**National Taiwan University Introduction to Machine Learning and Deep Learning**

Department of Civil Engineering Instructor: C.-S. CHEN

**Homework 2 Report**

**Essay and Programming, Due 21:00, Wednesday, October 11, 2023**

**Student ID: R11234567**

**Name: xxx**

**1. Consider a five-bit representation** 0\_1\_1 **with the following ground truth. Please list all the possible target functions.**

**2. Report your error rate using 5 training examples and 12 training examples.**

|  |  |
| --- | --- |
| **5 training examples** | **12 training examples** |
|  |  |

**3.**

**(a) Calculate and report the expected out-of-sample error and its bias and variance components.**

|  |  |  |
| --- | --- | --- |
| **error** | **Bias** | **variance** |
|  |  |  |

**(b)** **Write a short essay to rationalize and comment on your findings.**

**4.**

**4.**

**(a) Calculate and report the expected out-of-sample error and its bias and variance components.**

|  |  |
| --- | --- |
| **Bias** | **variance** |
|  |  |

**(b)** **Write a short essay to rationalize and comment on your findings.**

**5.** **Please plot the mean score of training and validation curves using a polynomial regression model with 3-fold cross validation**

**Submission Format**

Please convert HW2\_report\_template.docx to HW2\_report.pdf.