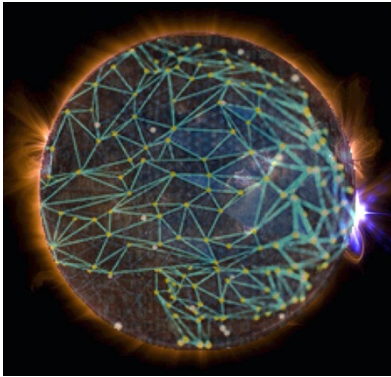


Space Weather Applications of Machine Intelligence (SWAMI) Seminar Series



Hosted by

Space Weather Technology, Research, and Engineering Center



Grand Challenge
UNIVERSITY OF COLORADO BOULDER
SPACE WEATHER CENTER

Thursday 10 September 2020, 11:30am – 12:30pm (MDT)

Zoom Session information at www.colorado.edu/spaceweather/events

MACHINE LEARNING EFFORTS ON SOLAR FLARE PREDICTIONS BY UOM TEAM

Yang Chen, University of Michigan

In this talk, we present our machine learning efforts, which show great promise towards early predictions of solar flare events. (1) We present a data pre-processing pipeline that is built to extract useful data from multiple sources -- Geostationary Operational Environmental Satellites (GOES) and Solar Dynamics Observatory (SDO)/Helioseismic and Magnetic Imager (HMI) and SDO/Atmospheric Imaging Assembly (AIA) -- to prepare inputs for machine learning algorithms. (2) For our strong/weak flare classification model, case studies show a significant increase in the prediction score around 20 hours before strong solar flare events, which implies that early precursors appear at least 20 hours prior to the peak of a flare event. (3) We develop a mixed Long Short Term Memory (LSTM) regression model to predict the maximum solar flare intensity within a 24-hour time window. (4) Our ongoing and future work will also be briefly mentioned.