POWER ELECTRONICS & RENEWABLE ENERGIES (PRE) COURSES AND SEMINARS

CIRCUITS AND SYSTEMS SOCIETY CHAPTER
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THE UNIVERSITY OF WESTERN AUSTRALIA

MODEL-BASED RELIABILITY EVALUATION OF POWER ELECTRONIC SYSTEMS

RSVP BY COB OF 04 JULY 2023
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DATE: TUESDAY, 11 July 2023
TIME: 15:00 TO 16:00 (GMT +8) [9:00 TO 10:00 (CET)]]
REGISTRATION: https://events.teams.microsoft.com/event/8a1e6f29-4a61-4187-9f3c-38575462a5e0@05894af0-cb28-46d8-8716-74cdb46e2226
AN ALLOCATED TIME FOR Q&A WILL BE PROVIDED FOLLOWING THE WEBINAR. AFTER REGISTERING FOR THE ONLINE WEBINAR, YOU WILL RECEIVE AN ACCESS LINK. THERE IS NO REGISTRATION FEE ASSOCIATED WITH THIS EVENT.

BIOGRAPHY

Dr. Ionuț Vernica (S'16, M'19) earned a B.Sc. degree in electrical engineering from Politehnica University of Bucharest, Romania, in 2014. He obtained M.Sc. and Ph.D. degrees in energy engineering from Aalborg University, Denmark, in 2016 and 2019, respectively. From 2019 to 2022, he worked as a Postdoctoral Researcher at Aalborg University, Denmark. Additionally, he served as a visiting researcher at Grundfos A/S and Danfoss Drives A/S in Denmark from January to April 2019. Since January 2023, he has been employed as a Power Electronics Application Developer at Plexim GmbH in Zürich, Switzerland. His research interests encompass IGBT power module and capacitor reliability, power device thermal management, and power electronic system design automation. Dr. Vernica received the "Best Originality Award" at the TECO Green Tech International Contest in Taipei, Taiwan, in 2019, and the "InnoExplorer" grant from the Innovation Fund of Denmark in 2021.

ABSTRACT

Due to the high cost of failure associated with power electronics, reliability is becoming a key factor in many energy conversion applications. The aim of this seminar is to provide a practical overview of a mission-profile-based reliability assessment procedure, which can be employed during the early design and developed stages of power electronic products. The methodology allows for quick lifetime prediction under realistic environmental/operating conditions, and thus, facilitating the reliability oriented design and optimization of power electronic systems. The analytical (e.g., electrical, thermal, lifetime) and statistical models, required for the reliability prediction of power electronics, alongside their underlying assumptions and uncertainties, will be presented in detail. The proposed methodology will afterwards be demonstrated on a practical motor drive study-case, in which, the lifetime of the IGBT power module will be investigated, under real-life operating conditions. The topics addressed in this seminar cover state-of-the-art research outcomes and are directed towards both entry-level and senior-level researchers or engineers, interested in the reliability analysis, and modeling of power electronic systems.

SPEAKER'S CONTACT DETAILS

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