

AI 6102: Machine Learning Methodologies & Applications

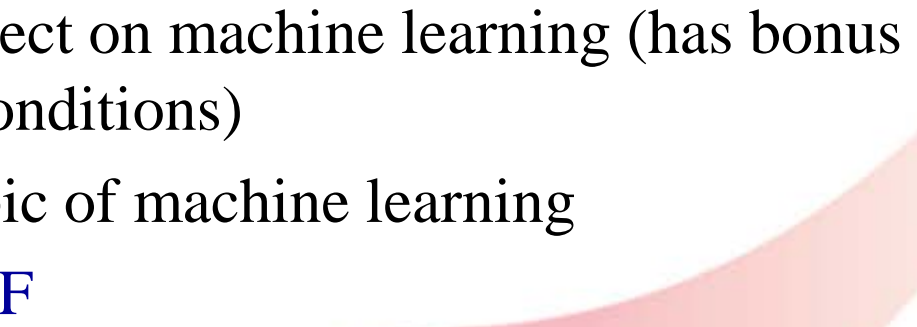
Term Paper Instructions

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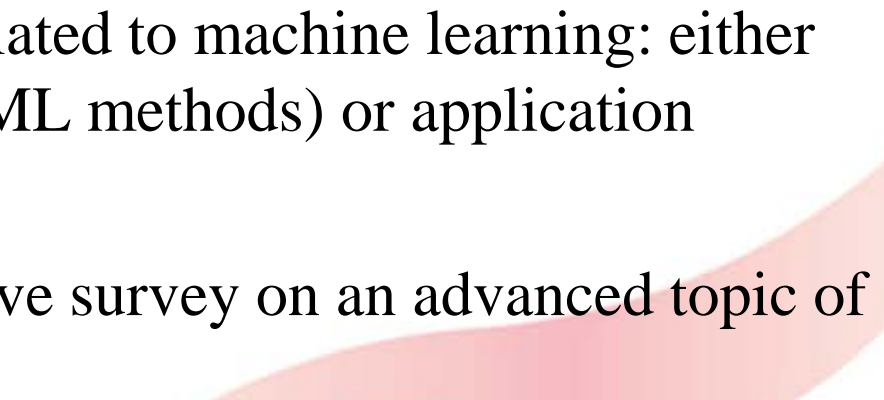
General Information

- The term paper can be group-based or individual
 - Each group consists of at most 3 members
 - The topic of the term paper is flexible, 4 options to choose:
 - Participate an ongoing Kaggle competition (has bonus marks based on some conditions)
 - Participate a completed Kaggle competition
 - Conduct a research project on machine learning (has bonus marks based on some conditions)
 - Survey an advanced topic of machine learning
 - Submission: a report in PDF
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Kaggle Competition Candidates (Completed)

- Zillow Prize: Zillow's Home Value Prediction (Zestimate)
url: <https://www.kaggle.com/c/zillow-prize-1>
- Sberbank Russian Housing Market
url: <https://www.kaggle.com/c/sberbank-russian-housing-market/>
- Costa Rican Household Poverty Level Prediction
url: <https://www.kaggle.com/c/costa-rican-household-poverty-prediction/>
- Store Item Demand Forecasting Challenge
url: <https://www.kaggle.com/c/demand-forecasting-kernels-only/>
- Nomad2018 Predicting Transparent Conductors
url: <https://www.kaggle.com/c/nomad2018-predict-transparent-conductors/>
- New York City Taxi Fare Prediction
url: <https://www.kaggle.com/c/new-york-city-taxi-fare-prediction/>
- Womxn in Big Data South Africa: Female-Headed Households in South Africa
url: <https://zindi.africa/competitions/womxn-in-big-data-south-africa-female-headed-households-in-south-africa>
- Plant Seedlings Classification
url: <https://www.kaggle.com/c/plant-seedlings-classification>
- Elo Merchant Category Recommendation
url: <https://www.kaggle.com/c/elo-merchant-category-recommendation/>
- Northeastern SMILE Lab - Recognizing Faces in the Wild
<https://www.kaggle.com/c/recognizing-faces-in-the-wild/>

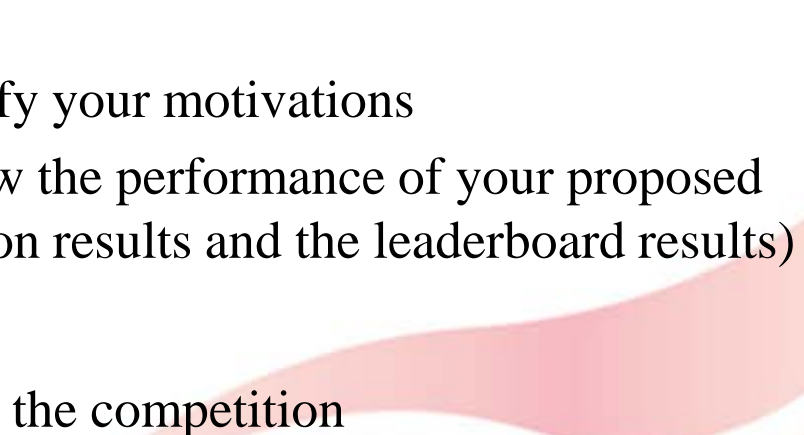
Brief Description

- Ongoing Kaggle Competition
 - Any ongoing Kaggle Competition which will end in Apr. or May 2022
 - Completed Kaggle Competition
 - Pick one from the candidate list on the next slide
 - Research Project
 - Any research project related to machine learning: either fundamental research (ML methods) or application
 - Research Survey
 - Conduct a comprehensive survey on an advanced topic of machine learning
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Report – Kaggle Competition

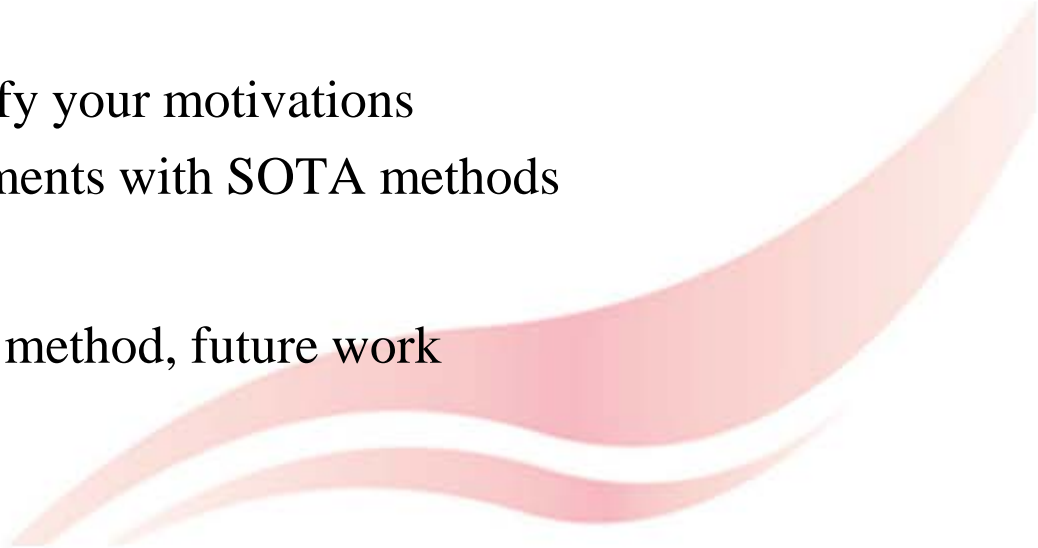
including both completed & ongoing

Recommended content

- Problem statement of the task in your own words
 - Challenges of the problem
 - Your proposed solution
 - Motivation (feature engineering, ML methods, etc)
 - Detailed steps with explanations
 - Experiment
 - Conduct experiments to verify your motivations
 - Conduct experiments to show the performance of your proposed solution (both cross-validation results and the leaderboard results)
 - Conclusion
 - What you have learned from the competition
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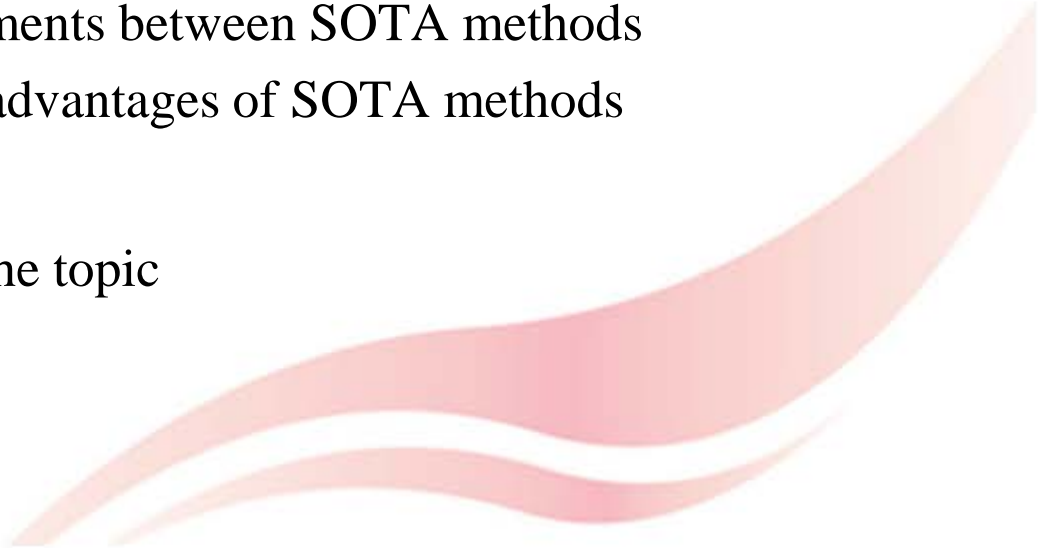
Report – Research Paper

Recommended content

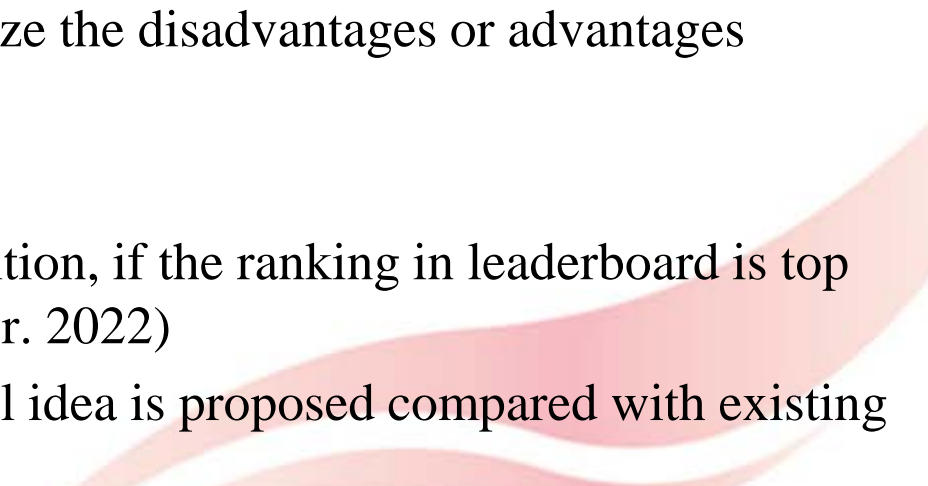
- Problem statement of the research topic
 - Related work – limitations of existing methods
 - Your proposed method
 - Motivation
 - Detailed steps with explanations
 - Experiment
 - Conduct experiments to verify your motivations
 - Conduct comparison experiments with SOTA methods
 - Conclusion
 - Limitation of your proposed method, future work
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Report – Research Survey

Recommended content

- Problem statement of the research topic
 - Categorize existing methods based on your own insights
 - Describe some representatives in each category
 - Motivation, high-level idea, detailed methodology
 - Experiment
 - Conduct comparison experiments between SOTA methods
 - Analyze advantages and disadvantages of SOTA methods
 - Conclusion
 - Potential new directions of the topic
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Evaluation

- **Writing**
 - Whether the organization is logically clear
 - Whether the descriptions on the proposed solution / proposed method / existing SOTA methods are clear
 - Whether there are many typos
 - **Experiments**
 - Whether the experiments are extensive to verify the proposed solution / proposed method or to analyze the disadvantages or advantages between SOTA methods
 - **Bonus**
 - For ongoing Kaggle competition, if the ranking in leaderboard is top 10% (cutoff date: by 25th Apr. 2022)
 - For research paper: if a novel idea is proposed compared with existing methods
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Key Dates

- Send me group information and topic of the term paper via email
 - by 11th Feb. 2022
- Submit the final report to NTULearn
 - by 11:59pm, 25th Apr. 2022

February 2022 Calendarpedia
Your source for calendars

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	1	2	3	4	5

April 2022 Calendarpedia
Your source for calendars

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Thank you!

