

Annexure

Optimization in Machine Learning

Duration: 1.5-hour Lecture per week

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<https://shiv98.online>

Week	Topic	Lecture/ Lab
1	Introduction to Optimization Theory	Lecture
2	Introduction to Convex and Non Convex Functions	Lecture
3	Gradient Descent	Lecture
4	Gradient Descent	Lab
5	Types of Gradient Descent	Lecture + Lab
6	Gradient Descent with Momentum	Lecture + Lab
7	Adam Optimization	Lecture
8	Adam Optimization	Lab
9	Newton Raphson Method	Lecture + Lab
10	Gauss Newton Method	Lecture + Lab
11	Introduction to Linear Programming	Lecture
12	Linear Programming in Python	Lab
13	Linear Programming in Python	Lab
14	Non-Linear Programming	Lecture
15	Dual Problem	Lecture
16	KKT conditions and SVM	Lecture + Lab
17	Coordinate Descent	Lecture
18	Coordinate Descent	Lab
19	Max-Min Problems	Lecture
20	Max-Min Problems	Lecture + Lab
21	Other Advance Methods (if time permits)	Lecture + Lab

Table 1: Optimization in Machine Learning week-wise course layout.