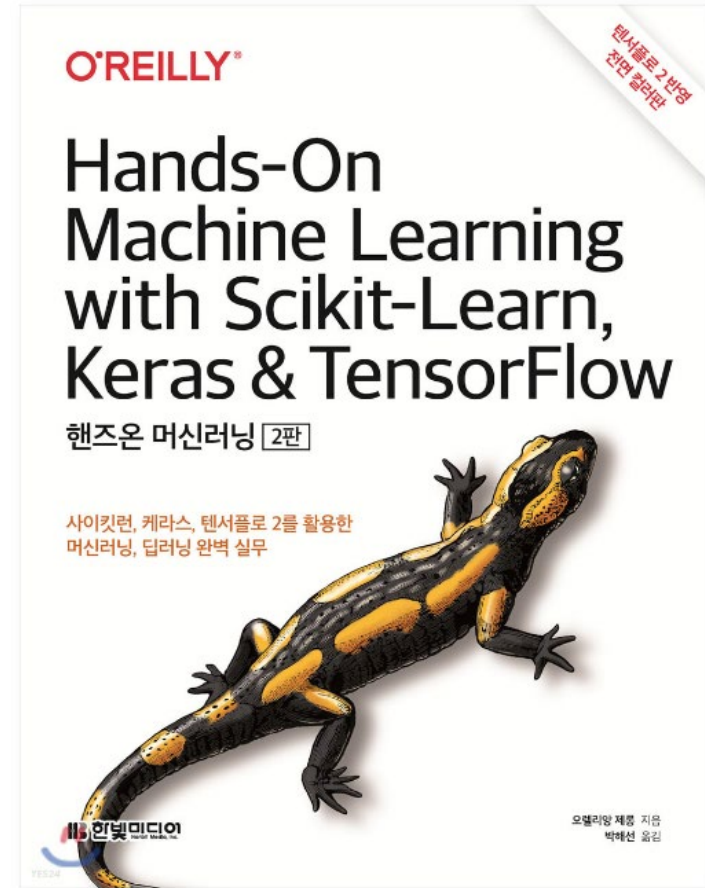
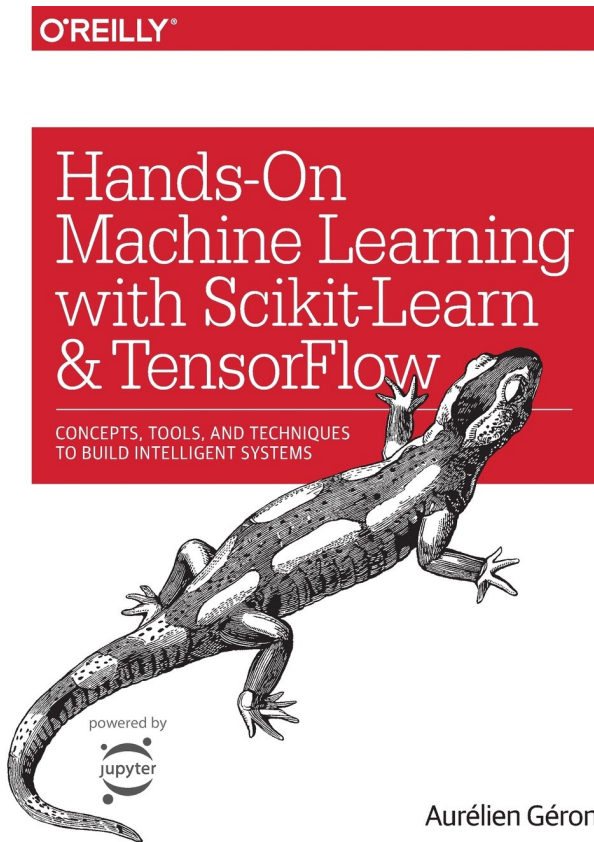




MACHINE LEARNING

MACHINE LEARNING STUDY 2022 WINTER

TEXTBOOK



Optional

PROCESS

Session 0

I ntroduce

- STUDY GOALS
- STUDY KEYPOINTS

P lan & Details

- STUDY DETAILS
- WEEKLY TASKS
- STUDY PLANS

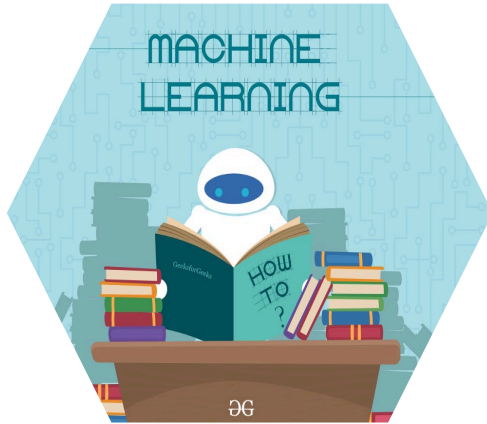
Q nA & Team Building

- TEAM BUILDING
- FIX TOPIC
- Q&A & NETWORKING TIME



INTRODUCE

STUDY GOALS



BASIC

MACHINE LEARNING STUDY 2022 WINTER

Machine Learning Basics and Utilization Study

Learn about the basic algorithms of Machine Learning

Acquire implementation capability based on theory or formula

Learning quickly through project experience with understood Machine Learning algorithms

Overall Level

Basic

Intermediate

Hard

Theory

Project



INTRODUCE

STUDY KEYPOINTS



GROUP STUDY

Group-based
Projects and Presentations



TERM PROJECT

Toy projects using
ML algorithms



WEEKLY MEETING

Weekly meeting on
Every Tuesday 6:00 PM

PLAN

WEEKLY TASKS



PERSONER TASK

Submit Preliminary
research about topic of the
next presentation



GROUP TASK

Term Project

Prepare a presentation slide

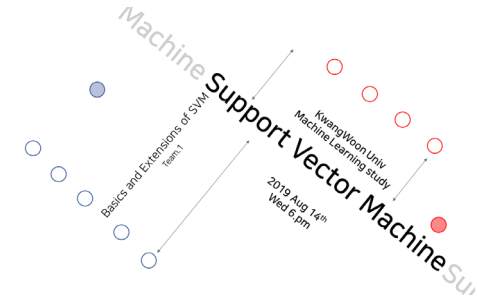
※ Presentations should be
written in English

※ Presenter will be
assigned randomly

'Warning' to all team member
If presentation is not prepared
3 warnings == expulsion

EXAMPLE

Section PPT



Definition of SVM

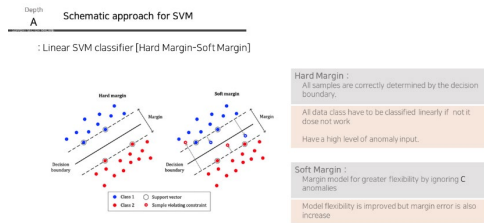
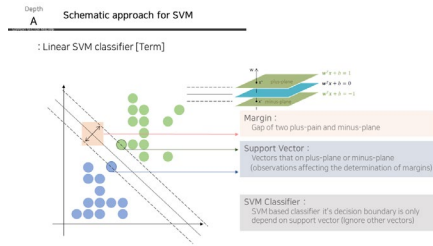
Support Vector Machine

Neural Nets

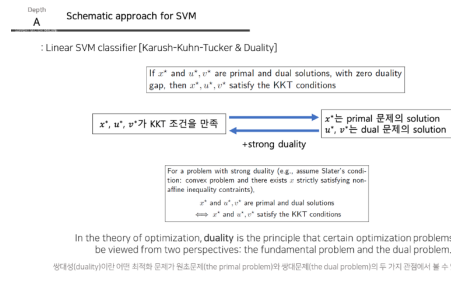
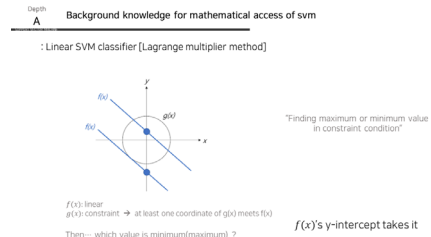
Input - set of (input, output) training pair samples
Output - set of weights w

In SVM use the optimization of maximizing the margin ("street width") to reduce the number of weights

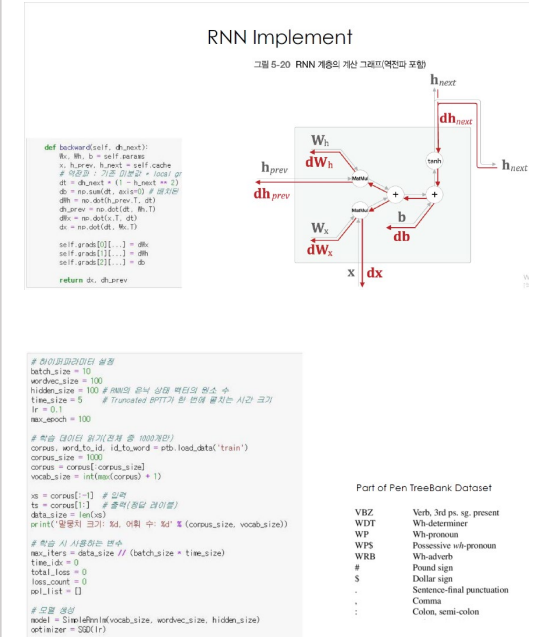
< Intro >



< Graphical Inst >



< Mathematical Inst >



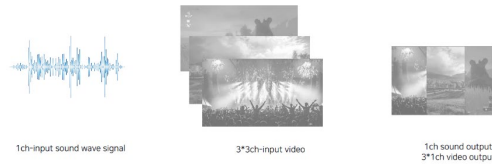
< Implement >

EXAMPLE

Progress PPT & Weekly Assignment

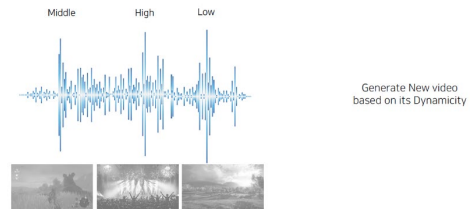
Section 1 Introduction

Image-Sound Match Algorithm based on Dynamicity Values that extracted via Soundwave Form and Image Channel



Section 1 Introduction

Image-Sound Match Algorithm based on Dynamicity Values that extracted via Soundwave Form and Image Channel

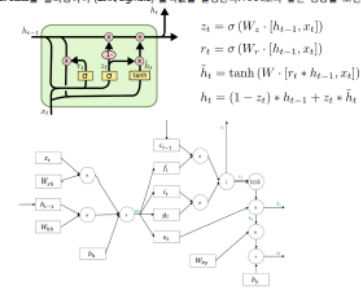


< Project Progress >

KW ML STUDY #3, #4 | 제출자 주혜경 | 2019.08.01

Topic #4 Long Short-Term Memory (LSTM)

LSTM은 RNN의 긴 의존 기간의 vanishing gradient 문제를 극복하기 위해 설계되었다. 기본적인 RNN은 NN 모듈을 반복하는 채인 형태를 갖는다. LSTM은 각 반복 모듈에 cell-state를 추가한 채인 형태이다. 직전 시점의 그래디언트 값에 영향을 받아 cell-state의 하인 state가 재귀적으로 구해진다. Cell-state는 gate (sigmoid, dot)를 통해서 정보를 더하거나(가) 제거하는(잊음) 기능을 수행한다. 세 게이트는 새로운 정보를 잊을지 결정하고, 새로운 정보를 기억할 지 결정하여 다음 cell-state를 갱신하고, 이 새 cell-state를 밀려들려 (tanh, sigmoid) 숨박값을 결정한다. RNN보다 좋은 성능을 보인다.



<Preliminary research>

PLAN

STUDY PLANS

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3 Meetup #0	4	5	6	7
8	9	10 Meetup #1	11	12	13	14
15	16	17 Meetup #2	18	19	20	21
22	23	24	25	26	27	28
29	30	31 Meetup #3	1	2	3	4

Jan

Meetup #0

- Introduce Study
- Team-Building & Set Topic

Meetup #1

- Basic of Machine Learning (1)
- Topic Presentation #1 – Basic Probability Theorems and Metrics for ML

Meetup #2

- Basic of Machine Learning (2)
- Topic Presentation #2 → k-means and k-Nearest Neighbor algorithm
- Pre-conference: Project presentation

Meetup #3

- Topic Presentation #3 — Linear Regression and Logistic Regression
- Project Progress sharing (1/3)

PLAN

STUDY PLANS

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29 →	30	31 Meetup #3	1 →	2	3	4
5 →	6	7 Meetup #4	8 →	9	10	11
12 →	13	14 Meetup #5	15 →	16	17	18
19 →	20	21 Meetup #6	22	23	24	25
26	27	28	9	10	11	12

Feb

Meetup#4

- Topic Presentation #4 - Decision Tree and Random Forest
- Project Progress sharing (2/3)

Meetup#5

- Topic Presentation #5 - Dimensionality Reduction
- Project Progress sharing (3/3)

Meetup#6

- Final Project Presentation

Team-Building

TOPICS

List of Topic

- Topic Presentation #1 - Basic Probability Theorems and Metrics for ML
- Topic Presentation #2 - K-means and K-Nearest Neighbors
- Topic Presentation #3 - Linear Regression and Logistic Regression
- Topic Presentation #4 - Decision Tree and Random Forest
- Topic Presentation #5 - Dimensionality Reduction

Easy  Hard

TOPIC	TOPIC 1	TOPIC 2	TOPIC 3	TOPIC 4	TOPIC 5
Team	Jiwoon	B, F	C, D	A, G	E

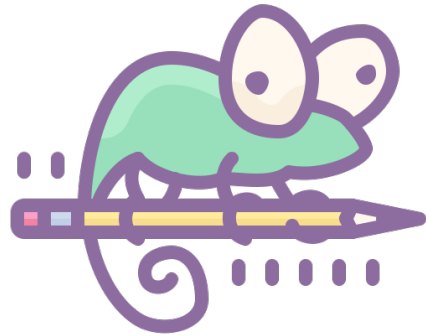
Team-Building

Team Build

TEAM A	김민지	정현기	윤태호	양지석
TEAM B	이지홍	정성현	오민성	
TEAM C	이정훈	김효민	김준혁	
TEAM D	김기수	황정원	류한웅	
TEAM E	심재윤	이혜미	박정원	장우현
Team F	졸업작품팀1			
Team G	졸업작품팀2			

TOPIC	TOPIC 1	TOPIC 2	TOPIC 3	TOPIC 4	TOPIC 5
Team	Jiwoon	B, F	C, D	A, G	E

Q&A



Jiwoon Lee(이지운)

Email. metr0jw@outlook.com

Phone. +82-10-3326-2914

Kwangwoon University

School of Computer Information and Engineering

Member of BCML Lab.