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# Natural Disasters Intensity Analysis and Classification using Artificial Intelligence

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# Cyclone intensity evaluation:

### An application of state-of-art neuroevolution method can be developed for prediction of wind-intensity for tropical cyclones in the South Pacific region. The method employed data from cyclone wind-intensity taken for the last three decades. This employs Cooperative Coevolution method for training Elman recurrent neural networks for the prediction.

# Flood intensity evaluation:

### A hybrid deep learning based flood forecasting can be developed. This approach has been made use of daily lagged IF and precipitation time series data to determine flood situations at multiple forecast horizons. The practicality of the model can be tested using datasets from nine locations in Fiji.

# Storm intensity evaluation:

### A storm scale ensemble post-processing system based on ensemble machine learning algorithms, radar mosaic verification, and ensemble variable statistics can provide improved precipitation forecasts. Multiple machine learning models of varying complexity were applied to forecasts. Probabilistic, deterministic, and interval forecasts of 1-hour precipitation accumulation were created with the different models. Verification statistics showed that random forests, multiple logistic regression, and MARS provided significant improvements for probabilistic and continuous forecasts by both increasing the range of precipitation and probabilistic values predicted and by increasing the areal coverage of the precipitation forecasts