Week 1 Quiz

What is an example of a Univariate time series?

Baseball scores

Fashion items

Hour by hour temperature

Hour by hour weather

What is an example of a Multivariate time series?

Baseball scores

Hour by hour temperature

Hour by hour weather

Fashion items

What is imputed data?

A good prediction of future data

A bad prediction of future data

A projection of unknown (usually past or missing) data

Data that has been withheld for various reasons

A sound wave is a good example of time series data

True

False

What is Seasonality?

A regular change in shape of the data

Weather data

Data aligning to the 4 seasons of the calendar

Data that is only available at certain times of the year

What is a trend?

An overall consistent downward direction for data

An overall consistent upward direction for data

An overall consistent flat direction for data

An overall direction for data regardless of direction

In the context of time series, what is noise?

Data that doesn't have seasonality

Unpredictable changes in time series data

Data that doesn't have a trend

Sound waves forming a time series

What is autocorrelation?

Data that follows a predictable shape, even if the scale is different

Data that automatically lines up in trends

Data that doesn't have noise

Data that automatically lines up seasonally

What is a non-stationary time series?

One that moves seasonally

One that has a constructive event forming trend and seasonality

One that is consistent across all seasons

One that has a disruptive event breaking trend and seasonality

Week 2 Quiz

What is a windowed dataset?

The time series aligned to a fixed shape

There's no such thing

A consistent set of subsets of a time series

A fixed-size subset of a time series

What does 'drop_remainder=true' do?

It ensures that all data is used

It ensures that all rows in the data window are the same length by adding data

It ensures that all rows in the data window are the same length by cropping data

It ensures that the data is all the same shape

What's the correct line of code to split an n column window into n-1 columns for features and 1 column for a label

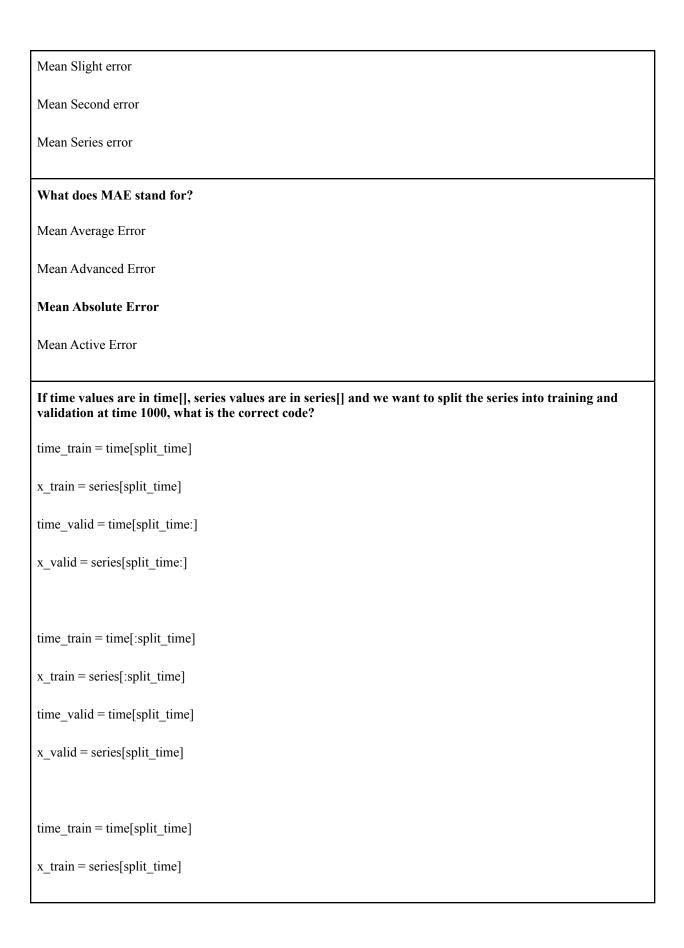dataset = dataset.map(lambda window: (window[n-1], window[1]))

dataset = dataset.map(lambda window: (window[:-1], window[-1:]))

dataset = dataset.map(lambda window: (window[-1:], window[:-1]))

dataset = dataset.map(lambda window: (window[n], window[1]))

What does MSE stand for?

Mean Squared error

Mean Slight error

Mean Second error

Mean Series error

What does MAE stand for?

Mean Average Error

Mean Advanced Error

Mean Absolute Error

Mean Active Error

If time values are in time[], series values are in series[] and we want to split the series into training and validation at time 1000, what is the correct code?

time_train = time[split_time]

x_train = series[split_time]

time_valid = time[split_time:]

x_valid = series[split_time:]

time_train = time[:split_time]

x_train = series[:split_time]

time_valid = time[split_time]

x_valid = series[split_time]

time_train = time[split_time]

x_train = series[split_time]

time_valid = time[split_time]

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time_train = time[:split_time]

x_train = series[:split_time]

time_valid = time[split_time:]

x_valid = series[split_time:]

If you want to inspect the learned parameters in a layer after training, what's a good technique to use?

Iterate through the layers dataset of the model to find the layer you want

Decompile the model and inspect the parameter set for that layer

Run the model with unit data and inspect the output for that layer

Assign a variable to the layer and add it to the model using that variable. Inspect its properties after training

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How do you set the learning rate of the SGD optimizer?

You can't set it

Use the Rate property

Use the RateOfLearning property

Use the lr property

If you want to amend the learning rate of the optimizer on the fly, after each epoch, what do you do?

Use a LearningRateScheduler and pass it as a parameter to a callback

Callback to a custom function and change the SGD property

Use a LearningRateScheduler object in the callbacks namespace and assign that to the callback

You can't set it

Week 3 Quiz

If X is the standard notation for the input to an RNN, what are the standard notations for the outputs?

Y

H

Y(hat) and H

H(hat) and Y

What is a sequence to vector if an RNN has 30 cells numbered 0 to 29

The Y(hat) for the first cell

The Y(hat) for the last cell

The average Y(hat) for all 30 cells

The total Y(hat) for all cells

What does a Lambda layer in a neural network do?

Changes the shape of the input or output data

There are no Lambda layers in a neural network

Allows you to execute arbitrary code while training

Pauses training without a callback

What does the axis parameter of tf.expand_dims do?

Defines the dimension index at which you will expand the shape of the tensor

Defines the axis around which to expand the dimensions

Defines if the tensor is X or Y

Defines the dimension index to remove when you expand the tensor

A new loss function was introduced in this module, named after a famous statistician. What is it called?

Hubble loss

Huber loss

Hyatt loss

Hawking loss

What's the primary difference between a simple RNN and an LSTM

LSTMs have a single output, RNNs have multiple

In addition to the H output, LSTMs have a cell state that runs across all cells

LSTMs have multiple outputs, RNNs have a single one

In addition to the H output, RNNs have a cell state that runs across all cells

If you want to clear out all temporary variables that tensorflow might have from previous sessions, what code do you run?

tf.keras.backend.clear_session()

tf.cache.clear_session()

tf.cache.backend.clear_session()

tf.keras.clear_session

What happens if you define a neural network with these two layers?

tf.keras.layers.Bidirectional(tf.keras.layers.LSTM(32)),

tf.keras.layers.Bidirectional(tf.keras.layers.LSTM(32)),

tf.keras.layers.Dense(1),

Your model will compile and run correctly

Your model will fail because you have the same number of cells in each LSTM

Your model will fail because you need return_sequences=True after the first LSTM layer

Your model will fail because you need return_sequences=True after each LSTM layer

Week 4 Quiz

How do you add a 1 dimensional convolution to your model for predicting time series data?

Use a 1DConvolution layer type

Use a 1DConv layer type

Use a Convolution1D layer type

Use a Conv1D layer type

What's the input shape for a univariate time series to a Conv1D?

[]

[None, 1]

[1, None]

[1]

You used a sunspots dataset that was stored in CSV. What's the name of the Python library used to read CSVs?

PyCSV

CommaSeparatedValues

CSV

PyFiles

If your CSV file has a header that you don't want to read into your dataset, what do you execute before iterating through the file using a 'reader' object?

reader.ignore_header()

reader.next

next(reader)

reader.read(next)

When you read a row from a reader and want to cast column 2 to another data type, for example, a float, what's the correct syntax?

Convert.toFloat(row[2])

float(row[2])

float f = row[2].read()

You can't. It needs to be read into a buffer and a new float instantiated from the buffer

What was the sunspot seasonality?

11 years

11 or 22 years depending on who you ask

4 times a year

22 years

After studying this course, what neural network type do you think is best for predicting time series like our sunspots dataset?

DNN

Convolutions

A combination of all of the above

RNN / LSTM

Why is MAE a good analytic for measuring accuracy of predictions for time series?

It biases towards small errors

It only counts positive errors

It doesn't heavily punish larger errors like square errors do

It punishes larger errors