MSc Seminar

Friday August 5, 2022 at 1pm via Zoom

Steven French

Streamflow prediction using transformer models trained with spatial and temporal data

Advisor: Dr. Stefan Kremer
Advisory: Dr. Prasad Daggupati [School of Engineering]
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Abstract:

Extreme weather events are unfortunately becoming more and more common due to the rapidly changing climate. These events can lead to droughts and floods that can have devastating impacts on local communities. Traditionally, engineering firms use complex rule-based modelling software that are cumbersome and difficult to set up. Recent innovations in machine learning open up the potential for the use of neural networks to create data-driven forecasting models with high levels of accuracy.

We propose the use of transformer-based machine learning models trained with publicly available spatial and temporal data to predict extreme flow events. Initial trials show promise in this technology being used to inform hydrograph predictions for various climate regions across North America. This involves its potential in both short-term forecasting, and long-term hindcasting for ungauged locations.