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Inhwi Hwang

ECE Ph.D. Candidate in University of Michigan-Ann Arbor

Education

- Ph.D. Candidate — Sep. 2023 - Aug. 2028
  Electrical and Computer Engineering, University of Michigan-Ann Arbor
- M.S. — Feb. 2022
  Electrical and Computer Engineering, Seoul National University
- B.E. — Aug. 2020
  Electrical and Computer Engineering, Seoul National University

Research and Technical Experience

- Academic project — May 2023 — Jun. 2023
  Self-synchronized grid connected converter — *Seoul, Korea*
- Academic project — Apr. 2023 — Jun. 2023
  Digital filter design under variable sampling — *Seoul, Korea*
- Academic project — Sep. 2022 — Apr. 2023
  Real time temperature estimation in SiC MOSFET — *Seoul, Korea*
- Industrial project — Jan. 2022 — Feb. 2023
  3.2 kW PFC design in Intel data centers, LG Innotek Co., Ltd. — *Seoul, Korea*
- Academic project — Sep. 2021 — Nov. 2021
  Extending torque operation limit in signal-injection sensorless control for IPMSM — *Seoul, Korea*
- Industrial project — Jan. 2021 — Aug. 2021
  Motor control for vibration reduction in scotch-yoke system, LG Electronics Inc. — *Seoul, Korea*
- Academic project — Mar. 2020 — Jun. 2020
  3-bit optical coding for improving the power of optical computing — *Seoul, Korea*

Publications

Journals

'Digital Filter Design under Variable Sampling Frequency for Power Electronics Control' (Status: Will be submitted)
*Authors: **Inhwi Hwang**, Jaekeun Lee, Shenghui Cui*
IEEE Transactions on Industrial Electronics (TIE), 2023

'Grid Voltage Sensorless Operation in Totem-pole PFC Boost Converter' (Status: Will be submitted)
*Authors: **Inhwi Hwang**, Jaekeun Lee, Shenghui Cui*
IEEE Transactions on Power Electronics (TPEL), 2023

'Enhanced Dynamic Operation of Heavily Saturated IPMSM in Signal-Injection Sensorless Control with Ancillary Reference Frame' (Status: Published)
*Authors: **Inhwi Hwang**, Yong-Cheol Kwon, Seung-Ki Sul*
IEEE Transactions on Power Electronics (TPEL), 2022

'Analysis of Position Estimation Error in Signal-Injection Sensorless Control Induced by Inverter dv/dt Based Current Measurement Noise' (Status: Published)
*Authors: Yoon-Ro Lee, Jiwon Yoo, **Inhwi Hwang**, Seung-Ki Sul*
IEEE Transactions on Power Electronics (TPEL), 2022

Conference

'Self-Synchronization Method for 3.2kW Totem-pole PFC Boost Converter' (Status: Will be submitted)
*Authors: **Inhwi Hwang**, Jaekeun Lee, Shenghui Cui*
IEEE Applied Power Electronics Conference and Exposition, 2024

'Time-Step-Adaptive-Bilinear (TSAB) Second-Order Digital Filter Design for Variable Sampling Frequency Control of Power Converter' (Status: Accepted)
*Authors: **Inhwi Hwang**, Jaekeun Lee, Shenghui Cui*
IEEE Energy Conversion Congression and Expo (ECCE), 2023

'Enhanced Dynamic Operation of Heavily Saturated IPMSM in Signal-Injection Sensorless Control' (Status: Published)
*Authors: **Inhwi Hwang**, Yong-Cheol Kwon, Seung-Ki Sul*
IEEE Energy Conversion Congression and Expo (ECCE), 2022

'Gain Scheduling of Full-Order Flux Observer for Sensorless PMSM Drives Considering Magnetic Spatial Harmonics' (Status: Published)
*Authors: Jiwon Yoo, **Inhwi Hwang**, Yoon-Ro Lee, Seung-Ki Sul*
IEEE Energy Conversion Congression and Expo (ECCE), 2021

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Honors

Research Assistant Funding Fall 2023
Commencement Valedictorian (Graduate Class Representative) in Graduation Ceremony Fall 2020
(Click here for speech video link)
Academic Scholarship, Kim Jeong-Sik Special Scholarship Spring 2020

Skills and Interests

Tools and Languages SiC power circuit design, DSP, Fusion360, Matlab, Simulink, Plecs, C, Latex, Python(Pytorch), R
Interests Wireless power transfer (Biomedical, Space-Solar power system), High-performance power electronics, Power semiconductor packaging, Grid-tied converters