14ITWCVP

AI Training

Day 3

Climate Variables prediction using AI

1. OBJECTIVE: Time series climate data(temperature/streamflow) prediction
2. TASK: Familiarize with the Anaconda navigator
   1. Open Spyder (Python 3.8)
   2. Load the provided python script (make sure data and script in same folder)
   3. Take a tour of interface
      1. First import all the functions and classes
      2. check SciPy environment with the Keras deep learning library installed.
      3. Browse the folder where you have stored the data.
3. TASK: Tuning Hyperparameter
   1. Create optimized model
      1. Activation function: default sigmoid activation function is used for the LSTM blocks ( Relu could be explore)
      2. Optimizer function: Adam
      3. Epoch: The network is trained for 2 epochs and a batch size of 1 is used.
      4. Loss function: Mean squared error
      5. Batch Size: Batch Size = N
      6. Momentum:0.9
      7. Decay rate:
      8. Learning rate:0.01
      9. Save edits
   2. Model training
      1. Split the data into the training and testing datasets
      2. 70% of the data used to train the model, leaving the remaining 30% for testing the model.
      3. The network has a visible layer with 1 input, a hidden layer with 4 blocks or neurons, and an output layer that makes a single value prediction
      4. Save edits
4. TASK: Run Model
   1. Run the model
      1. generate predictions using the model for both the train and test dataset
      2. time series plot
      3. regression plot
5. OBJECTIVE: Regression Using the Window Method
6. TASKS:
   1. Use recent multiple time steps (the size of the window) to make the prediction for the next time step.
   2. Tune the model
   3. Determine prediction for 3, 7, 30-time steps
      1. time series plot
      2. regression plot