from OHEC and OEAD **Apr 2018**
One-month research scholarship at TU Graz, Austria

Junior research fellowship from French Embassy in Thailand **Apr 2011 - May 2011**
Two-month research scholarship at Ecole Nationale de l'Aviation Civile (ENAC), France

Visiting research fellowship from University of Electro-Communications (UEC) **Oct 2010**
One-month research scholarship at UEC, Japan

Scholarship from The Royal Thai Government **Jan 2001 - Oct 2006**
Master-PhD scholarship at Columbia University, USA

SCOPUS INDEX JOURNALS (LAST 5 YEARS)

P. Areerob and B. Panomruttanarug, "**Iterative Learning Control for Lateral Tracking with Repeated Path in Autonomous Vehicles for Dynamic Environments,**" *International Journal of Control, Automation, and Systems*, vol. 21, no. 11, pp. 3712–3723, Sep. 2023.

P. Chotikunnan, T. Puttasakul, R. Chotikunnan, B. Panomruttanarug, M. Sangworasil, and A. Srisiriwat, "**Evaluation of Single and Dual image Object Detection through Image Segmentation Using ResNet18 in Robotic Vision Applications,**" *Journal of Robotics and Control*, Vol. 4, No.3, pp. 263–277, May 2023.

B. Panomruttanarug, "**The optimal design of repetitive controllers based on inverse frequency response,**" *Optimal Control Applications and Methods*, pp. 1–18, Jan 2023.

P. Chotikunnan, B. Panomruttanarug, and P. Manoonpong, "**Dual Design Iterative Learning Controller for Robotic Manipulator Application,**" *Journal of Control Engineering and Applied Informatics*, Vol. 24, No.3, pp. 76–85, 2022.

P. Chotikunnan, and B. Panomruttanarug, "**Practical Design of a Time-Varying Iterative Learning Control Law Using Fuzzy Logic,**" *Journal of Intelligent & Fuzzy Systems*, Vol. 43,

No. 3, pp. 2419-2434, Jul 2022.

B. Panomruttanarug, "**Position Control of Robotic Manipulator Using Repetitive Control Based-on Inverse Frequency Response Design,**" *International Journal of Control, Automation, and Systems (2020)*, Vol. 18, No. 11, pp. 2830–2841, May 2020.

B. Panomruttanarug, R. W. Longman, and M. Q. Phan, "**Steady State Frequency Response Design of Finite Time Iterative Learning Control,**" *Journal of Astronautical Sciences (2020)*, Vol. 67, No. 2, pp. 571–594, Dec. 2019.

(I have published 13 international journal papers and 35 international conference papers as of Oct 2023)

Academic Talks

Institut für Technische Informatik (ZITI), Uni. of Heidelberg, Germany, 2018

Invited speaker for EU-SEA Workshop Adv. Compt. for Contrl and Perf. Opt., Thailand, 2015

Ecole Nationale de l'Aviation Civile (ENAC), France, 2011

Dept. of Advanced Energy, Grad. School of Frontier Sciences, Univ. of Tokyo, Japan, 2010

Grad. School of Informatics and Eng. Univ. of Electro-Communication (UEC), Japan, 2010

Dept. of Mechanical and Automotive Engineering, Daegu Univ., South Korea, 2008

Dept. of Aerospace Engineering, Kanagawa Institute of Technology (KAIT), Japan, 2008

Dept. of Mechanical Eng.,Hong Kong Uni. of Technology and Science, Hong Kong, 2007

Dept. of Aerospace Engineering, Tokyo Metropolitan Institute of Technology, Japan, 2006

Dept. of Mechanical Engineering, Osaka University, Japan, 2006

Interdisciplinary Center for Scientific Computing (IWR), Uni. of Heidelberg, Germany, 2006

Center for Self-Organizing and Intelligent Systems, Utah State University, USA, 2004

Professional Activities

Team advisor for Team Andaman (KMUTT) to join racing car robot competitions, 2017 - present

Treasurer for IEEE Control Systems Society Thailand Chapter, 2016 - 2019

Young leader selected to participate the Isuzu's young leadership camp, 1999

Department assistant and treasurer for Mahidol Student Engineers Association, 1996 - 1999

Racing Car Robot Competition Awards

Fun driving award in F1tenth, Korea, Dec 2022

2nd runner up in Turtlebot3 AutoRace (Thailand), Nov 2019

2nd runner up in International Autonomous Racing Robot Competition (IARRC), University of Waterloo, Canada (2 successive yeras), Jul 2018-2019

Professional Experience

King Mongkut's University of Technology Thonburi (KMUTT), Bangkok, Thailand

Lecturer **Nov 2006 - Present**

Teaching: grad/undergrad courses in control, circuits, and mathematics. Researching: learning and repetitive control, optimization. Advising grad/undergrad students and managing grants.

Advanced Technology center for Manufacturing (@M), supported by KMUTT, Thailand

Deputy Director **Jan 2012 - Sep 2014**

Managing student internship program and funding for KMUTT students and academic staffs.

I/U CRC Advanced Manufacturing, supported by NECTEC, Thailand

Deputy Director **Feb 2008 - Sep 2011**
Administering and managing hard disk drive funding for researchers in universities, collaborating with HDD industries for solving on-site problems.

Asian Institute of Technology (AIT), Pathumthani, Thailand

Adjunct Faculty **Jun 2009 - Jul 2009**
Co-teaching the course "**Robust and Adaptive Control**".

Thai Engineering & Business Co., Ltd., Bangkok, Thailand

Design/Sales Engineer **May 1999 - Jan 2000**
Designed and marketed ventilation devices for buildings and factories, for Matsushita Electric Industrial Co., Ltd. Primary liaison between Thai and Japan-based engineering teams.

Research Grants

KMUTT research group grant (≈ 27M Baht) **Apr 2023 - Mar 2027**
Connected and Autonomous Vehicles research group

National Broadcasting and Telecom. Commission (≈ 27M Baht) **Nov 2022 - Sep 2024**
5G Autonomous Bus

Fundamental Fund (≈ 1.5M Baht) **Oct 2022 - Sep 2023**
Autonomous Vehicles: Camera-based navigation

Fundamental Fund (648K Baht) **Oct 2021 - Sep 2022**
Autonomous Vehicles: GPS Tracking System

TRF research career development grant (1.5M Baht) **Jun 2018 - May 2021**
Iterative Learning Control for Visual Trajectory Tracking of Robotic Manipulator

NRCT (≈ 1M Baht) **Oct 2010 - Sep 2012**
A Design of Self-Balancing Wheelchair

TRF (480K Baht) **Jul 2010 - Jun 2012**
A Use of Kalman Filtering in Relinearizations of Nonlinear Systems in Iterative Learning Control System

NSTDA (250K Baht) **Jan 2009 - Feb 2010**
Parallel Parking System Based on Fuzzy Logic Control

Western Digital (Thailand) Co.,LTD. (≈ 530K Baht) **Apr 2008 - Aug 2008**
Software Development for Image Deblurring

KMUTT (150K Baht) **Jul 2007 - Jun 2009**
The Advantages and Disadvantages of Kalman Filtering in Learning and Repetitive Control