

Machine Learning Engineer Course

Day 23

- Paper Introduction -



DIVE INTO CODE

Thursday September 23, 2021
DIOP Mouhamed



Agenda

- 1 Check-in**
- 2 Today's Objective**
- 3 Today's Task**
- 4 International Conferences and Papers**
- 5 Paper Introduction**
- 6 Sample Presentation Slide**
- 7 To do by next class**
- 8 Check-out**



Check-in

3 minutes Please post the following point to Zoom chat.

Q. What did you learn in the previous week?
(Anything is fine.)



Objectives of this project

Grasp the research trends in the field of interest in a short time based on common viewpoints.

To be able to give a short introduction in case you are asked about the articles you have read recently in an interview.



Today's Task

Select several relevant papers (5-10) and prepare a slide presentation with an abstract in a format that responds to a specific question, which should be presented in about 5 minutes.

Requirements :

- ① The presentation should be such that the listener can get some kind of trend in the field.
- ② Students should be able to answer the reason for the selection of the paper.



Today's Task

① What does it mean to "make a presentation that will help the listener understand some trends in the field?"

This time, it is not necessary to convey every detail of each individual research paper.

We will try to find the trend of the selected series of papers and communicate it.

② "Be able to answer why the paper was selected."

- It is a paper on a technology that is related to the problem of the company I want to work for.
- I chose a basic research paper based on my academic interests.
- I chose a technical paper on machine learning that might help me formulate my problematic thinking outside the domain of machine learning.
etc.



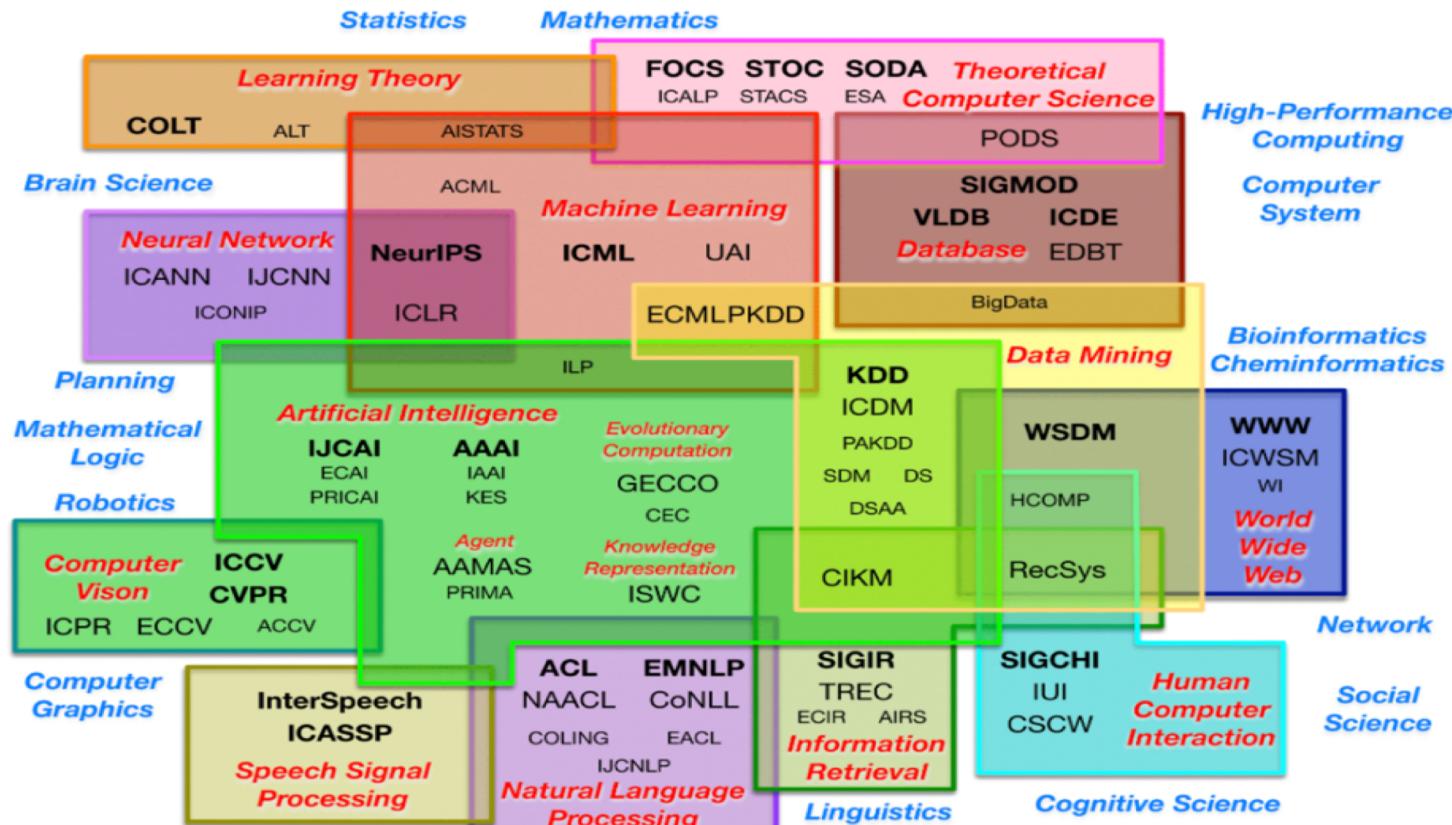
About this slide

Let's take a look at international conferences in the fields of computer science (CS) and AI.



Regions and Positioning of International CS Societies

<https://guanqun-vang.github.io/publications.html>



Map of International Conference by Mr. Toshihiro

http://www.kamishima.net/jp/kaisetsu/?_fsi=amvflHln&_fsi=cb4POCOl&_fsi=F4QjHGTW

<http://www.kamishima.net/archive/MLDMAImap.pdf>



Ranking of various CS-related international conferences

<https://webdocs.cs.ualberta.ca/~zaiane/htmldocs/ConfRanking.html>

- (DB) VLDB: Very Large Data Bases (since 1975)
- (DB) SIGMOD: ACM SIGMOD Conf on Management of Data (since 1975)
- (DB) PODS: ACM SIGMOD Conf on Principles of DB Systems (since 1982)
- (DB) ICDE: IEEE Intl Conf on Data Engineering (since 1984)
- (DB) ICDT: Intl Conf on Database Theory (since 1986)
- (DB) EDBT: Extending DB Technology (since 1988)
- (DM) SIGKDD: ACM Knowledge Discovery and Data Mining (since 1995)
- (DM) ICDM: IEEE International Conference on Data Mining (since 2001)
- (AI) IJCAI: Intl Joint Conf on AI (since 1969)
- (AI) AAAI: American Association for AI National Conference (since 1980)
- (AI) ICML: Intl Conf on Machine Learning (since 1984)
- (AI) UAI: Conference on Uncertainty in AI (since 1985)
- (AI) UMAP: Int Conf on User Modeling, Adaptation and Personalization (since 1985) [Was UM: Int Conf on User Modeling until 2009]
- (AI) NIPS: Neural Information Processing Systems (since 1987)
- (AI) AAMAS: International Conference on Autonomous Agents and Multiagent Systems (since 1997) [Was AGENTS: International Conference on Autonomous Agents until 2002]
- (NL) ACL: Association for Computational Linguistics (since 1963)
- (ED) AIED: Intl Conf on Artificial Intelligence in Education (since 1983)
- (ED) ITS: Intelligent Tutoring System Conference (since 1988)
- (IR) SIGIR: ACM SIGIR Conf on Information Retrieval (since 1971)
- (W3) WWW: World-Wide Web Conference (since 1994)
- (W3) ICIS: Intl Conf on Information Systems (since 1983)
- (DP) PPoPP: Principles and Practice of Parallel Programming (since 1988)
- (DP) PACT: Intl Conf on Parallel Arch and Compil Tech (since 1990)
- (DP) IPDPS: IEEE Intl Parallel and Dist Processing Symp (since 1986)
- (DP) ICPP: Intl Conf on Parallel Processing (SINCE 1972)
- (DP) Euro-Par: European Conf. on Parallel Computing (SINCE 1995)
- (GV) SIGGRAPH: ACM SIGGRAPH Conference (since 1974)
- (GV) CVPR: IEEE Conf on Comp Vision and Pattern Recognition (since 2000)
- (GV) ICCV: Intl Conf on Computer Vision (since 1987)
- (GV) 3DG: ACM-SIGGRAPH Interactive 3D Graphics
- (MM) ACM-MM: ACM Multimedia Conference (since 1993)
- (NC) SIGCOMM: ACM Conf on Applic, Techno, Archit, and Protocols for Comp Comm (since 1977)
- (NC) PERFORMANCE: IFIP Intl Symp on Computer Performance, Modeling, Measurements & Evaluation (since 1980)
- (NC) SIEMETRICS: ACM Conf on Meas & Modelling of Comp Sys (since 1981)
- (NC) INFOCOM: Annual Joint Conf IEEE Comp & Comm Soc (since 1982)
- (NC) MOBICOM: ACM Intl Conf on Mobile Computing and Networking (since 1995)
- (SE) IEEE Symposium on Security and Privacy (since 1980)
- (SE) CCS: ACM Conf on Comp and Communications Security (since 1993)
- (OS) SOSP: ACM SIGOPS Symp on OS Principles (since 1957)
- (OS) OSDI: Usenix Symp on OS Design and Implementation (since 1994)

Rankings by University of Alberta Computer Science Department

Rankings are not absolute, and different views can be found in the discussions.

<https://www.quora.com/What-are-the-best-conferences-and-journals-about-machine-learning>

Index	Conference	Attendance	Topics	Prestige	Note
1	NeurIPS	High	Wide	High	
2	ICML	High	Wide	High	
3	KDD	High	Wide	High	More focuses on new applications than basic methodology
4	AISTATS	Medium	Medium	High	Scale is limited because of a smaller range of topics
6	UAI	Medium	Medium	High	Scale is limited because of a smaller range of topics
7	COLT	Low	Narrow	High	Learning theory
8	ICLR	Low	Narrow	High	Deep learning
9	AAAI	High	Very Wide	Medium	
10	IJCAI	High	Very Wide	Medium	



Ranking of various CS-related international conferences

Ranking of international conferences on AI by number of papers published and number of citations (h-index)

https://scholar.google.es/citations?view_op=top_venues&hl=en&vq=eng_artificialintelligence

Ranking by Google Scholar Metrics 2019

Publication	<u>h5-index</u>	<u>h5-median</u>
1. Neural Information Processing Systems (NIPS)	<u>169</u>	334
2. International Conference on Learning Representations	<u>150</u>	276
3. International Conference on Machine Learning (ICML)	<u>135</u>	254
4. Expert Systems with Applications	<u>105</u>	139
5. IEEE Transactions On Systems, Man And Cybernetics Part B, Cybernetics	<u>100</u>	132
6. IEEE Transactions on Neural Networks and Learning Systems	<u>96</u>	127
7. AAAI Conference on Artificial Intelligence	<u>95</u>	153
8. Applied Soft Computing	<u>83</u>	113
9. Neurocomputing	<u>83</u>	105
10. The Journal of Machine Learning Research	<u>81</u>	143
11. IEEE Transactions on Fuzzy Systems	<u>81</u>	130
12. Knowledge-Based Systems	<u>79</u>	107
13. International Joint Conference on Artificial Intelligence (IJCAI)	<u>67</u>	100
14. Neural Computing and Applications	<u>60</u>	87
15. Neural Networks	<u>57</u>	90

CVPR, the top computer vision conference, ranks first in the h-index when it comes to CS conferences.
(Deep learning papers started to emerge around CVPR 2015)

<http://www.guide2research.com/topconf/>



2020-2021 International Conference Information

https://jackietseng.github.io/conference_call_for_paper/conferences-with-ccf.html

Level	Conference Name	Conference Location	Submission Deadline	Conference Date	Website	H-Index
A	CVPR 2021: IEEE Conference on Computer Vision and Pattern Recognition	Nashville, TN, United States	Nov 15, 2020 (TBD)	Jun 19 - Jun 25, 2021	http://cvpr2021.thecvf.com	240
A	NeurIPS 2020: Neural Information Processing Systems	Vancouver, Canada	May 12, 2020 (57)	Dec 6 - Dec 12, 2020	https://nips.cc/Conferences/2020	169
B	ECCV 2020: European Conference on Computer Vision	Glasgow, Scotland, United Kingdom	Mar 5, 2020	Aug 23 - Aug 28, 2020	http://eccv2020.eu	137
A	ICML 2020: International Conference on Machine Learning	Messe Wien Exhibition & Congress Center, Vienna, Austria	Feb 6, 2020	Jul 12 - Jul 18, 2020	https://icml.cc/Conferences/2020	135
A	ICCV 2021: International Conference on Computer Vision	Montreal, Canada	TBD	Oct 11 - Oct 17, 2021	http://iccv2021.thecvf.com	129
A	ACL 2020: Annual Meeting of the Association for Computational Linguistics	Seattle, Washington, United States	Dec 9, 2019	Jul 5 - Jul 10, 2020	http://acl2020.org	106
A	AAAI 2021: Association for the Advancement of Artificial Intelligence	Vancouver, British Columbia, Canada	Sep 5, 2020 (TBD)	Feb 2 - Feb 9, 2021	https://aaai.org/Conferences/AAAI-21	95
B	EMNLP 2020: Conference on Empirical Methods in Natural Language Processing	Barceló Bávaro Convention Centre, Punta Cana, Dominican Republic	May 11, 2020 (56)	Nov 8 - Nov 12, 2020	https://2020.emnlp.org	88



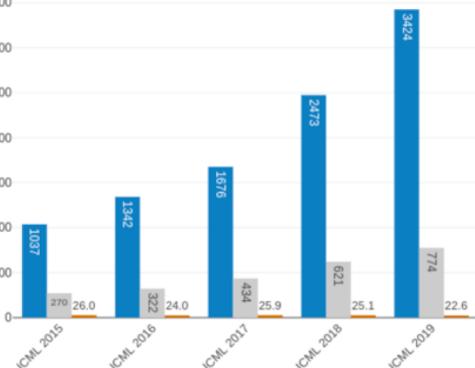
Tendency to accept papers

Number of applications (accepted) / Number of submissions (submitted)

NeurIPS 2018 : 1011 cases / 4856 cases (20.8%)

NeurIPS 2019 : 1428 cases / 6743 cases (21.1%)

<https://medium.com/@dcharrezt/neurips-2019-stats-c91346d31c8f>

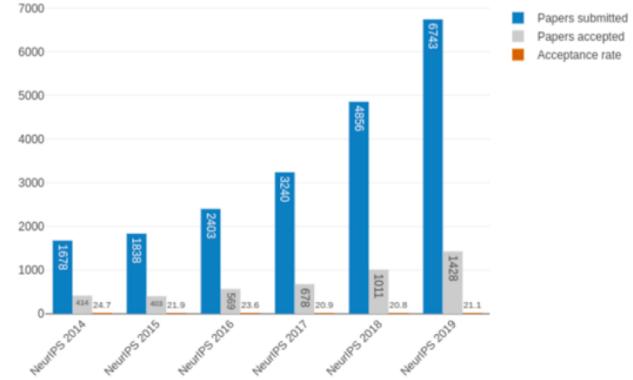


CVPR 2019 : 1294 cases / 5160 cases (25.0%)

CVPR 2020 : 1470 cases / 6656 cases (22.1%)

<http://cvpr2019.thecvf.com/files/CVPR%202019%20-%20Welcome%20Slides%20Final.pdf>

Statistics of acceptance rate NeurIPS



ECCV 2016 : 415 cases / 1561 cases (26.6%)

ECCV 2018 : 776 cases / 2439 cases (31.8%)

<https://www.springer.com/it/book/9783030012274>

ICLR 2019 : 500 cases / 1591 cases (31.4%)

ICLR 2020 : 687 cases / 2594 cases (26.5%)

<https://www.springer.com/it/book/9783030012274>



Methods of reviewing papers and problems and examples

Paper review

Double-blind peer review is the usual method of review:

A review system in which experts in each field are appointed as reviewers, and the reviewers and authors of the paper remain anonymous to each other.

Problems in peer reviewing papers for AI conferences:

Lack of a mechanism to reproduce experimental results.

Lack of qualified reviewers as the number of papers submitted increases.

The impact of positive comments on public platforms (such as arXiv, where papers are submitted before peer review) on reviewers' evaluations.

The tendency for reviewers to skip over complex formulas in papers.



An example posted on reddit (a message board) that went up in flames:

[R] NIPS 2018: How do I write a good review?

https://www.reddit.com/r/MachineLearning/comments/8ite3n/r_nips_2018_how_do_i_write_a_good_review/

[Discussion] I tried to reproduce results from a CVPR18 paper, here's what I found

https://www.reddit.com/r/MachineLearning/comments/9ihhet/discussion_i_tried_to_reproduce_results_from_a/



About the paper submission system

Each conference will specify where to submit the paper (paper submission management site).

MicrosoftCMT (NeurIPS · CVPR · ICML · ICCV · AAAI · IJCAI · COLT · AISTATS)

The screenshot shows the MicrosoftCMT Author Console interface. At the top, there's a navigation bar with tabs like 'Submissions' (which is selected), 'Help Center', 'Select Your Role: Author', 'CVPR2021', and a user account dropdown for 'yoshiko endo'. Below the navigation is a search bar labeled 'Author Console'. The main area has a search bar with placeholder 'Paper ID' and a 'filter...' button. To the right of the search bar is a 'Title' field. At the bottom of the search area are buttons for 'Show:' (set to 25), '50', '100', 'All', and 'Clear All Filters'. The URL <https://cmt3.research.microsoft.com/Conference/Recent> is visible at the bottom right.

OpenReview (ICLR · ECCV)

The screenshot shows the OpenReview.net homepage. The header includes the logo 'OpenReview.net' and a search bar. Below the header, it says 'International Conference on Learning Representations'. Underneath, it lists 'ICLR 2020' with details: 'Addis Ababa, Ethiopia', 'Apr 30 2020', and a link to 'https://iclr.cc/Conferences/2020'. It also mentions 'Please see the venue website for more information.' and 'Submission Start: Aug 01 2019 11:59PM GMT, End: Sep 25 2019 02:59PM GMT'. At the bottom, there are tabs for 'Poster Presentations', 'Spotlight Presentations', 'Oral Presentations', and 'Withdrawn/Rejected Submissions'. A specific post titled 'Large Batch Optimization for Deep Learning: Training BERT in 76 minutes' by Yang You, Jing Li, Sashank Reddi, Jonathan Hseu, Sanjiv Kumar, Srinadh Bhojanapalli, Xiaodan Song, James Demmel, Kurt Keutzer, Cho-Jui Hsieh' is shown, along with its publication date ('26 Sep 2019 (modified: 11 Mar 2020)'), conference ('ICLR 2020 Conference Blind Submission'), readers ('Everyone'), replies ('7 Replies'), and a 'Show details' link. The URL <https://openreview.net/group?id=ICLR.cc/2020/Conference> is at the bottom right.

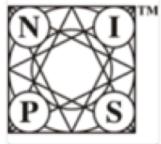
EasyChair (WWW)

The screenshot shows the EasyChair interface for 'TheWebConf 2020 (The Web Conference 2020)'. The header includes the logo 'My EasyChair' and a 'πreprints' button with the slogan 'It's easy!!!'. Below the header, there's a navigation bar with links for 'Conferences', 'CPNs', 'Preprints', 'Slides', 'News', and 'EasyChair'. The main content area displays a message: 'You are trying to enter EasyChair pages for TheWebConf 2020. Paper submission for TheWebConf 2020 is closed.' and 'You seem to have no previous roles at TheWebConf 2020, so you cannot enter its pages. If you have questions about the conference, please contact TheWebConf 2020 chairs.' The URL <https://easychair.org/my/conference?conf=www2020#> is at the bottom right.



Paper Introduction

Access to accepted papers



NeurIPS (NIPS Proceedings)

<https://papers.nips.cc/>
<https://openreview.net/group?id=NIPS.cc>

It is managed by the NeurIPS Foundation.

The name was changed from NIPS to NeurIPS in 2018.



CVPR · ICCV · WACV · ECCV2018 (CVF Open Access)

<http://openaccess.thecvf.com/menu.py>

Registered and copyrighted by the Computer Vision Foundation (CVF) to IEEE Xplore

ECCV (Springer link)

<https://link.springer.com/conference/eccv>

Published by Springer. Free access is available immediately after the conference.



ICLR (OpenReview)

<https://iclr.cc/Conferences/2019/Schedule?type=Poster>
<https://openreview.net/group?id=ICLR.cc/2020/Conference>

It will be published in OpenReview.

Even if your paper is not accepted, the link will be maintained at the time of submission.



ICML (PMLR)

<http://proceedings.mlr.press/v97/>
<https://openreview.net/group?id=ICML.cc>

Publish machine learning research papers under copyright protection with ISSN so that they can be published.



Paper Introduction

Access to and use of papers, including non-refereed papers

arXiv.org: preprint server <https://arxiv.org/>

- Free dissertation publishing platform for quick information exchange without peer review.
- Currently operated by Cornell University Library

Arxiv Sanity Preserver: News Feed of Papers <http://www.arxiv-sanity.com/>

- You can also view discussions and more.

arXiv Vanity: Format conversion service for arXiv papers (pdf→html)

<https://www.arxiv-vanity.com/>

- There are rare papers that fail to convert.



Paper Introduction

Useful support sites

paperwithcode: a site that archives papers with github code.

(Let's do a search using Browse state-of-the-art.

<https://paperswithcode.com/sota>

arXivTimes: A brief summary of the arXiv paper

<http://arxivtimes.herokuapp.com/>

Personal blog: How to read arXiv broadly and shallowly

<https://ensekitt.hatenablog.com/entry/2017/12/15/200000>

Personal Blog: Why and How to Read a Research Paper

Andrew Ng: "After completing a few ML-related courses, the best way to go further is to read research papers. Even better, try to replicate the results of the research paper."

<https://towardsdatascience.com/getting-started-with-reading-deep-learning-research-papers-the-why-and-the-how-dfd1ac15dbc0>



Summary sites of past conferences

Look for trending issues at conferences (e.g., NeurIPS 2019)

NeurIPS 2019 Keynote Address

<https://neurips.cc/Conferences/2019/Schedule?type=Invited%20Talk>

A bird's-eye view of modern AI from NeurIPS 2019

<https://alexkolchinski.com/2019/12/30/neurips-2019/>

Key trends from NeurIPS 2019

<https://huyenchip.com/2019/12/18/key-trends-neurips-2019.html>

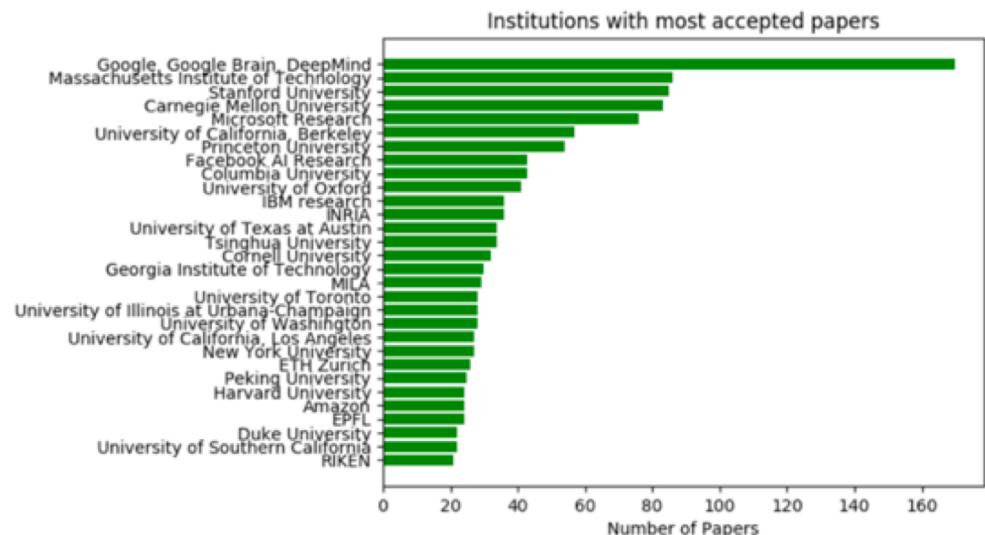
NeurIPS 2019 Accepted Papers by Company

Google

<https://ai.googleblog.com/2019/12/google-at-neurips-2019.html>

Facebook

<https://research.fb.com/conferences/neurips-2019/>





Paper Introduction

Let's use this format to summarize



What is it about ? / Main Idea

Write here what you read in the abstract, conclusion and introduction.

Is there any discussion?

Write here what you read in the discussion.

How did they verify that it works ?

Write down what you read in the experiment.

What's the uniqueness compared to prior research?

Related papers and what is interesting about this paper compared to others

What are the methods, technics ?

Write what you read about the Experiments, Materials & Methods.

What is the next paper to read

Write here what you read in the bibliography.

Post to SlideShare and SpeakerDeck for external audiences to see.

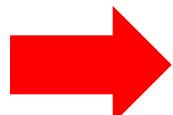
<https://slidehelper.com/blog/slideshare-alternatives-create-share-online-presentations/>



Sprint 16 – Paper Introduction

Explanation about this Sprint is given but please try it on your own first.

Sprint 16 – Paper Introduction



Please work on your own after class and submit your assignments on DIVER.



Sample Presentation Slide

IUST at SemiEval-2020 Task 9: Sentiment Analysis for Code-Mixed Social Media Text using Deep Neural Networks and Linear Baselines

[July 2020] Soroush Javdan, Taha Shangipour Ataei and Behrouz Minaei-Bidgoli

Main Idea

Development of a system that can predict the sentiment of a given code-mixed tweet.

Methods

The NBSVM, SVM with TF-IDFmatrix, XGBoost, Bi-GRU-CNN+BiLSTM-CNNL, DistilBERT-LR, CNN-GloVe+fast text and CNN-fastText are used. In addition, for all models, input with and without processing are used.

[Link] <https://arxiv.org/pdf/2007.12733.pdf>

Content

After highlighting the related works, the dataset is discussed before the methodology where the preprocessing occurs. Then the different models are discussed. Finally the results are shown based on all models to access their performance.

Related – Interesting Paper(s)

Souwick Ghosh, Satanu Ghosh, and Dipankar Das. 2017. Sentiment identification in code-mixed social media text. (This paper is in phase with the current study)

Verification

The Spanish-English dataset (15000 data samples for the train and 3789 for the test) and the Hindi-English (15131 and 3000) are used. The NBSVM showed impressive results compared to other models.

Originality - Effectiveness

Many models have been used for comparison in this study. In addition, different datasets were used which makes the results diverse and effective. In addition the strength of the combination of NBSVM and TF-IDF was shown.

Presented by: M. DIOP Mouhamed



ToDo by next class

Next class will be Zoom : Thursday September 30, 2021 19:30 ~ 20:30

ToDo: Faster R-CNN and YOLO v3

<https://diveintocode.jp/curriculums/1906>



Check-out

3 minutes Please post the following point to Zoom chat.

Q. Current feelings and reflections
(joy, anger, sorrow, anticipation, nervousness, etc.)



Thank You For Your Attention

