

FYS-STK4155 Project 1

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Abstract

1 Introduction

yvyecjyukioyjfchdxcgfjhbkl

2 Data

3 Method

4 Results

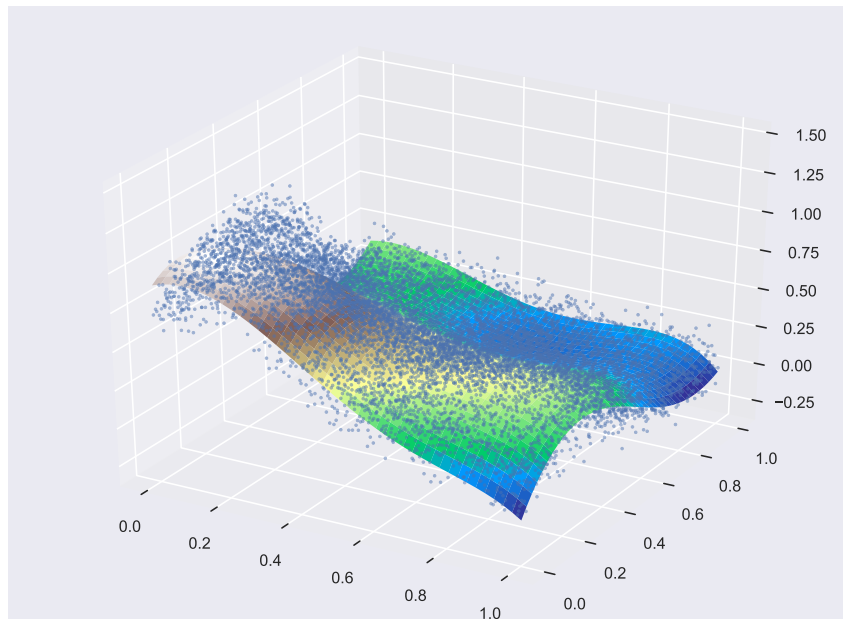


Figure 1: The resulting function after performing a standard least square regression analysis using polynomials in x and y up to fifth order on the Franke function

	β_0	β_1	β_2	β_3	β_4	β_5	β_6	β_7	β_8	β_9	β_{10}	β_{11}	β_{12}	β_{13}	β_{14}	β_{15}	β_{16}
SLS	0.00789	0.322	2.46	4.81	5.61	1.76	0.322	1.85	4.3	5.97	2.83	2.46	4.3	5.97	4.23	4.81	5.97
k -fold	0.0321	4.03	94	474	517	79.5	4.03	57.3	260	301	60.1	93.9	260	261	57.1	474	301
	β_{17}	β_{18}	β_{19}	β_{20}													
SLS	4.23	5.61	2.83	1.76													
k -fold	57.1	517	60.1	79.5													

Table 1: β for part a and b

5 Discussion

	MSE	R^2
SLS	0.015	0.84
k -fold	0.012	0.87

Table 2: MSE and R2 for a and b

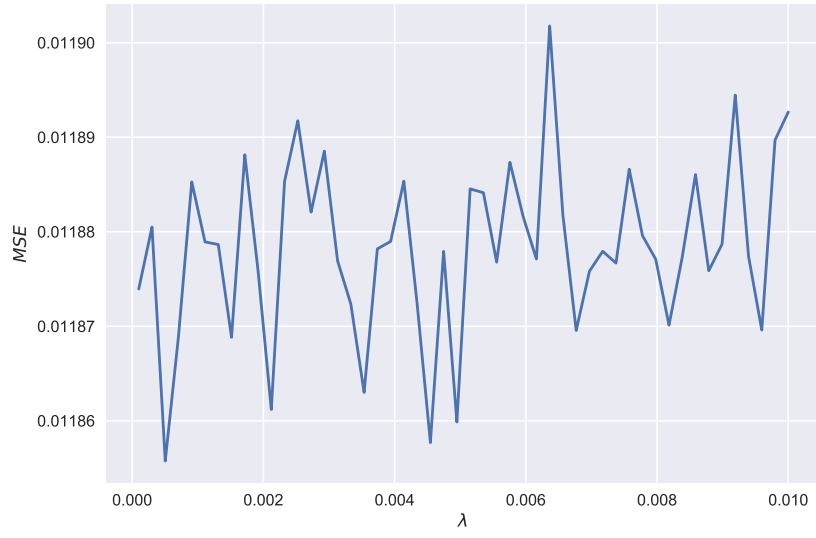


Figure 2: The Mean Squared Error for the Ridge method for different values of λ

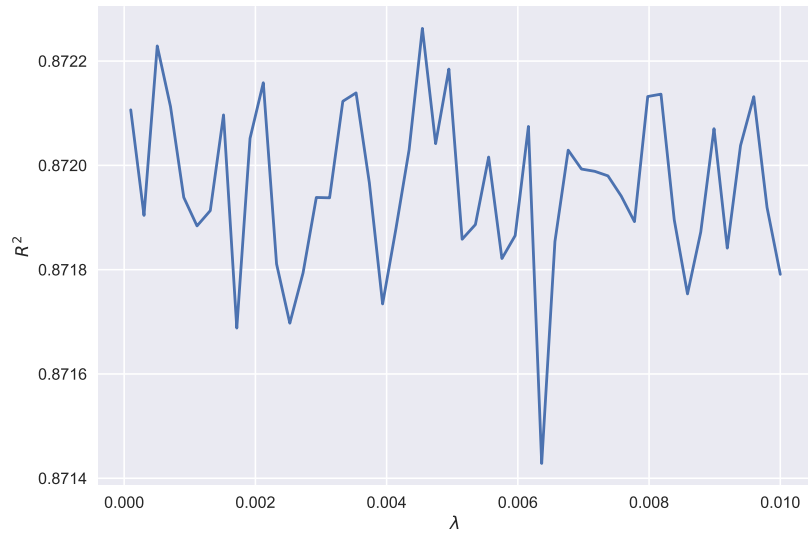


Figure 3: R^2 -score for the Ridge method for different values of λ

6 Appendix

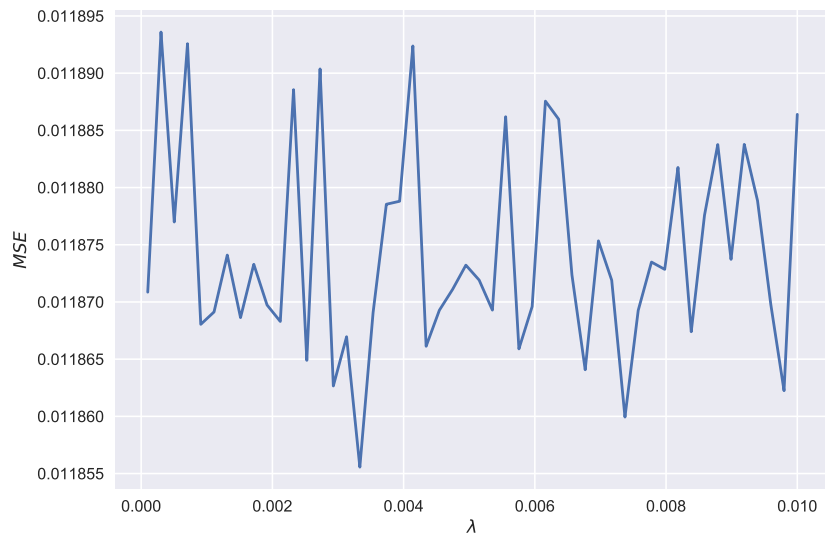


Figure 4: The Mean Squared Error for the Lasso method for different values of λ

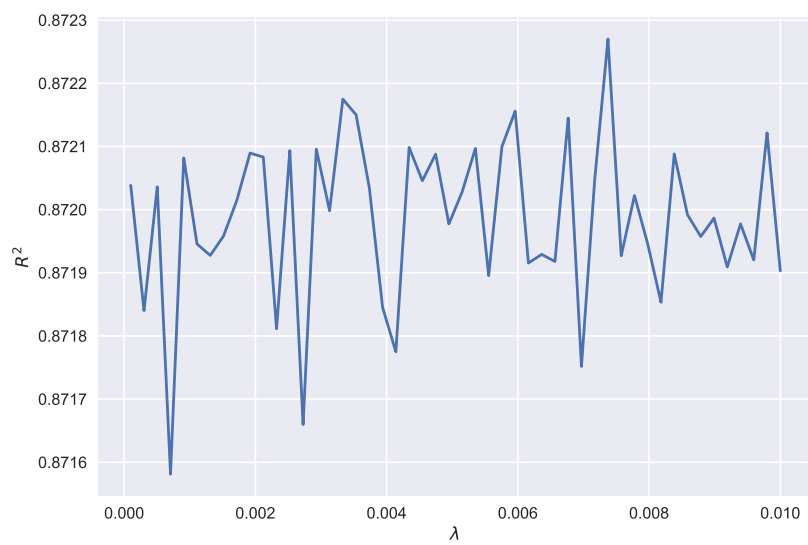


Figure 5: R^2 -score for the Lasso method for different values of λ

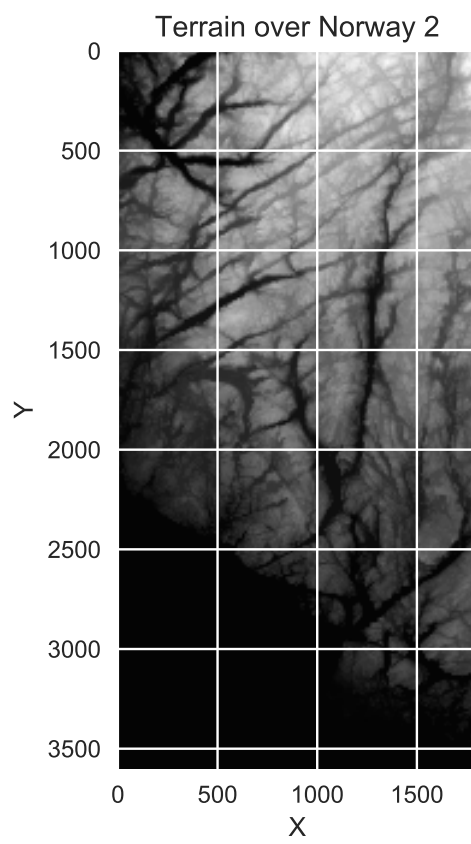


Figure 6: The terrain-data we are studying, from Møsvatn Austfjell in Norway