

# 생체신호마이닝

wk01 :

## Introduction to PDM



Physiological Data Mining (PDM)

INJE University

2<sup>nd</sup> semester, 2023

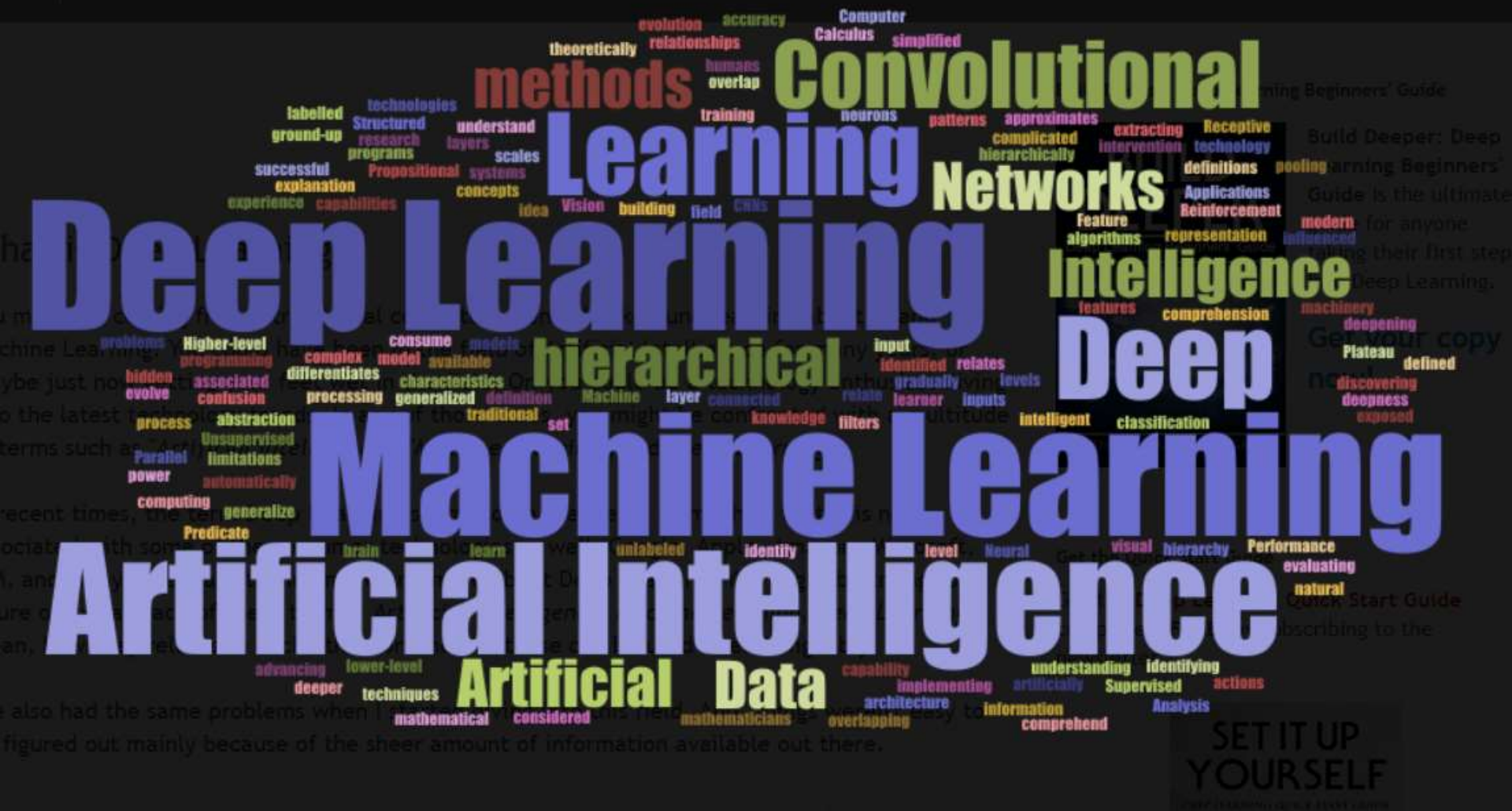
Email : [chaos21c@gmail.com](mailto:chaos21c@gmail.com)

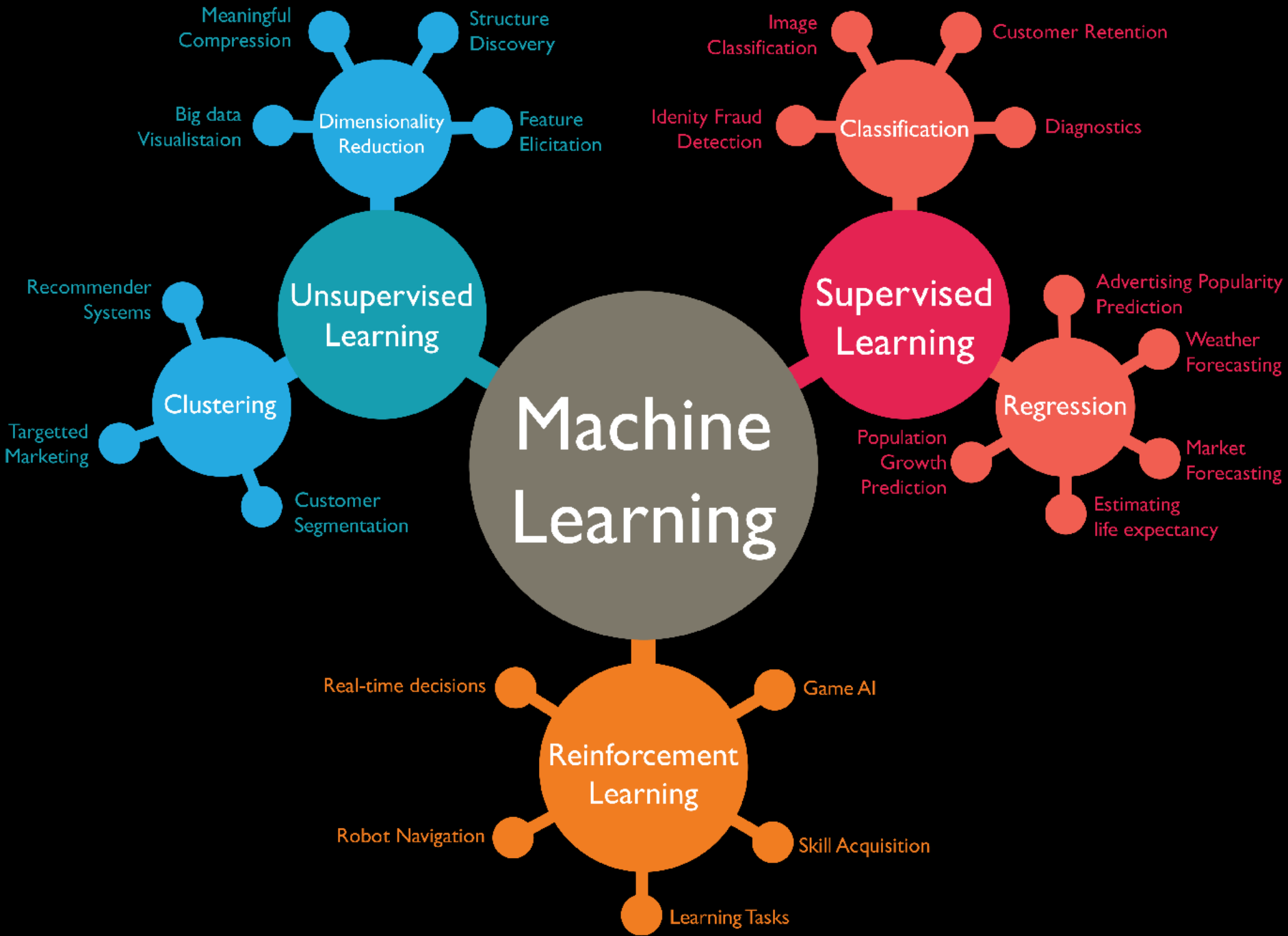


# My ID

ID	성명
PDM01	강민석
PDM02	박미르
PDM03	송재운
PDM04	정용철
PDM05	정종빈
PDM06	천윤서
PDM07	한유태
PDM08	현재진
PDM09	황해성

위의 **id**를 이용해서 **github**에 **repo**를 만드시오.





15%

**PYTHON**

# PROJECTIONS OF FUTURE TRAFFIC FOR MAJOR PROGRAMMING LANGUAGES

10%

**JAVASCRIPT**  
**JAVA**

5%

**C#**

**PHP**

**C++**

**2020**

**2012**

**2014**

**2016**

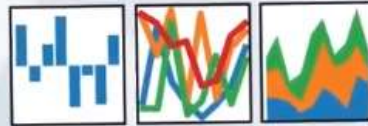
**2018**





pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



Flask django

web development,  
one drop at a time

# Mobile python

• JupyterLab · Python

로딩중...

TensorFlow.js

Getting Started

Tutorials & Guides

API Reference

FAQ

TRY IT LIVE!

GITHUB



A JavaScript library for training and deploying ML models in  
the browser and on Node.js

## Develop ML with JavaScript

Use flexible and intuitive APIs to build and train models from scratch using the low-level JavaScript linear algebra library or the high-level layers API

## Run Existing Models

Use TensorFlow.js model converters to run pre-existing TensorFlow models right in the browser or under Node.js.

## Retrain Existing Models

Retrain pre-existing ML models using sensor data connected to the browser, or other client-side data.

# AI deployment using python

## → **streamlit**

### Set some hyperparameters

Select batch size

32

Select number of epochs

20

Activation function of CONV2D

relu

Loss function

categorical\_crossentropy

Optimizer

Adam

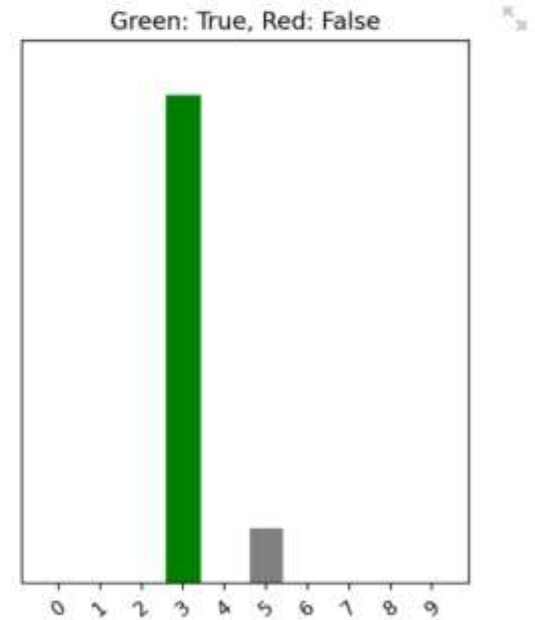
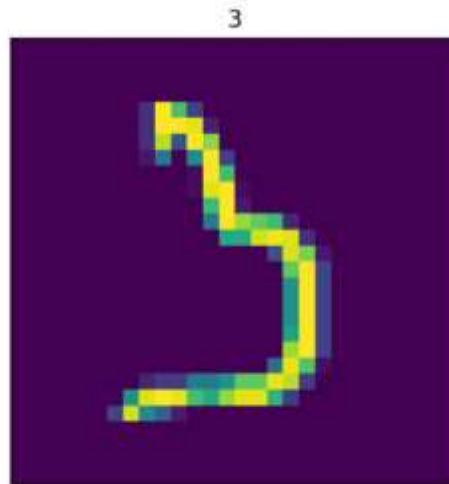
Current model

loss: 0.39

### Visualizing results: mnist

☒ Show random prediction results

Test image-883: Classified correctly





# Python Tools

## Python

- **numpy**, **matplotlib**, **pandas**, ...

## Tensorflow

## Pytorch

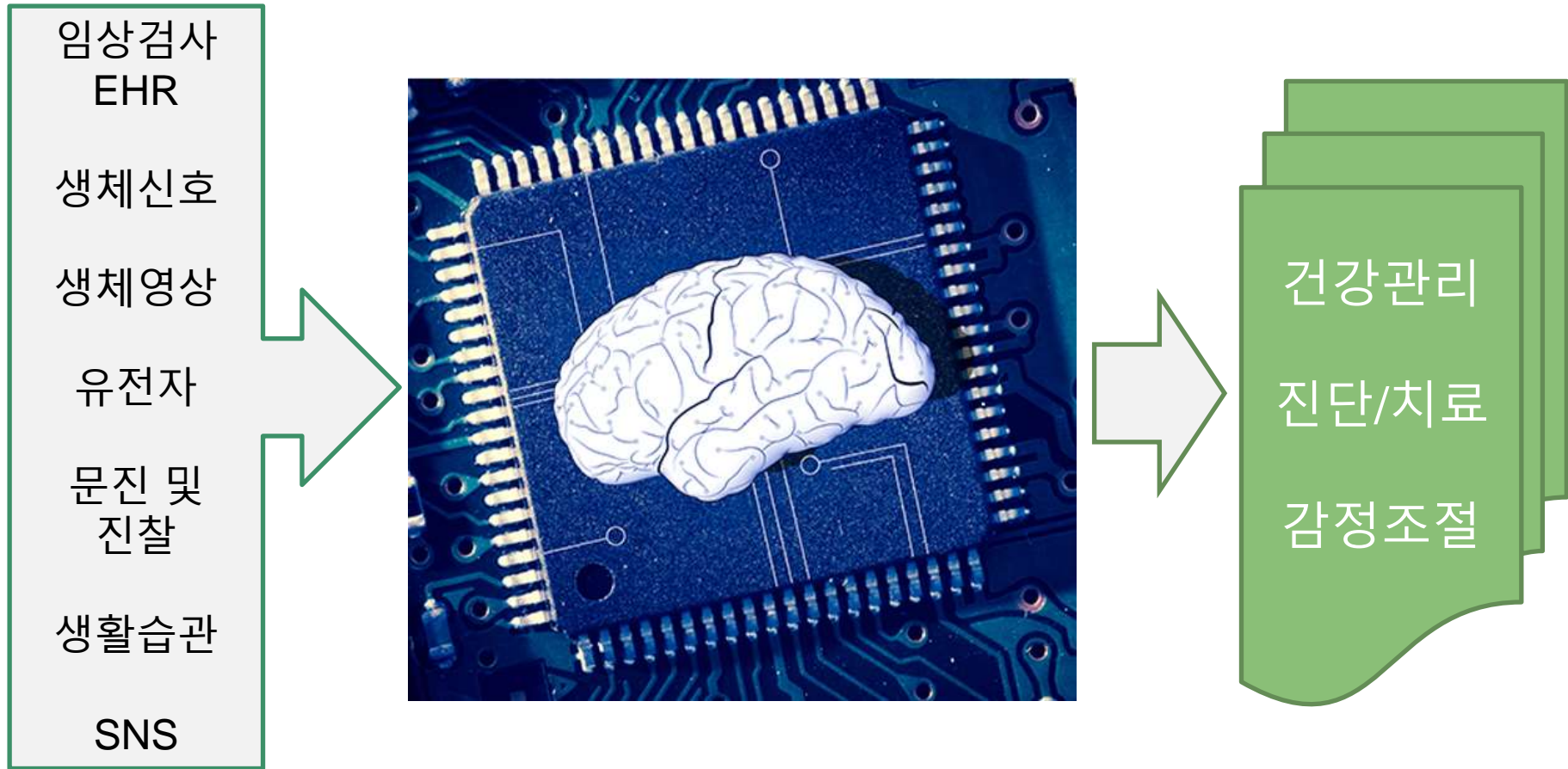
## Spyder

Jupyter Notebook (Jupyter, **VSCode**)

**Colab** (Sagemaker, Kaggle notebook)

**ChatGPT interpreter**

# Machine(Deep) learning with brain-AI chip



# EHR: Tabular data → ML-LR (DL-MLP)

- sklearn 라이브러리에는 당뇨병 환자들의 데이터가 기본적으로 포함되어 있다.

특징(10개)

데이터 개수 (442)	age	sex	bmi	bp	s1	s2	s3	s4	s5	s6	혈당
	...									...	

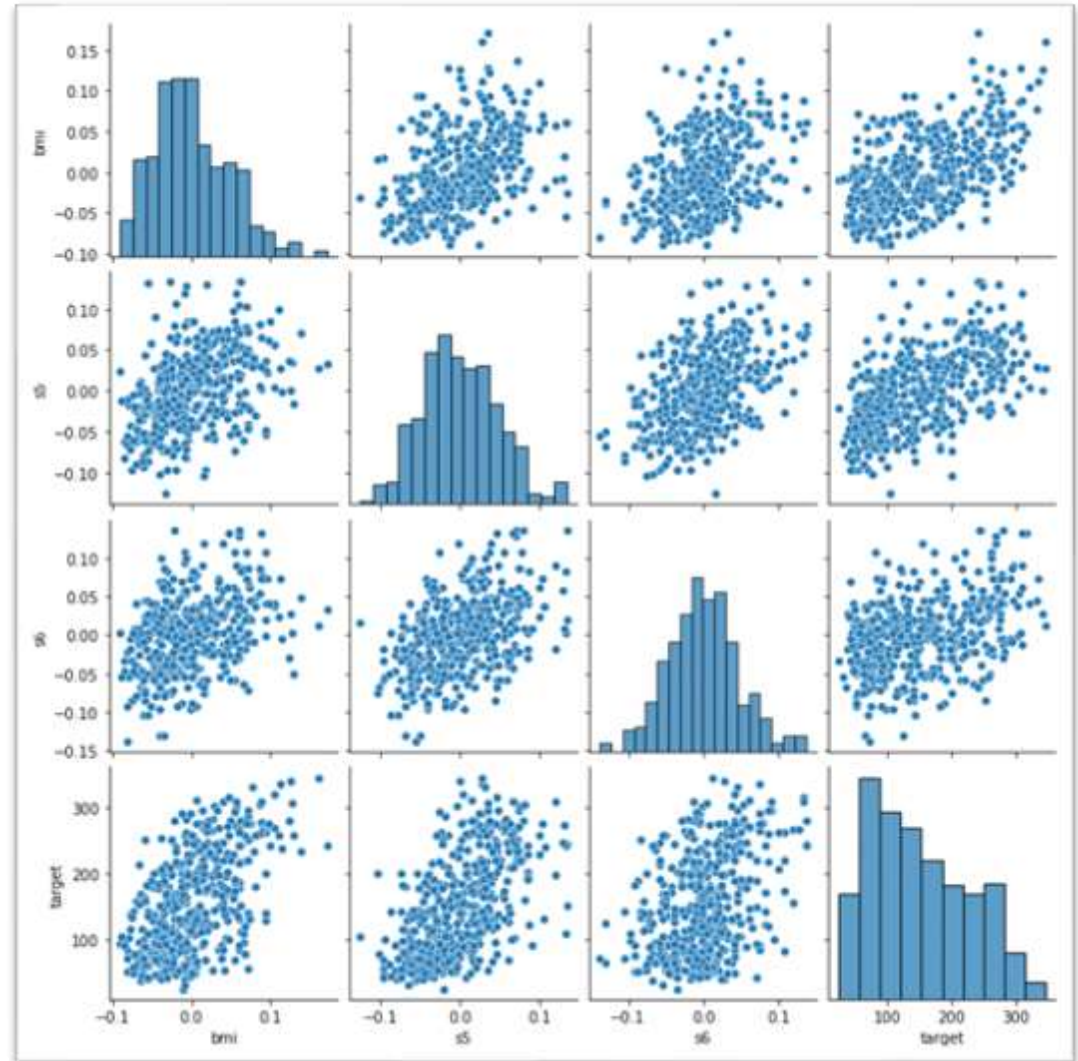
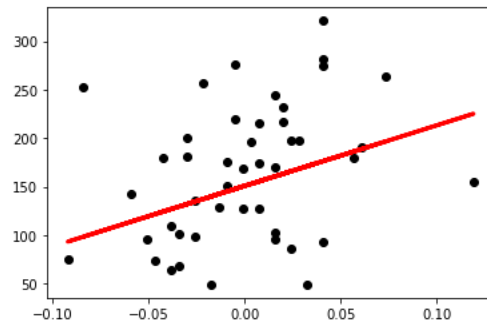
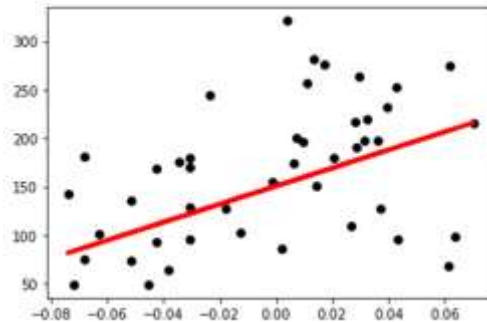
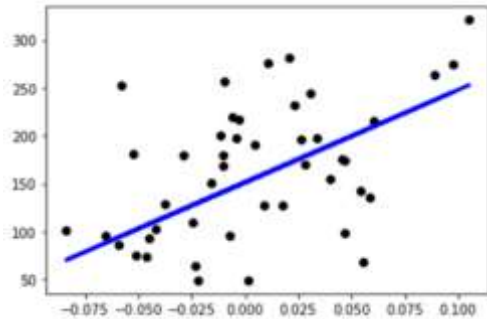
**sklearn.datasets.load\_diabetes**

```
sklearn.datasets.load_diabetes(*, return_X_y=False, as_frame=False, scaled=True)
```

Load and return the diabetes dataset (regression).

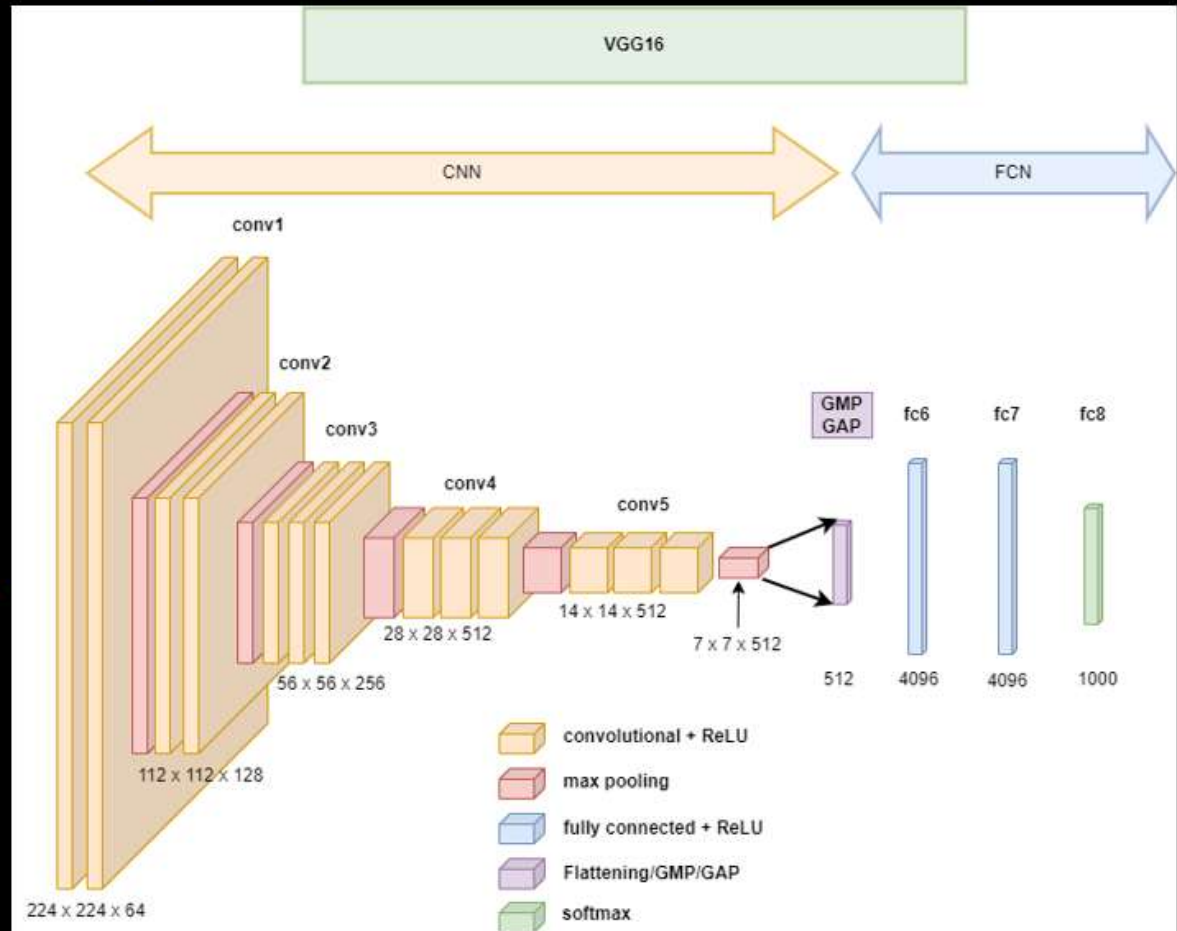
Samples total	442
Dimensionality	10
Features	real, $-0.2 < x < 0.2$
Targets	integer 25 - 346

# ML-LR: bmi,s5,s6 vs. target



# Deep learning: CV model

## ConvNet- Very deep neural network models

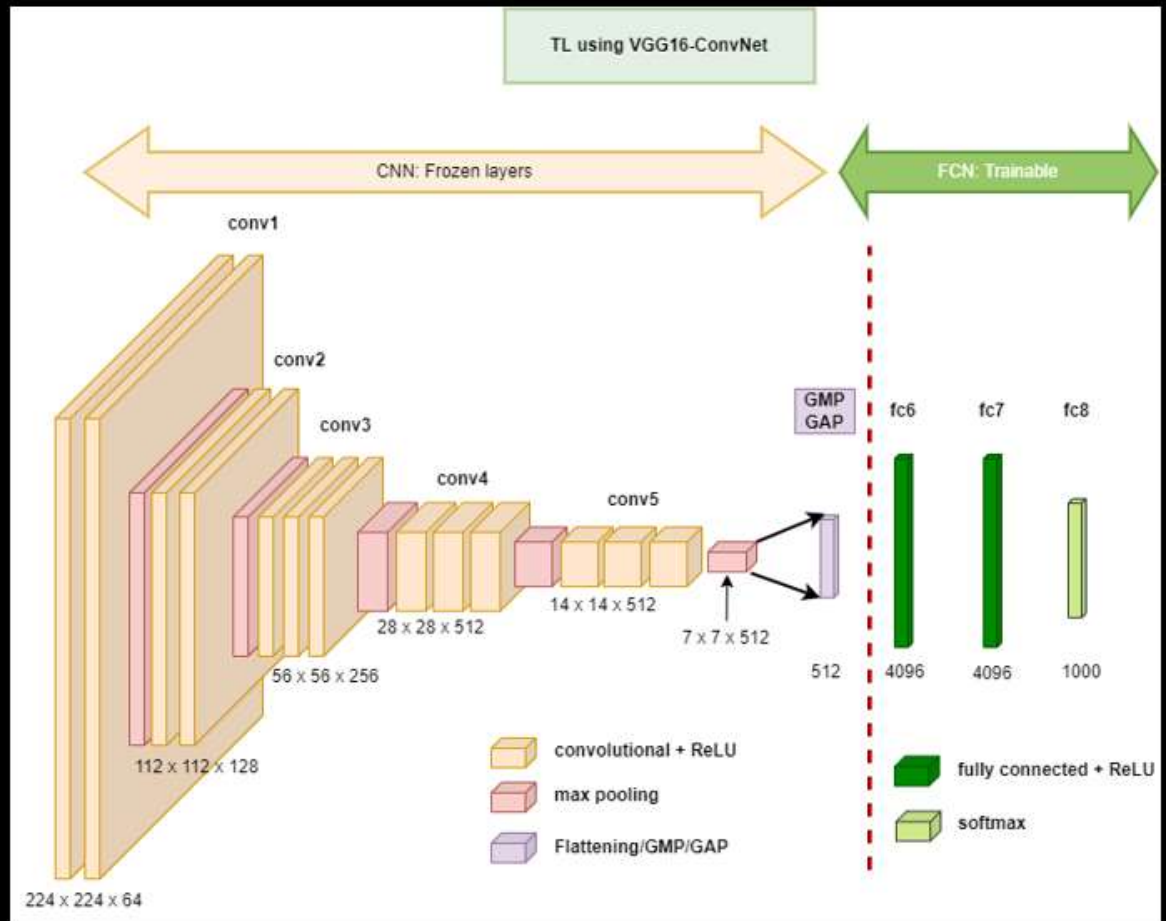




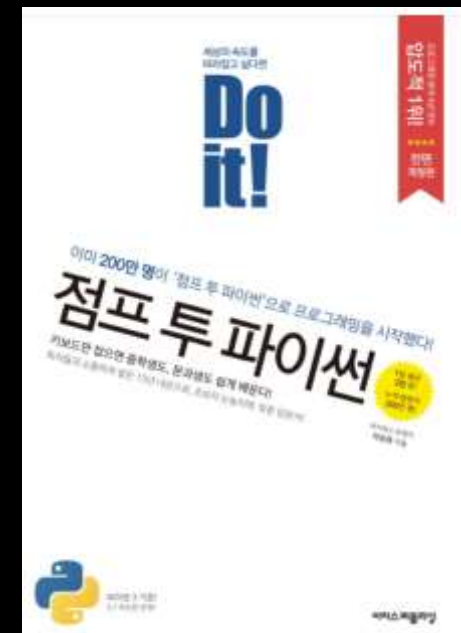
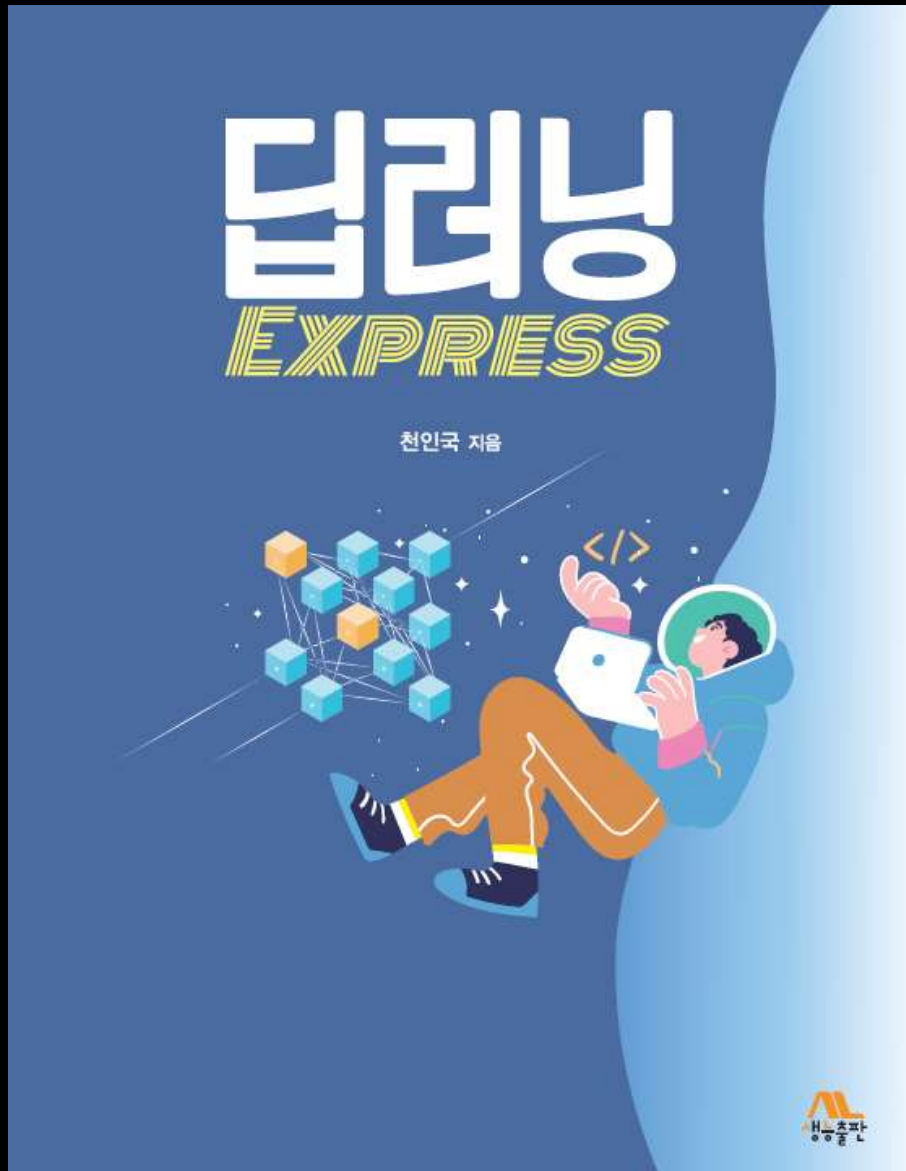
# Deep learning: X-ray images

전이(전환) 학습 – Using ConvNet & training FCN

My small dataset



# 교재/참고도서



## 수업소개

파이썬 개발 환경인 Spyder와 구글 코랩(Colab)에서 파이썬 소스코드(\*.py)와 jupyter 노트북(\*.ipynb)을 이용해서 데이터 마이닝을 강의한다.

데이터 코딩에 필수적인 numpy, pandas 모듈을 소개하고, 여러가지 데이터를 처리하는 방법을 소개한다.

처리되어 정돈된 일반 데이터, 생체정보 데이터를 matplotlib, seaborn, plotly 등의 모듈을 이용해서 시각화한다.

생체정보 데이터, 영상데이터를 분류하는 tensorflow 등을 이용한 딥러닝을 소개하고 실습을 통하여 딥러닝을 익힌다.

수업 중 완성한 모든 소스 코드는 각자의 github repo에 저장하고 결과를 평가한다.

생체정보데이터를 이용한 프로젝트를 수행하고 평가를 받는다.

ChatGPT를 파이썬 코드 작성과 수정에 이용해본다.

Spyder와 구글의 COLAB 환경에서 실습을 수행, 실습 결과는 github에 저장

# 성적평가기준

평가방법	평가비율(%)
중간고사	30%
기말고사	30%
과제	10%
프로젝트	30%



# github.com/Redwoods/pdm

Redwoods/pdm: Physiological

github.com/Redwoods/pdm

Redwoods / pdm

Type / to search

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

pdm

Public

Unpin

Unwatch 2

main

1 branch

0 tags

Go to file

Add file

<> Code

Redwoods Add files via upload

875d7cf 18 minutes ago 281 commits

Lec	Add files via upload	18 minutes ago
code	Delete code/dl-express-src.zip	1 hour ago
notebook	Update README.md	1 hour ago
project	Colaboratory를 통해 생성됨	5 months ago
tutorial	Update README.md	last year
LICENSE	Initial commit	last year
README.md	Update README.md	1 hour ago





# Lecture materials

## ● References & good sites

- ✓ <http://colab.research.google.com> Colab
- ✓ <http://www.github.com> GitHub
- ✓ <https://drive.google.com/drive/my-drive> Google drive
- ✓ <https://www.anaconda.com/distribution/> Python download