

Invited lecture

Kaewunruen, Sakdirat

License:

Creative Commons: Attribution (CC BY)

Document Version

Peer reviewed version

Citation for published version (Harvard):

Kaewunruen, S 2022, 'Invited lecture: IoT, big data and AI applications to railway systems', 11th International Conference on Materials Science and Technology, Bangkok, Thailand, 29/08/22 - 31/08/22.

[Link to publication on Research at Birmingham portal](#)

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

Invited Lecture: IoT, Big Data and AI Applications to Railway Systems

Dr Sakdirat Kaewunruen

Abstract: Railway systems were born over 200 years ago, firstly in the UK. Their world-wide adoptions has been terribly sensational, from light-rail, metro, suburban, highspeed to freight systems. Over the past decades, most focuses in railway operations have been placed on RAMS (reliability, availability, maintainability, safety). Despite the fact that railway is the most environment-friendly mode of transport, its decision-making systems could still be relatively niche, non-interconnected, noninteractive, unsystemics, and perhaps unsustainable. This presentation will highlight recent progress of research and development on the Internet of Things (IoT), Big Data analytics, and Artificial Intelligence with real-world applications to railway systems. The session will discuss advanced sensor technologies used to collect essential digital data sets in railway systems such as customer experience, passenger safety, mechanical responses, actions, environmental loads and burdens. Recent trends and progress in the applications of machine learning to railway industry will be demonstrated to enhance not only system efficiency or effectiveness, but also sustainable development to its full potential.

Short biography: Dr Sakdirat Kaewunruen is a Reader in Railway and Civil Engineering at the University of Birmingham, United Kingdom. He has over 20 year experience in both railway industry and academia. He is a Fellow of Engineers Australia, a chartered engineer in both civil and structural engineering, an academic panel member of Permanent Way Institute, and a specialty chief editor of Frontiers in Built Environment. He has authored and co-authored over 500 technical publications, sits on 12 Editorial Boards and is a member of ISO and BSI standard committees for railway applications.