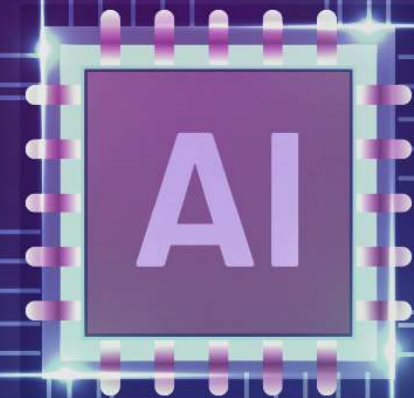


AI로 할 수 있는 것들 (2)

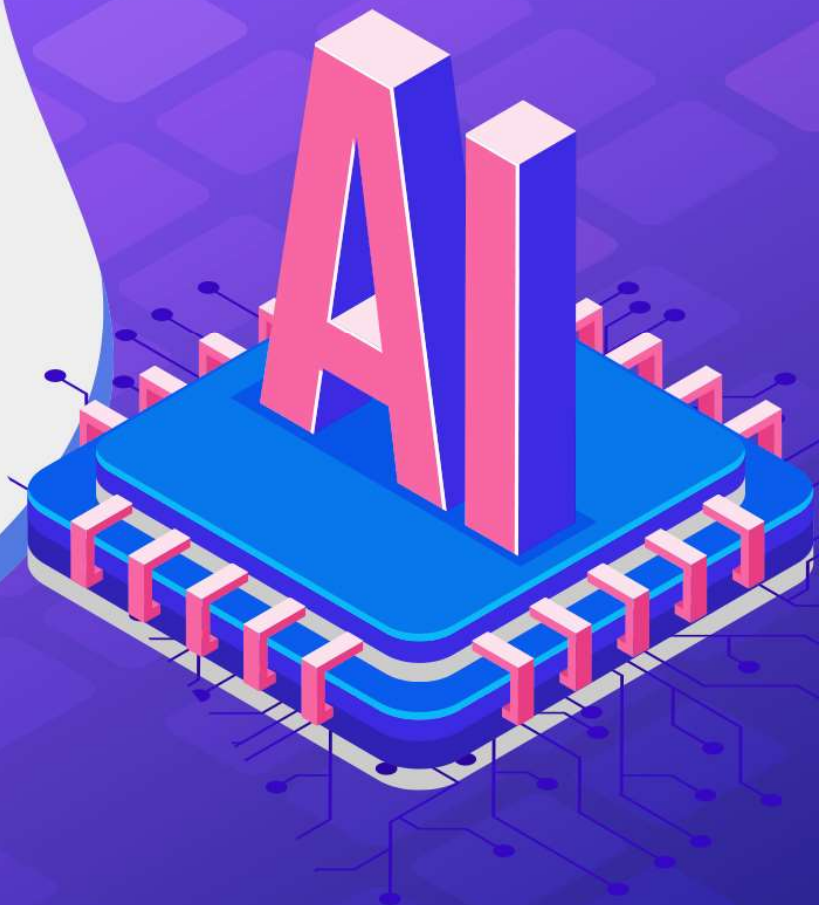
김재광 교수 (소프트웨어융합대학 글로벌융합학부)



C

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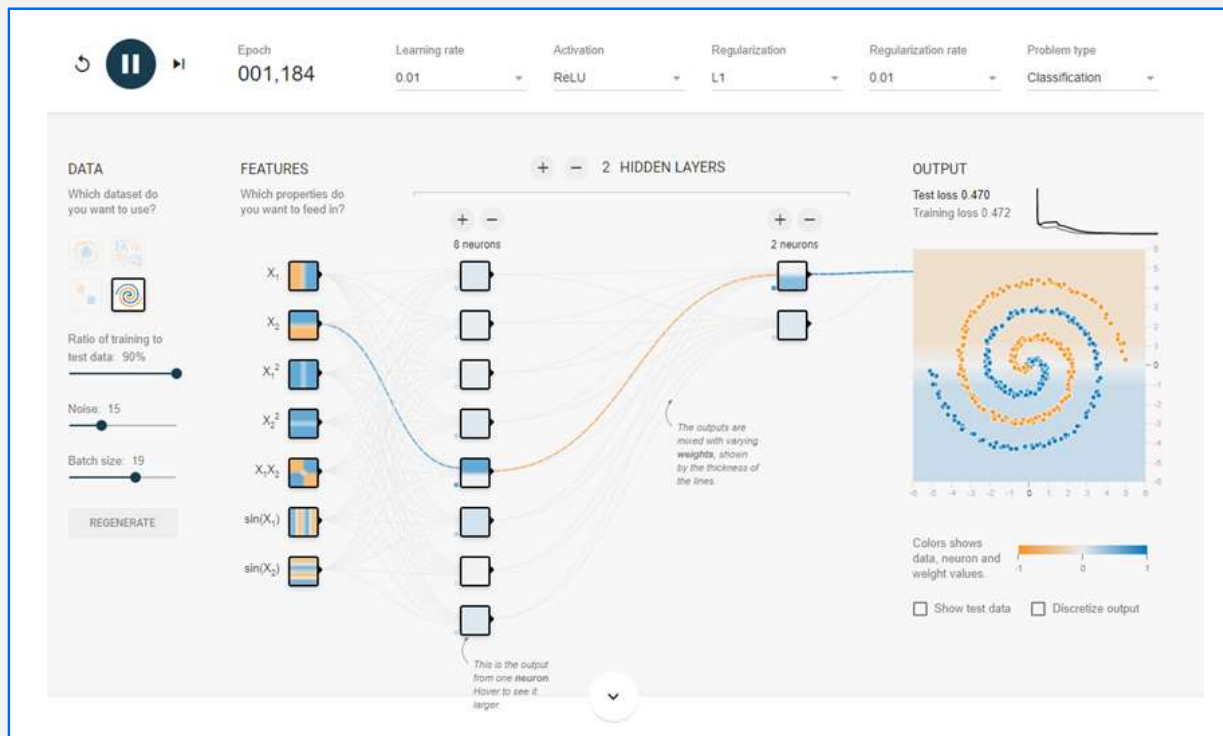
- 실습 7 - 신경망 실습
- 실습 8 - 가장 가까운 단어는?
- 실습 9 - KNN Classification
- 실습 10 - Noise Canceling
- 실습 11 - MNIST with GAN
- 실습 12 - 흑백을 컬러로!



실습 7 - 신경망 실습

- 텐서플로어로 구현된 신경망의 파라미터들을 수정하며 학습해볼 수 있음

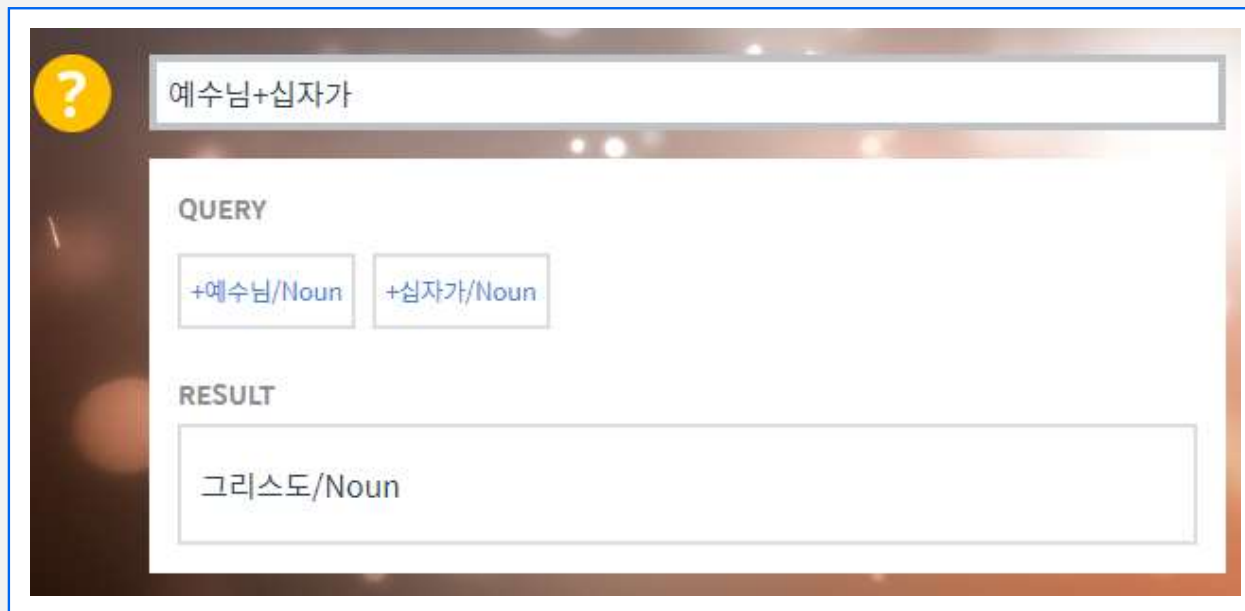
 <http://playground.tensorflow.org/>



실습 8 - 가장 가까운 단어는?

- 단어들의 정보를 신경망으로 학습한 컴퓨터가, 더하고 빼는 연산을 하며 가장 가까운 단어를 추천 해주기

 <http://word2vec.kr/>



The screenshot shows the word2vec.kr website interface. At the top, there is a search bar containing the text "예수님+십자가". Below the search bar, the word "QUERY" is displayed. Under "QUERY", there are two buttons: "+예수님/Noun" and "+십자가/Noun". Below these buttons, the word "RESULT" is displayed. Under "RESULT", there is a box containing the text "그리스도/Noun".

실습 9 – K-NN Classification

- 파라미터에 따른 KNN 알고리즘 분류하는 것을 체험할 수 있음

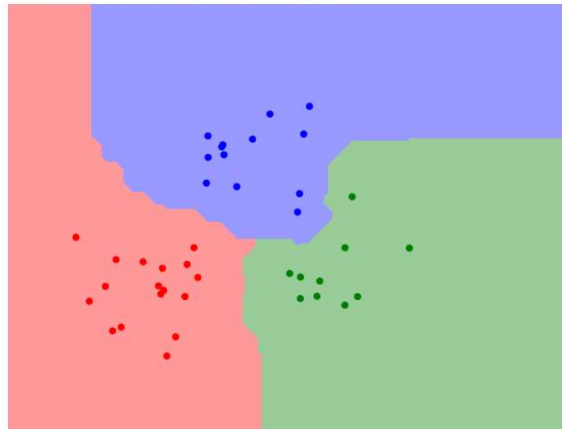


<http://vision.stanford.edu/teaching/cs231n-demos/knn/>

K-Nearest Neighbors Demo

This interactive demo lets you explore the K-Nearest Neighbors algorithm for classification. Each point in the plane is colored with the class that would be assigned to it using the K-Nearest Neighbors algorithm. Points for which the K-Nearest Neighbor algorithm results in a tie are colored white.

You can move points around by clicking and dragging!



Metric

L1 L2

Num classes

2 3 4 5

Num Neighbors (K)

1 2 3 4 5 6 7

Num points

20 30 40 50 60

실습 10 - Noise Canceling

- SEGAN이란 방법을 이용하여 잡음이 있는 음성 데이터에서 잡음을 제거하고 음성을 강화함

 <http://veu.talp.cat/segan/>

SEGAN: Speech Enhancement Generative Adversarial Network

Santiago Pascual, Antonio Bonafonte, Joan Serra

This is the samples page of the SEGAN project. Our original paper can be found [here](#), and code is available [here](#).

M1 We were surprised to see the photograph.

▶ 0:02 / 0:02 - 🔊 ⋮ ▶ 0:02 / 0:02 - 🔊 ⋮ ▶ 0:02 / 0:02 - 🔊 ⋮
[noisy] [wiener] [segan]

M2 Today I couldn't run on it.

▶ 0:01 / 0:01 - 🔊 ⋮ ▶ 0:01 / 0:01 - 🔊 ⋮ ▶ 0:01 / 0:01 - 🔊 ⋮
[noisy] [wiener] [segan]

M3 There will be no repeat of that performance, that I can guarantee.

▶ 0:03 / 0:03 - 🔊 ⋮ ▶ 0:03 / 0:03 - 🔊 ⋮ ▶ 0:03 / 0:03 - 🔊 ⋮
[noisy] [wiener] [segan]

실습 11 - MNIST with GAN

- GAN을 이용하여 MNIST를 학습하는 것을 보여줌

 <http://reiinakano.com/gan-playground/>

GAN Playground - Explore Generative Adversarial Nets in your Browser

DATA	DISCRIMINATOR	GENERATOR	REAL IMAGES	GENERATED IMAGES	TRAIN STATS
<p>Dataset MNIST</p> <p>Model - discriminator Convolutional (disc)</p> <p>Model - generator Convolutional (gen)</p> <p>Hyperparameters</p> <p>Learning Rate - discriminator 0.01</p> <p>Optimizer - discriminator sgd</p> <p>Learning Rate - generator 0.01</p> <p>Beta1 - generator 0.9</p> <p>Beta2 - generator 0.999</p> <p>Optimizer - generator adam</p> <p>Batch Size 15</p> <p>TRAIN</p>	<p>Input Image</p> <p>[28,28,1]</p> <p>Op type Convolution</p> <p>Field size: 5, Stride: 1, Zero pad: 2, Output dep.: 8</p> <p>[28,28,8]</p> <p>Op type ReLU</p> <p>[28,28,8]</p> <p>Op type Max pool</p> <p>Field size: 2, Stride: 2, Zero pad: 0</p> <p>[14,14,8]</p>	<p>Generator Random Vector</p> <p>[100]</p> <p>Op type Fully connected</p> <p>Hidden units: 784</p> <p>[784]</p> <p>Op type ReLU</p> <p>[784]</p> <p>Op type Reshape</p> <p>Shape (comma separated): 28, 28, 1</p> <p>[28,28,1]</p>	<p>Inferences/sec: 174 Inference duration: 5.23ms</p> <p>3: 1 89.5%, 0 10.5%</p> <p>0: 1 84.2%, 0 15.8%</p> <p>2: 1 77.6%, 0 22.4%</p> <p>8: 1 85.4%, 0 14.6%</p> <p>1: 81.6%</p>	<p>Generations/sec: 174 Generation duration: 5.23ms</p> <p>1 55.3%, 0 44.7%</p> <p>1 53.2%, 0 46.8%</p> <p>1 55.3%, 0 44.7%</p> <p>1 56.8%, 0 43.2%</p> <p>1 53.4%</p>	

실습 12 - 흑백을 컬러로!

- 컬러 이미지들로 학습한 컴퓨터가 흑백으로 된 이미지를 컬러로 만들어 줌

 <https://demos.algorithmia.com/colorize-photos>

