

# Learning the dynamics: from radial basis functions to reservoir computers.



THE UNIVERSITY OF  
**WESTERN**  
**AUSTRALIA**

Prof Michael Small

Theme Lead

**Theme 2**

2021-11-04

**Turing Institute** <http://www.turing.ac.uk>

Learning the dynamics: from radial basis functions to reservoir computers.

Summary: There has been a lot of recent interest in various computational methods that allow one to extract models of the deterministic evolution operator of a dynamical system from time series data. These methods have become increasingly successful as they are able to leverage increasing computational resource available today. I will start by contrasting these efforts against some earlier attempts to do this (including some of my own) and then move on to describe our recent work with reservoir computers. Viewed in this setting, reservoir computers are a pattern generator which appear particularly appropriate to the task of reconstructing dynamics as their memory mimics the role of Takens' theorem in delay reconstruction. I will briefly explore some of these ideas and finish by describing our attempts to quantify the performance of reservoirs and apply them to modelling tasks in industrial settings.

Zoom link: <https://turing-uk.zoom.us/j/5141752978>

Previous talks: <https://www.youtube.com/channel/UCetvKhuAbnuU1tidgCz9g0g/videos>

1