Braden Thorne presents - Understanding patterns in your maintenance data prevents failures

Approaches to analysing time series ultimately follow the same process; identify the pattern in the data then use that pattern to draw a conclusion. As a result there exists a plethora of methods for extracting these patterns, both for simple systems and more complex systems through dynamical system analysis. These methods work generally well for time series data sampled with sufficient frequency and precision, however issues begin to arise when the data we have is sampled infrequently or sporadically, and indeed at first glance it appears these methods can no longer be applied. I will discuss how we can still utilise these pattern extraction techniques with data about important events alone. I will focus on one specific dynamical system method which has shown impressive results in analysing financial and environmental event series, and I will highlight the direction of work in these fields. Finally, I will bring these ideas back to maintenance by relating them to a common event series in our context; maintenance work orders. This analysis facilitates finding patterns between failing assets, relating sensor data to asset health, and the eventual prediction and prevention of future failures.

About the speaker:

Braden completed his undergraduate degree in applied mathematics with first class honours at the University of Western Australia looking at applying dynamical system theory and machine learning to time series diagnosis, with an application to pump cavitation. He continued this work in his PhD through the centre, introducing the novel field of "reservoir time series analysis" for analysing complex time series with applications to classification and change point detection tasks, generalizations of real-world problems such as fault mode classification and early fault detection. Braden looks to continue exploring the application of dynamical system tools to maintenance contexts.

When Friday 3 May at 1.00pm

Where - Microsoft Teams - please see link below

Where - **Microsoft Teams** Link to Microsoft Teams

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