

Project “Hessian Matrices and : ”
Title
IB3702 Mathematics for Machine Learning

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1 Introduction

1.1 Hessian Matrix

1.1.1 Motivation

- Context
 - Machine learning
 - Loss function
- Goal
 - Accelerate finding minimum

1.1.2 Context

- Machine learning
- Loss function

1.1.3 Goal

- Accelerate finding minimum

1.2 Scope

- Gradient descent
- Newton's method 1 variable
- Newton's method 2 variables
- Role of eigenvalue
- Hessian matrices

1.3 Results

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2 Preliminaries

2.1 Notation

2.2 Concepts

2.3 Techniques

- Calculating derivative
- Calculating second derivative
- Computing eigen values

2.4 Problems

2.4.1 Problem 1

2.4.2 Problem 2

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3 Methods

- Gradient descent
- Newton's method 1 variable

- Newtons method 2 variables
- Role of eigenvalue
- Hessian matrices
- Examples and metaphors

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4 Numerical Examples

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5 Collaboration

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6 Reflection

6.1 Student a

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6.2 Student b

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