

# 머신러닝 (Machine Learning) 기초 및 실습

K - 디지털 아카데미



# 머신러닝 교육과정 강의 일정

1일차 >

## 머신러닝

- > 머신러닝의 개요
- > [실습] 데이터 분석의 시작 Numpy, Pandas 활용하기

2일차 >

## Classification (분류)

- > 분류를 평가하는 지표 알아보기
- > 분류 알고리즘 (결정트리, 앙상블, 랜덤포레스트 등) 익히기
- > [실습] 분류를 통한 밀크T 만료및탈퇴회원 예측(이탈 회원 예측)

3일차 >

## Regression (회귀)

- > 회귀와 경사 하강법
- > 로지스틱 회귀와 소프트맥스 회귀
- > [실습] 로지스틱 회귀를 통한 문항별 정오답 예측

4일차 >

## 차원 축소와 Clustering(군집화)

- > PCA, LDA
- > K-means, DBSCAN 등 다양한 클러스터링 기법 알아보기
- > [실습] 밀크T중학 회원수준 군집화(GMM)

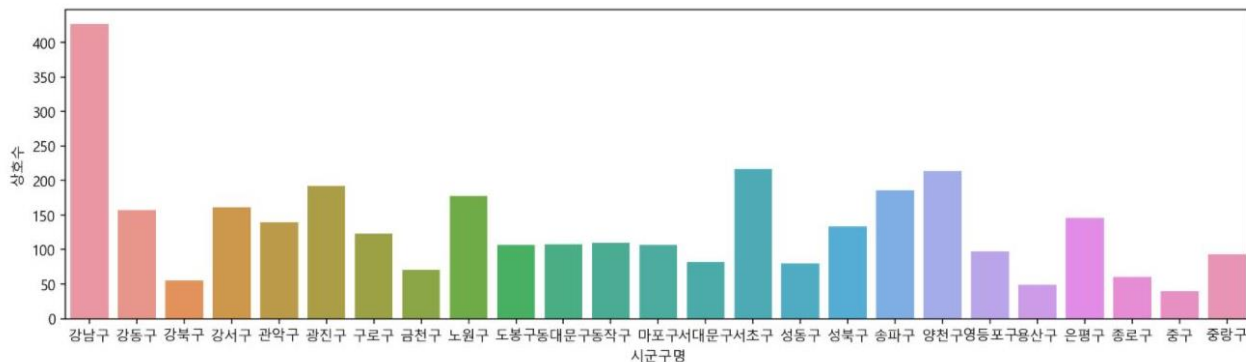
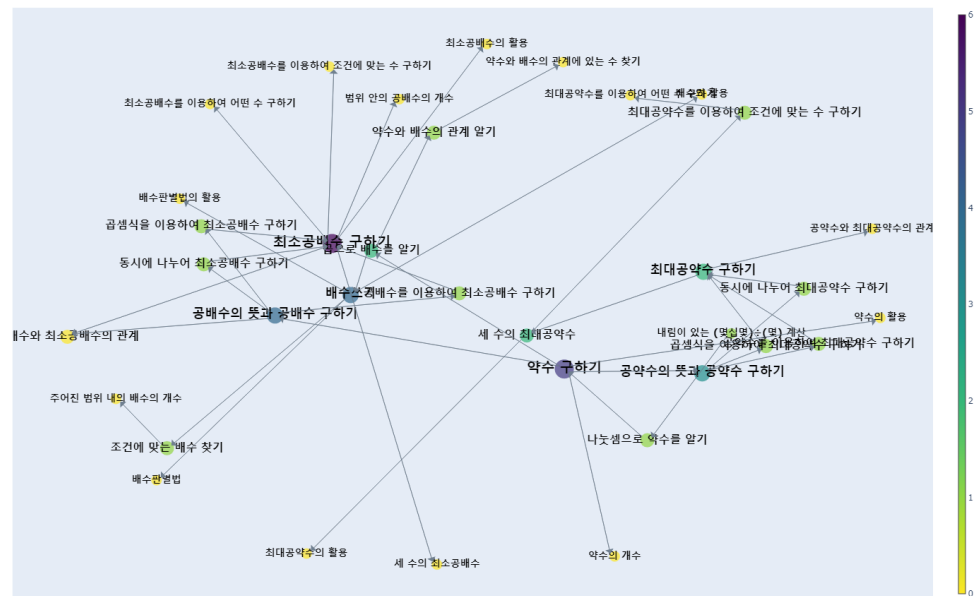
5일차 >

## 데이터 시각화와 최종 프로젝트

- > 데이터 시각화
- > 최종 프로젝트

# ▶ 데이터 시각화

데이터 시각화란,  
데이터 분석 결과를 쉽게 이해할 수 있도록 시각적으로 표현하고 전달되는 과정 (위키피디아)

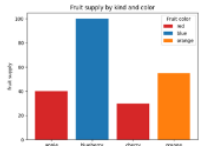




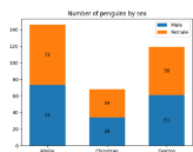
# 데이터 시각화 : matplotlib

<https://matplotlib.org/stable/index.html>

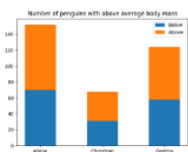
## Lines, bars and markers



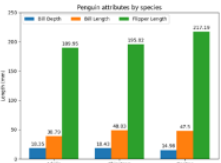
Bar color demo



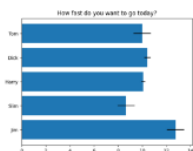
Bar Label Demo



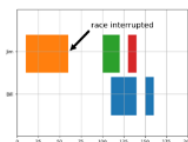
Stacked bar chart



Grouped bar chart with labels



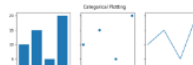
Horizontal bar chart



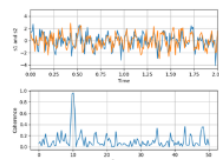
Broken Barh



CapStyle

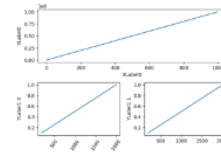


Plotting categorical variables

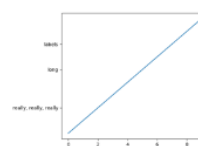


Plotting the coherence of two signals

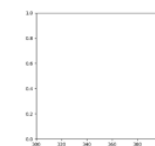
## Subplots, axes and figures



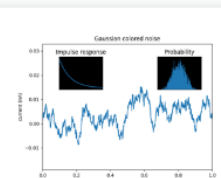
Aligning Labels



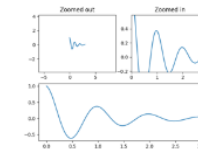
Programmatically controlling subplot adjustment



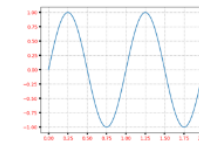
Axes box aspect



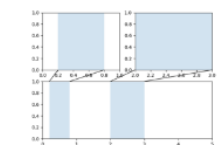
Axes Demo



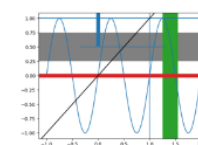
Controlling view limits using margins and sticky\_edges



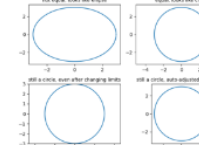
Axes Props



Axes Zoom Effect



axhspan Demo



Equal axis aspect ratio

## 데이터 시각화 : seaborn

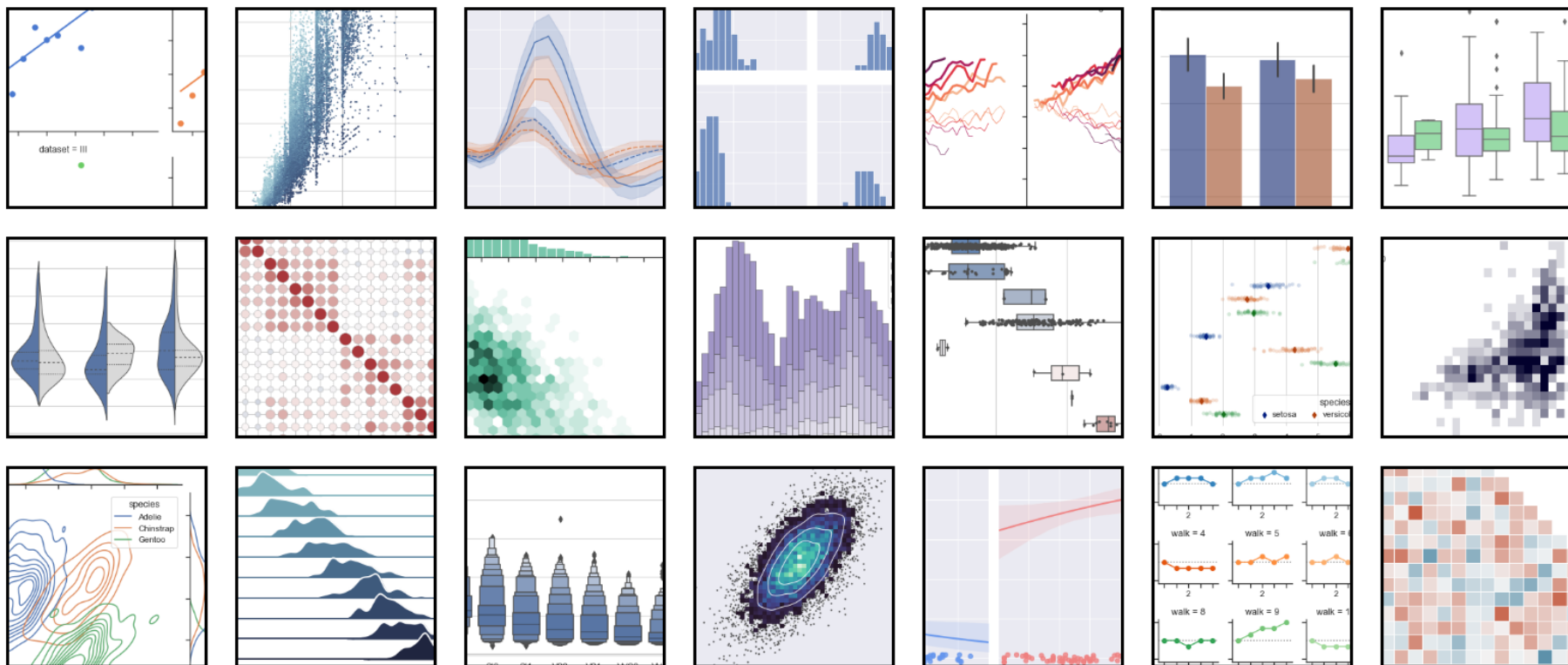
<https://seaborn.pydata.org/examples/index.html>




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## Example gallery



# ▶ 데이터 시각화 : 그 외


[DASH ENTERPRISE](#)
[DOCS](#)
[EXAMPLE APPS](#)
[COMPANY](#)
[PRICING](#)
[DEMO DASH](#)

## Industries

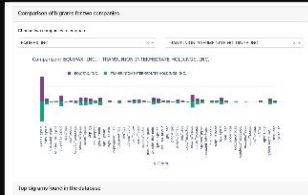
- Finance
- Bioinformatics & Life Sciences
- Energy & Utilities
- Science & Engineering
- Manufacturing & R&D
- Business

## Analytics

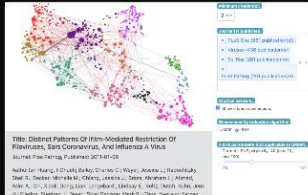
- Data Visualization & Dashboards
- Machine Learning
- Predictive Analytics & Forecasting
- Geospatial
- Natural Language Processing
- Connecting to APIs

## Natural Language Processing


Natural Language Processing (NLP) apps process documents, audio transcripts, customer reviews into actionable business insights.



Comparison of sentiment analysis results across different models and datasets.



Network graph visualization showing relationships between entities.



Research analytics dashboard showing publication trends and author networks.

### Bank Consumer Complaints

Natural Language Processing and customer segmentation from consumer complaints.

By Plotly

### LDA Topic Analysis

Latent Dirichlet Allocation performed in Python across a scientific paper dataset.

By Plotly

### Research Analytics

Explore topics, authors, and papers across several journals.

By Julie Hartz

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bokkeh

[Documentation](#)

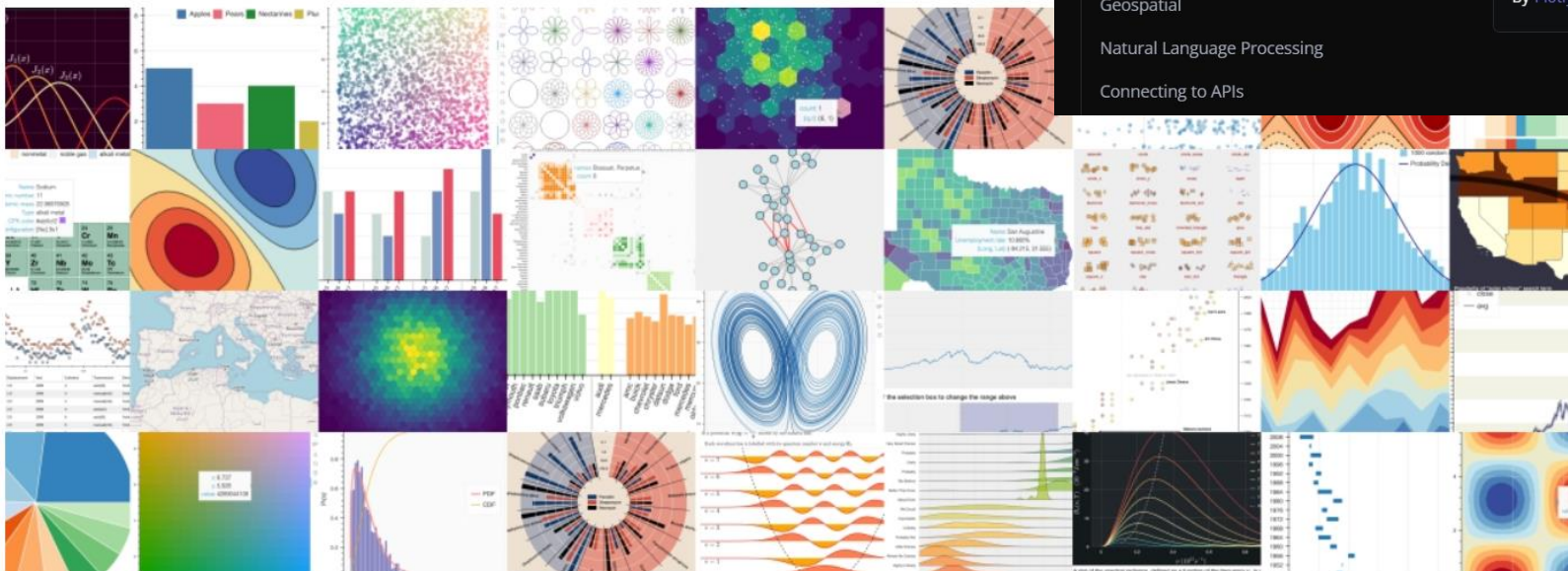
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[Tutorials](#)

[Demos](#)

[Blog](#)

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## 데이터 시각화 튜토리얼

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### Matplotlib Tutorial

<https://wikidocs.net/book/5011>

### Seaborn Tutorial

<https://wikidocs.net/137245>



# [Matplotlib] 마커 지정하기

| marker             | symbol | description  |
|--------------------|--------|--|
| "."                | •      | point  |
| ","                | .      | pixel  |
| "o"                | ●      | circle   |
| "v"                | ▼      | triangle_down  |
| "^"                | ▲      | triangle_up  |
| "<"                | ◀      | triangle_left  |
| ">"                | ▶      | triangle_right   |
| "1"                | ⋿      | tri_down   |
| "2"                | ⋈      | tri_up   |
| "3"                | ⋊      | tri_left   |
| "4"                | ⋋      | tri_right  |
| "8"                | ⬢      | octagon  |
| "s"                | ■      | square   |
| "p"                | ⬠      | pentagon   |
| "p"                | ⬢      | plus (filled)  |
| "*"                | ★      | star   |
| "h"                | ⬡      | hexagon1   |
| "H"                | ⬢      | hexagon2   |
| "+"                | +      | plus   |
| "x"                | ×      | x  |
| "X"                | ⊠      | x (filled)   |
| "D"                | ◆      | diamond  |
| "d"                | ◇      | thin_diamond   |
| " "                |        | vline  |
| "_"                | —      | hline  |
| 0 (TICKLEFT)       | —      | tickleft   |
| 1 (TICKRIGHT)      | —      | tickright  |
| 2 (TICKUP)         |        | tickup   |
| 3 (TICKDOWN)       |        | tickdown   |
| 4 (CARETLEFT)      | ◀      | caretleft  |
| 5 (CARETRIGHT)     | ▶      | caretright   |
| 6 (CARETUP)        | ▲      | caretup  |
| 7 (CARETDOWN)      | ▼      | caretdown  |
| 8 (CARETLEFTBASE)  | ◀      | caretleft (centered at base)   |
| 9 (CARETRIGHTBASE) | ▶      | caretright (centered at base)  |
| 10 (CARETUPBASE)   | ▲      | caretup (centered at base)   |
| 11 (CARETDOWNBASE) | ▼      | caretdown (centered at base)   |
| "None", " " or ""  |        | nothing  |
| '\$...\$'          | ℱ      | Render the string using mathtext. E.g "\$f\$" for marker showing the letter f. |





# [Matplotlib] 색상 지정하기

|   |             |  |                      |   |                   |   |                 |
|---|-------------|--|----------------------|---|-------------------|---|-----------------|
|    | black       |    | bisque               |    | forestgreen       |    | slategrey       |
|    | dimgray     |    | darkorange           |    | limegreen         |    | lightsteelblue  |
|    | dimgray     |    | burlywood            |    | darkgreen         |    | cornflowerblue  |
|    | gray        |    | antiquewhite         |    | green             |    | royalblue       |
|    | grey        |    | tan                  |    | lime              |    | ghostwhite      |
|    | darkgray    |    | navajowhite          |    | seagreen          |    | lavender        |
|    | darkgrey    |    | blanchedalmond       |    | mediumseagreen    |    | midnightblue    |
|    | silver      |    | papayawhip           |    | springgreen       |    | navy            |
|    | lightgray   |    | moccasin             |    | mintcream         |    | darkblue        |
|    | lightgrey   |    | orange               |    | mediumspringgreen |    | mediumblue      |
|    | gainsboro   |    | wheat                |    | mediumaquamarine  |    | blue            |
|    | whitesmoke  |    | oldlace              |    | aquamarine        |    | slateblue       |
|    | white       |    | floralwhite          |    | turquoise         |    | darkslateblue   |
|    | snow        |    | darkgoldenrod        |    | lightseagreen     |    | mediumslateblue |
|    | rosybrown   |    | goldenrod            |    | mediumturquoise   |    | mediumpurple    |
|    | lightcoral  |    | cornsilk             |    | azure             |    | rebeccapurple   |
|    | indianred   |    | gold                 |    | lightcyan         |    | blueviolet      |
|    | brown       |    | lemonchiffon         |    | paleturquoise     |    | indigo          |
|    | firebrick   |    | khaki                |    | darkslategray     |    | darkorchid      |
|    | maroon      |    | palegoldenrod        |    | darkslategrey     |    | darkviolet      |
|    | darkred     |    | darkkhaki            |    | teal              |    | mediumorchid    |
|    | red         |    | ivory                |    | darkcyan          |    | thistle         |
|   | mistyrose   |   | beige                |   | aqua              |   | plum            |
|  | salmon      |  | lightyellow          |  | cyan              |  | violet          |
|  | tomato      |  | lightgoldenrodyellow |  | darkturquoise     |  | purple          |
|  | darksalmon  |  | olive                |  | cadetblue         |  | darkmagenta     |
|  | coral       |  | yellow               |  | powderblue        |  | fuchsia         |
|  | orangered   |  | olivedrab            |  | lightblue         |  | magenta         |
|  | lightsalmon |  | yellowgreen          |  | deepskyblue       |  | orchid          |
|  | sienna      |  | darkolivegreen       |  | skyblue           |  | mediumvioletred |
|  | seashell    |  | greenyellow          |  | lightskyblue      |  | deeppink        |
|  | chocolate   |  | chartreuse           |  | steelblue         |  | hotpink         |
|  | saddlebrown |  | lawngreen            |  | aliceblue         |  | lavenderblush   |
|  | sandybrown  |  | honeydew             |  | dodgerblue        |  | palevioletred   |
|  | peachpuff   |  | darkseagreen         |  | lightslategray    |  | crimson         |
|  | peru        |  | palegreen            |  | lightslategrey    |  | pink            |
|  | linen       |  | lightgreen           |  | slategray         |  | lightpink       |

**감사합니다**