

Title: Differentiable programming with Julia

Prof. Ronan Reilly

Abstract:

Differentiable programming is a paradigm whereby programs are structured to allow their components to be differentiated throughout, enabling optimisation and learning via techniques such as gradient descent. Most interestingly, from my perspective, it allows for the development of hybrid models involving a combination of physical simulations and artificial neural networks, combining the strengths of both approaches.

In this talk, I will give a short introduction to the Julia programming language and specifically the features that make it well-suited to differentiable programming. I will illustrate the talk with some examples from climate modelling and models of biologically realistic neural networks.