



COLLEGE of ENGINEERING  
AND PHYSICAL SCIENCES

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SCHOOL OF COMPUTER SCIENCE

## PhD Qualifying Examination

**Jason Kemp**

**Thursday January 6, 2022 at 1pm via Zoom**

*RADAR LSTM Flood Predictions*

**Chair:** Dr. Joe Sawada

**Advisor:** Dr. Stefan Kremer

**Co-Advisor:** Dr. Genevieve Ali [SES]

**Non-Advisory:** Dr. Jana Levison [SoE]

**Non-Advisory:** Dr. Deborah Stacey

### **Abstract:**

Streamflow prediction models are used across the world to estimate the amount of water that will flow through watersheds in the near future. Frequently recent research into streamflow prediction uses LSTMs or other machine learning methods. A great deal of this research is conducted using datasets for pristine watersheds, meaning the watersheds have very little human interference. Our research puts the focus on a mixed use watershed used by multiple cities, forests, and large amounts of agriculture. Our first objective is to test the viability of an existing LSTM based model on this watershed. We then look at implementing a new type of streamflow prediction model using weather RADAR images with CNN-LSTM and ConvLSTM models. These models are very well suited to making predictions given gridded data. We hope that we are able to make accurate streamflow predictions using publicly available weather RADAR images.