

HỌC THỐNG KÊ

Statistical Learning

Introduction.pdf

Đăng nhập

Statistical learning

Trang 1 / 26

Ngô Minh Nhựt

2024

- Ôn tập xác suất thống kê
- Ôn tập đại số tuyến tính
- Thuật toán
- Tools

Week	Topic	Week	Topic
1	Introduction	8	Support vector machine
2	Linear regression	9	K-mean
3	Logistic regression	10	Dimensionality reduction
4	Overfitting and model validation	11	Decision tree
5	Neural network		
6	Midterm test		
7	Convolutional neural network		



ML - Course:

Nội dung thi giữa kỳ:

Week	Topic
1	Introduction
2	Linear regression Test
3	Logistic regression
4	Overfitting and model validation
5	Neural network

- Week 1:
 - Introducing the course syllabus
 - Reading the chapter 5 of "deep learning"
 - Watching the video of "learning is feasible" of Caltech
 - Perceptron Model
- Week 2:
 - Linear regression
 - Gradient descent
 - Computational graph
- Week 3:
 - Logistic regression
- Week 4:
 - Softmax regression
 - Over-fitting vs under-fitting
- Week 5:
 - Decision tree
- Week 6:
 - Instanced based learning
 - Statistical learning
- Week 7:
 - Statistical learning (cont.)
- Week 8:
 - Ensemble
- Week 9:
 - Support vector machine
 - Neural network
- Week 10: RNN, LTSM, Transformer
- Week 11: Reinforcement learning, Review

LINEAR REGRESSION



2. Linear regression.pdf



Đăng nhập

{
Hàm chi phí
Hàm lỗi
Hàm mới nhất

$$J(\theta_0, \theta_1) = \sum_{i=1}^m \frac{1}{2m} (\theta_0 + \theta_1 x^i - y^i)^2$$

$$\Rightarrow \frac{dJ}{d\theta_0} = \frac{1}{2m} \sum_{i=1}^m 2(\theta_0 + \theta_1 x^i - y^i) \cdot 1$$

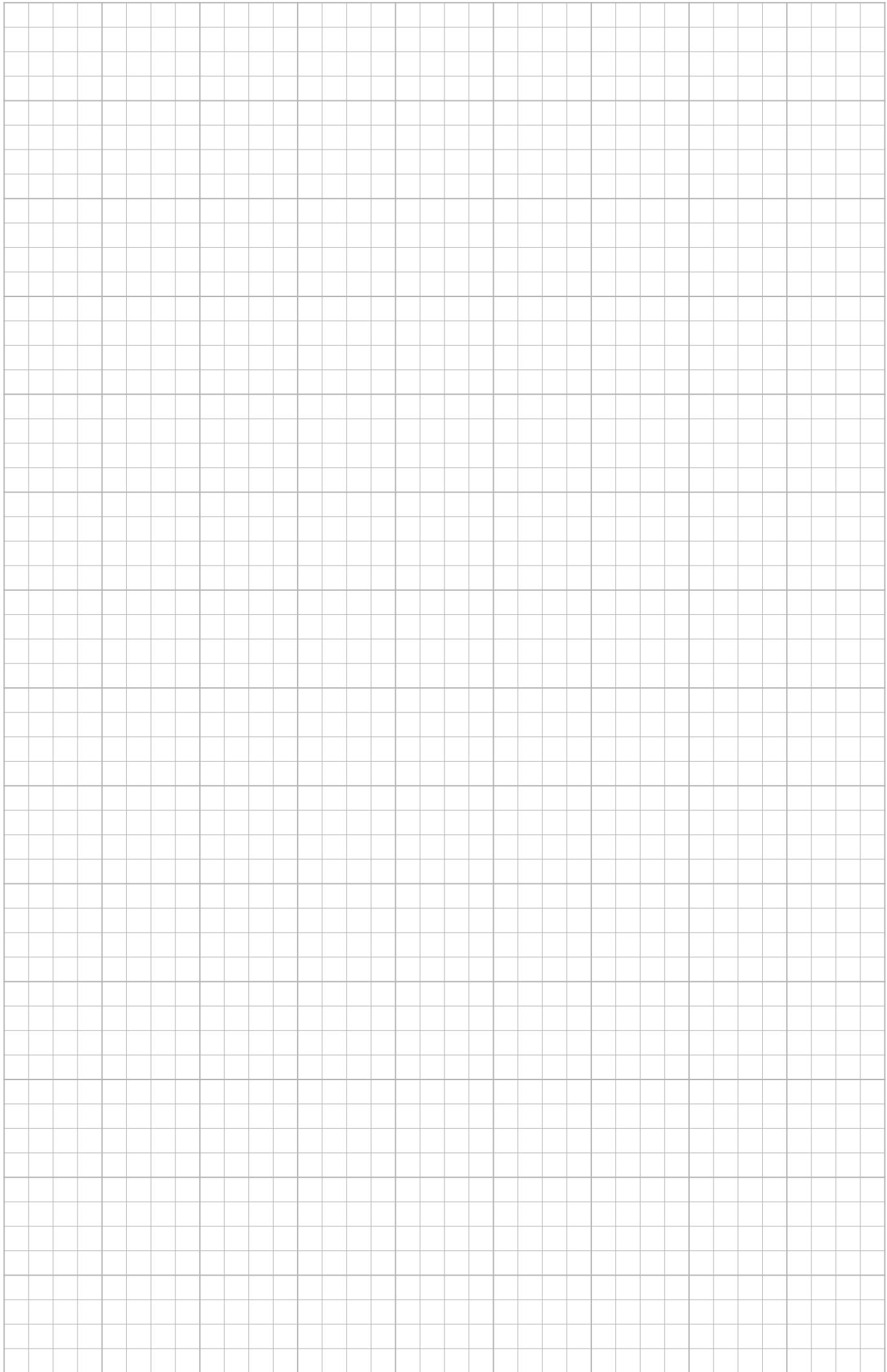
Vecto gradient

$$\left(\frac{dJ}{d\theta_0}, \frac{dJ}{d\theta_1} \right)$$

Lặp cho đến khi hội tụ

{

$$\begin{aligned}\theta_0 &= \theta_0 - \alpha \frac{dJ}{d\theta_0} \\ \theta_1 &= \theta_1 - \alpha \frac{dJ}{d\theta_1}\end{aligned}$$



LOGISTIC REGRESSION

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$$y = x^2 \Rightarrow f(y) = \begin{cases} 1 & , 0 \leq x \leq 1 \\ 0 & , \end{cases}$$

$$f(x^2) = \begin{cases} 1 & , 0 \leq x^2 \leq 1 \\ 0 & , \end{cases}$$

$$\Rightarrow \int_0^1 f(x^2) dx = \int_0^1 1 dx = 1$$

$$f(x) = \begin{cases} 1 & , 0 \leq x \leq 1 \\ 0 & , \text{ otherwise} \end{cases}$$

OVERFITTING AND MODEL VALIDATION



4. Regularization and Validation.pdf



Đăng nhập

Overfitting, regularization, và kiểm tra mô hình

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NEURAL NETWORK



5. Neural network.pdf



Đăng nhập

Mạng nơ ron nhân tạo

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