



Course Overview

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Lecture Information

- When
 - 109075/21001: Thursday 09:00 – 12:50 in Korean
 - 109075/21002: Thursday 13:00 – 16:50 in English
- Where
 - Offline: 319 Mirae Hall
 - Online: **SeoulTech [e-Class](#) and Zoom**
- Lecturer: **Sunglok Choi**
 - E-mail: sunglok@seoultech.ac.kr
 - Online meeting is available if you ask **through e-mail or e-Class message** in advance.
 - Office: 327 Mirae Hall
- Textbook: **Course slides**
- Online references: <https://github.com/mint-lab/know-where/>
 - Please refer *Programming (Python)* and *Machine Learning and Deep Learning* categories



Course Objective

- This course aims to improve **mathematical reasoning** and **programming skill** essential for students in computer science and engineering
- To fulfill this objective, this course has five small missions as follows:
 - To understand open-source software (shortly OSS), OSS licenses, and version control systems
 - To learn **Python** programming language and build its experience by its applications
 - To understand essential **mathematical concepts** using Python and its OSS
 - To understand and apply **machine learning** and **deep learning** using Python and its OSS
 - **To start your own OSS project**

“Let’s start to build your [career portfolio!](#)”

Course Objective

- **Career portfolio** [\[Wikipedia\]](#) [\[NamuWiki\]](#)
 - A collection of your works and projects (to apply for jobs or graduate universities)
 - e.g. Tae Hwan Jung (a.k.a. graykode): [Homepage](#), [Github](#)

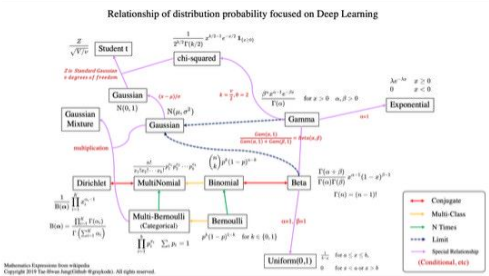
Projects

All AI Product NLP Deep Learning

Model	Example	Framework	Lines(torch/tensor)
NNLM	Predict Next Word	Torch, Tensor	67/83
Word2Vec(Softmax)	Embedding Words and Show Graph	Torch, Tensor	77/94
TextCNN	Sentence Classification	Torch, Tensor	94/99
TextRNN	Predict Next Step	Torch, Tensor	70/88
TextLSTM	Autocomplete	Torch, Tensor	73/78
Bi-LSTM	Predict Next Word in Long Sentence	Torch, Tensor	73/78
Seq2Seq	Change Word	Torch, Tensor	93/111
Seq2Seq with Attention	Translate	Torch, Tensor	108/118
Bi-LSTM with Attention	Binary Sentiment Classification	Torch, Tensor	92/104
Transformer	Translate	Torch	222/0
Greedy Decoder Transformer	Translate	Torch	246/0
BERT	how to train	Torch	242/0

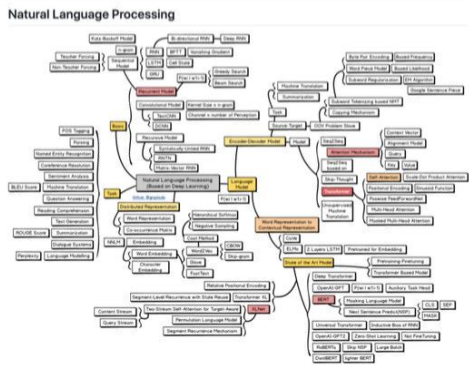
nlp-tutorial
Natural Language Processing Tutorial for Deep Learning
Researchers stars 8.9k

[Github](#) [Reddit](#)



distribution-is-all-you-need
The basic distribution probability Tutorial for Deep Learning
Researchers stars 1.1k

[Github](#)



nlp-roadmap
ROADMAP(Mind Map) and KEYWORD for students those who have interest in learning NLP stars 2.5k

[Github](#) [Reddit](#)

```
test.py calculate
1 def calculate(a, b, c):
2     d = 100 * c - 10 * b + c
3     return d
4
5 def create_app():
6     @app.route("/")
7     def index():
8         return jsonify(hello="world")
9
10 def sina_xml_to_url_list(xml_data):
11     rawurl = []
12     dom = parseString(xml_data)
13     for node in dom.getElementsByTagName('durl'):
14         url = node.getElementsByTagName('url')[0]
15         rawurl.append(url.childNodes[0].data)
16     return rawurl
```

ai-docstring
A tool that AI automatically recommends commit messages.
stars 261

[Github](#) [reddit](#)

Motivation

- How to estimate your skill set and proficiency (for entering a company or graduate school)
 - It's **your Github repository** these days.



Motivation

- Make **your (intermediate) works blossom!**
 - e.g. Your homework assignments, your term projects, ...



내가 그의 이름을 불러 주기 전에는
그는 다만
하나의 몸짓에 지나지 않았다.

내가 그의 이름을 불러 주었을 때
그는 나에게로 와서
꽃이 되었다.

– 김춘수의 ‘꽃’ 中

(Tentative) Weekly Schedule

Week	Lectures (2-3 hr)	Practice (1-2 hr)
01	Introduction	Practice with Git, Github, and Markdown
02	Python: Basic	Practice with Python
03	Python: Beginner to Intermediate	Practice with Python
04	Python: Applications	Practice with Python Standard Libraries
05	Python Meets Math: Calculus	Practice with SymPy and Matplotlib
06	Python Meets Math: Linear Algebra	Practice with NumPy
07	Python Meets Math: Optimization	Practice with SciPy
08	Python Meets Math: Probability and Statistics	Practice with SciPy
09	Machine Learning: Classification	Practice with scikit-learn
10	Machine Learning: Regression and Clustering	Practice with scikit-learn
11	<i>Midterm Examination</i>	
12	Deep Learning: Deep Neural Networks	Practice with PyTorch
13	Deep Learning: Convolutional Neural Networks	Practice with PyTorch
14	Deep Learning: Recurrent Neural Networks	Practice with PyTorch
15	<i>Term Project Presentation</i>	

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Grading Policy

- **Examination (20%)**
 - **Mid-term exam** will be at the 11th week. (cf. no final exam)
- **Lab/homework assignments (40%)**
 - Lab and homework assignments will be given **almost every week** (roughly 12 times).
 - Their difficulty is **very easy** if you follow my lectures and **practices**.
 - Their deadline is generally **within roughly 1 week**.
- **Term project (30%)**
 - Your **OSS project with your desired topic** (open probably at Github)
 - You can perform the project **individually** or **as a team**.
 - (In case of teams) Their difficulty score will be considered with the number of members.
 - **Presentation** (a short video; 1-2 min) is necessary at the end of this semester.
 - **Online exhibition** will be held after this semester.
- **Attendance (10%)**
 - Please let me know your absence due to public affairs **though e-mail** to be recognized as attendance.

Grading Policy

- **Grading:** As good as possible [until the school's guideline](#)
 - Percentile
 - Korean course: A+ 10%, A0 30%, B+ 50%, B0 70%
 - English course: A+ 20%, A0 40%, B+ 60%, B0 80%
 - Average
 - Korean course: Max 3.30
 - English course: Max 3.60
 - Your final score and rank will be opened at the end of semester.
 - Please check your score and claim it **within the given deadline**.