



COLLEGE of ENGINEERING AND PHYSICAL SCIENCES

SCHOOL OF COMPUTER SCIENCE

PhD Seminar 1

Tuesday December 7, 2021 at 12:30pm via Zoom

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*Semantic interoperability of
animal livestock data using graph databases*

Advisor: Dr. Deborah Stacey

AD Advisor: Dr. Theresa Bernardo [Population Medicine]

Advisory: Dr. David Calvert

Advisory: Dr. Andrew Hamilton-Wright

Abstract:

In order to leverage pre-existing data for models, estimates and decision-making, heterogeneous data from different sources need to be harmonized. However, the ability to combine, compare, use, and understand data from different sources is contingent on data being semantically interoperable.

In this seminar, the concept of semantic interoperability will be discussed using international livestock population data as an example. The importance of semantic interoperability will be highlighted using semantic problems that are relevant in the calculation of animal biomass, which is an important One Health measurement since it is used in greenhouse gas emission models, models of economic impact and livestock production, and Antimicrobial Resistance (AMR) calculations.

Approaches to semantic interoperability challenges will be introduced; it will be shown that graph databases can be used to solve the problem of semantic interoperability between data from different sources. Graph databases will be compared to other approaches to semantic interoperability, demonstrating that they provide an efficient and effective methodology that has advantages over ontologies and other structures that have been used for data (and semantic) interoperability.