Housing Price 예측 모델 실습

박경규

데이터셋

■ kagge 가입 및 kgggle.json 다운로드

- kaggle 가입 : https://www.kaggle.com/
- kgggle.json 다운로드 : https://www.kaggle.com/<username>/account

API

Using Kaggle's beta API, you can interact with Competitions and Datasets to download data, make submissions, and more via the command line. Read the docs

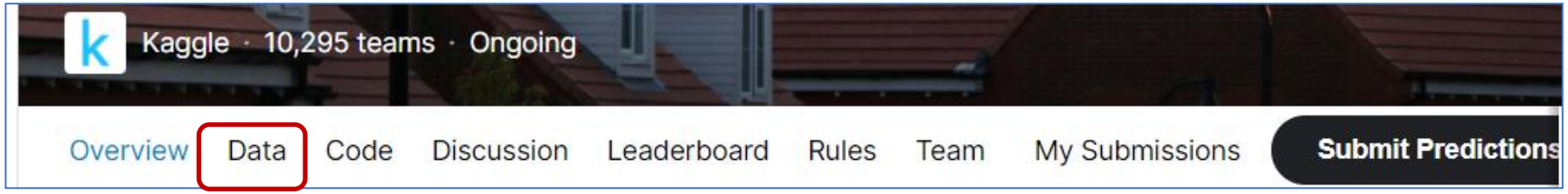
Create New API Token | Expire API Token

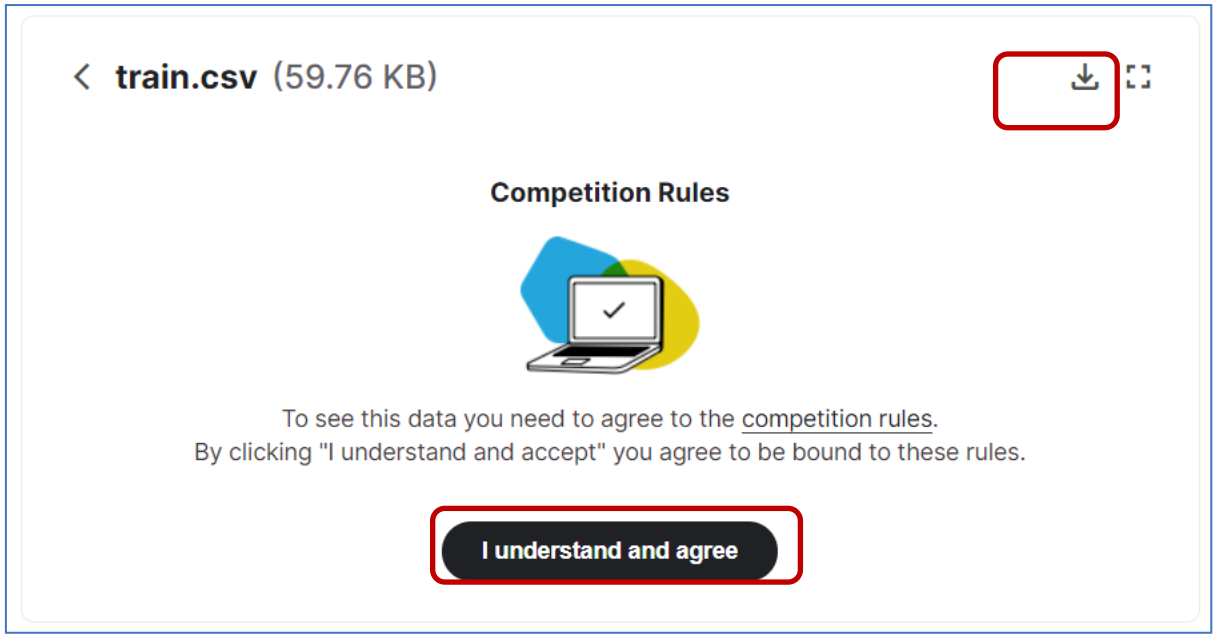
■ 데이터

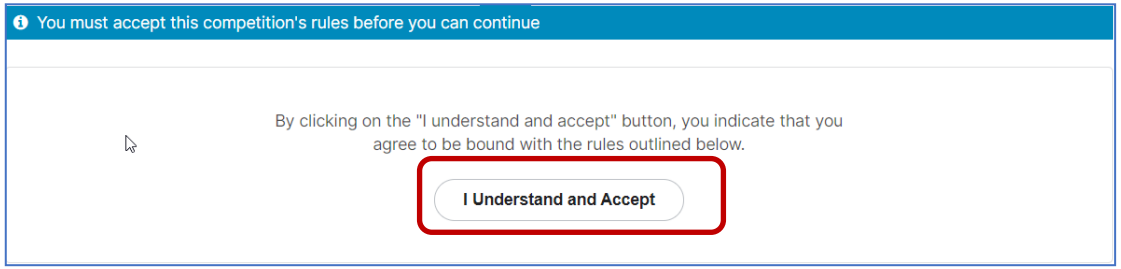
- **House Prices**, https://www.kaggle.com/c/house-prices-advanced-regression-techniques

데이터셋

■ kagge 사이트 Data 메뉴 → 다운로드 아이콘 클릭 → agree 버튼 클릭







데이터셋

- MSSubClass: Identifies the type of dwelling involved in the sale.
- MSZoning: Identifies the general zoning classification of the sale.
- LotFrontage: Linear feet of street connected to property
- LotArea: Lot size in square feet
- Street: Type of road access to property
- Alley: Type of alley access to property
- LotShape: General shape of property
- LandContour: Flatness of the property
- Utilities: Type of utilities available
- LotConfig: Lot configuration
- LandSlope: Slope of property
- Neighborhood: Physical locations within Ames city limits
- Condition1: Proximity to various conditions
- Condition2: Proximity to various conditions (if more than one is present)

데이터셋

- BldgType: Type of dwelling
- HouseStyle: Style of dwelling
- OverallQual: Rates the overall material and finish of the house
- OverallCond: Rates the overall condition of the house
- YearBuilt: Original construction date
- YearRemodAdd: Remodel date (same as construction date if no remodeling or additions)
- RoofStyle: Type of roof
- RoofMatl: Roof material
- Exterior1st: Exterior covering on house
- Exterior2nd: Exterior covering on house (if more than one material)
- MasVnrType: Masonry veneer type
- MasVnrArea: Masonry veneer area in square feet
- ExterQual: Evaluates the quality of the material on the exterior
- ExterCond: Evaluates the present condition of the material on the exterior

데이터셋

- Foundation: Type of foundation
- BsmtQual: Evaluates the height of the basement
- BsmtCond: Evaluates the general condition of the basement
- BsmtExposure: Refers to walkout or garden level walls
- BsmtFinType1: Rating of basement finished area
- BsmtFinSF1: Type 1 finished square feet
- BsmtFinType2: Rating of basement finished area (if multiple types)
- BsmtFinSF2: Type 2 finished square feet
- BsmtUnfSF: Unfinished square feet of basement area
- TotalBsmtSF: Total square feet of basement area
- Heating: Type of heating
- HeatingQC: Heating quality and condition
- CentralAir: Central air conditioning
- Electrical: Electrical system

데이터셋

- 1stFlrSF: First Floor square feet
- 2ndFlrSF: Second floor square feet
- LowQualFinSF: Low quality finished square feet (all floors)
- GrLivArea: Above grade (ground) living area square feet
- BsmtFullBath: Basement full bathrooms
- BsmtHalfBath: Basement half bathrooms
- FullBath: Full bathrooms above grade
- HalfBath: Half baths above grade
- Bedroom: Bedrooms above grade (does NOT include basement bedrooms)
- Kitchen: Kitchens above grade
- KitchenQual: Kitchen quality
- TotRmsAbvGrd: Total rooms above grade (does not include bathrooms)
- Functional: Home functionality (Assume typical unless deductions are warranted)

데이터셋

- Fireplaces: Number of fireplaces
- FireplaceQu: Fireplace quality
- GarageType: Garage location
- GarageYrBlt: Year garage was built
- GarageFinish: Interior finish of the garage
- GarageCars: Size of garage in car capacity
- GarageArea: Size of garage in square feet
- GarageQual: Garage quality
- GarageCond: Garage condition
- PavedDrive: Paved driveway
- WoodDeckSF: Wood deck area in square feet
- OpenPorchSF: Open porch area in square feet
- EnclosedPorch: Enclosed porch area in square feet

데이터셋

- 3SsnPorch: Three season porch area in square feet
- ScreenPorch: Screen porch area in square feet
- PoolArea: Pool area in square feet
- PoolQC: Pool quality
- Fence: Fence quality
- MiscFeature: Miscellaneous feature not covered in other categories
- MiscVal: $Value of miscellaneous feature
- MoSold: Month Sold (MM)
- YrSold: Year Sold (YYYY)
- SaleType: Type of sale
- SaleCondition: Condition of sale

실습

https://www.kaggle.com/munmun2004/house-prices-for-begginers

I. 데이터 불러오기 및 확인

- a. 데이터 불러오기

II. EDA & FE

- a. Data Processing
- b. concat
- c. 타겟변수 확인
- d. 결측치 확인 및 처리
- e. 순서형과 명목형 데이터 분리
- f. f.파생 변수 생성
- g. 수치형 변수 확인
- h. 범주형 변수 확인
- i. box-cox 변환
- j. 중요 변수 확인

III. 모델링

- a. 단순선형 회귀 & 통계치확인
- b. RobustScaler
- c. KFold
- d. 파라미터 튜닝 & GridSearchCV

IV. 예측

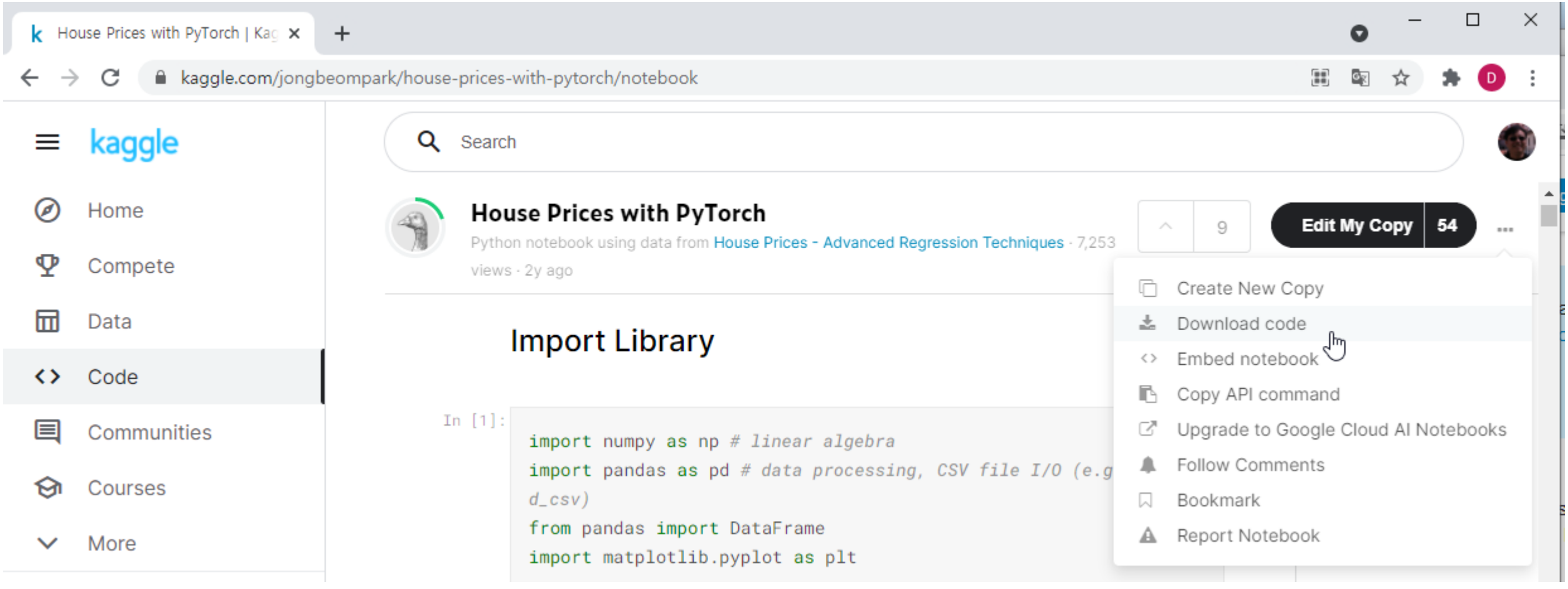
- a. 앙상블
- b. voting
- c. stacking
- c. blending

1. 변수	설명
SalePrice	집값
ID	집을 구분하는 번호
date	집을 구매한 날짜
price	집의 가격
OverallQual	전체 재료 및 마지막 품질
GrLivArea	생활 면적 평방 피트
GarageCars	차고
1stFlrSF	1층 평방 피트
YearBuilt	최초 공사 일
YearRemodAdd	리모델한 날
Fireplaces	벽난로 수
OpenPorchSF	평방 피트 단위의 현관 면적
MasVnrArea	제곱 피트의 벽돌 베니어 면적
LotFrontage	건물에 연결된 거리의 선형 피트
CentralAir	중앙 에어컨
KitchenQual	주방 품질
HeatingQC	난방 품질 및 상태
ExterQual	외부 재료 품질
BsmtQual	지하실의 높이

실습

https://www.kaggle.com/jongbeompark/house-prices-with-pytorch

■ 노트북 파일 다운로드 : Download code



실습

■ 다운로드 받은 노트북파일을 Colab에서 오픈하고 아래 코드를 추가하고 실행

■ Colab에 데이터 저장 디렉토리 생성(실습 목적)

```
import os
DATA_PATH = '../input'

if not os.path.exists(DATA_PATH):
    os.makedirs(DATA_PATH)
```

■ Colab에 kgggle 데이터셋 다운로드

```
! pip install -q kaggle

from google.colab import files
files.upload()
```

```
 ! mkdir ~/.kaggle
 ! cp kaggle.json ~/.kaggle/
 ! chmod 600 ~/.kaggle/kaggle.json

 ! kaggle competitions download -p ../input/ -c house-prices-advanced-regression-techniques
```