

Invited Talk

KEMAI Research Training Group GRK 3012/1



Prof. Dr. Aldo Faisal

**AI & Neuroscience, Imperial College London /
Digital Health, University of Bayreuth**

From John Snow to Nightingale AI

Abstract. My talk traces the intellectual arc from the birth of data driven medical science or modern foundation models in healthcare, using John Snow as a conceptual starting point and extending to our development of Nightingale AI. It examines how the core logic of data-driven inference—linking observations to actionable interventions—has evolved from statistics and causal reasoning to large-scale, multimodal machine learning. We will discuss how contemporary ML systems move beyond static prediction toward continuous patient modelling, integrating heterogeneous data streams (EHR, imaging, biosignals, behaviour) into unified latent representations. The talk will highlight the role of foundation models, reinforcement learning, and approaches in enabling this transition, as well as the constraints imposed by clinical validation, regulatory frameworks, and real-world deployment. The objective is to provide a principled view of how modern AI systems can be understood as a natural extension of data driven reasoning—while also identifying where fundamentally new methodological and conceptual challenges emerge.

Speaker Bio. Aldo Faisal is a Professor of AI & Neuroscience jointly at the Dept. of Bioengineering and the Dept. of Computing at Imperial College London, where he leads the Brain & Behaviour Lab. Aldo is also Director of the Behaviour Analytics Lab at the Data Science Institute. He is also Associate Investigator at the MRC London Institute of Medical Sciences and is affiliated faculty at the Gatsby Computational Neuroscience Unit (University College London). Aldo serves as an Associate editor for Nature Scientific Data and PLOS Computational Biology and has acted as conference chair, area chair, program chair in key conferences in the field (e.g. Neurotechnix, KDD, NIPS, IEEE BSN), in 2016 he was elected into the Global Futures Council of the World Economic Forum. Aldo received a number of awards and distinctions, including being scholar of the German National Merit Foundation (Studienstiftung des Deutsche Volkes; Undergraduate PhD), a Fellow of the Böhringer-Ingelheim Foundation for Basic Biomedical Research, elected as a Junior Research Fellow at the University of Cambridge (Wolfson College), and research prizes such as the Toyota Mobility Foundation award in 2018 (\$50,000). Aldo's lab featured regularly across global media (such as BBC, CNN, WIRED, TED, TEDx, New Scientist, Guardian, Times of India, etc.) and Scientific American voted his research on gaze-based control as 1st of 10 most transformative ideas for 2016.

Place & Time.

Schloss Reisensburg, Roter Saal
Wednesday, July 15, 2026 Time: 14:23 – 15:35