

# **AI Methods Coursework**

## **ANN Implementation and Modelling**

# AI Methods - Coursework

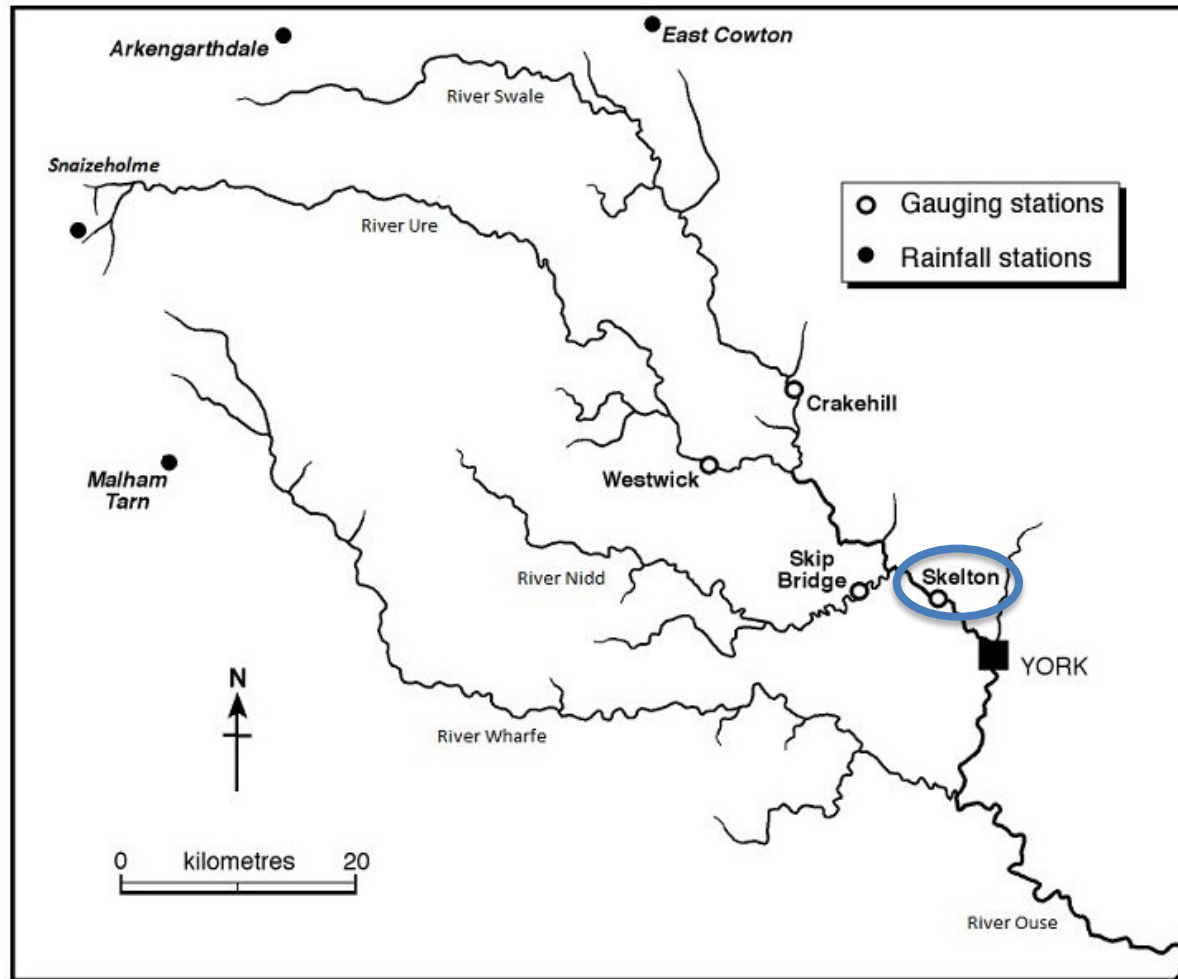
- 20%
- Given out week 2
- Lab sessions week 5
- Due – week 8
- Submit either Word / PDF files – as many as you need. Eg program listing in one file, report in another

# Data Set – River Ouse

January 2021



# Data Set



# Data Set

	Flow - Cumecs				Rainfall - mm			
	Crakehill	Skip Bridge	Westwick	Skelton	Arkengarth dale	East Cowton	Malham Tarn	Snaizeholme
01/01/1993	10.4	4.393	9.291	26.1	0	0	0	4
02/01/1993	9.95	4.239	8.622	24.86	0	0	0.8	0
03/01/1993	9.46	4.124	8.057	23.6	0	0	0.8	0
04/01/1993	9.41	4.363	7.925	23.47	2.4	24.8	0.8	61.6
.	.	.	.	.	.	.	.	.

1993 – 1996 (approx. 1460 data points)

# Stages

- 1) Appropriate data pre-processing of the supplied data set;
- 2) Implementation of the algorithm in an appropriate language;
- 3) Documentation and commenting of this implementation;
- 4) Appropriate training, configuration and weight adjustment of the ANN model;
- 5) Appropriate evaluation of the chosen ANN;
- 6) Comparison with a simple data driven model such as a simple multiple linear regression model (for example, see LINEST in Excel).
- 7) A report detailing the above process and discussing the evaluation of the model.



# Language

- You should NOT use numerical computing environments (such as MATLAB) or pre-written neural network libraries (although other libraries, for example mathematical functions, are acceptable).
- Typical languages you could use would be Python, Java, C#, C++, or C.
- I am NOT running your program. I need to see the code listing; and I can see if the program works from the results you present. No results means very few marks for the program as I don't know if it works or not.

# Marking Scheme

1. Data pre-processing (including cleansing and data splitting, identifying predictors) – 15%;
2. Implementation of the MLP algorithm (including modifications / improvements) – 35%;
3. Training and network selection – 20%;
4. Evaluation of final model (including comparisons between different modifications to the algorithm) – 20%;
5. Comparison with another data driven model – 10%;