Paper Project

20/12/20

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Objective

- Gaining basic knowledge about scientific research,
- Applying CV methods to a problem,
- Learning how to write a scientific paper

You are expected to choose / find a project topic and come up with a solution to the problem, do the experiments and finally write your finding as a scientific paper (See the past SIU Sinyal İşleme Uygulamaları Conference papers, IEEE).

You will be assigned with an advisor, possibly with a PhD student studying CV. She/he will help you with your progress (methods, papers, preparing the paper etc.).

Each week, you need to submit your progress report to Canvas.

Note: After reading this documentation, if you have questions, you can ask in Canvas Discussions.

Steps:

1. (If you are allowed) Choose your project partner
2. Picking a project topic
3. Literature Review
4. Running the current methods,
5. Improving the current method or proposing a new one,
6. Experiments,
7. Writing the results as a paper

1. Choose your project partner

If you are taking COMP431 course , you are allowed to work in group of two people. Choose your partner. You can send your decision to TA or ask for help from the TA.

At the end, you will need to clearly tell us who did which part so that we can score your performance separately.

2. Pick a project topic

Any project topic related to CV is acceptable as long as it has a chance to be accepted to be presented in the conference.

Some tips for choosing a good project topic:

1. The most common problem in CV field is implementation of the previous methods and finding good datasets. If you want to do less work, please make sure that the method you are going to use has a **working code**. Beware that most of the methods claims that they have a working code but quite of them does not work in reality.
2. Also make sure that there is **a good dataset** about your problem. If you are going to use supervised learning, make sure that the dataset has ground truth data (that is, labeling, classes etc.)
3. You are not an expert. So, the best possible way to make a contribution to the field is **choosing a very specific problem**, and borrowing one of the **most recent methods from another research problem**:
    a. Be specific: For example, cancer detection from chest X-Rays is a very well known and a very competitive field. Most of the recent methods would be already applied to that problem. However, if you can find a very specific problem, such as, counting albino rainbow trouts in a fish tank, you have a chance. But this time, you will have two problems:
        i. it would be hard for you to find a dataset.
        ii. It would be hard to convince the referees that your problem is important
    b. Recent methods from other problems: Nowadays, most of the AI methods provide their sample code. You can find one and try it out on the problem you picked.

3. Literature review

Now you have the problem. You need to first learn what others did for this problem and what is the most recent method? You are not expected to understand the methods to the core but at least you need to have an idea. You can use scholar.google.com

4. Running current methods

Giving a comparison in the paper (results of your method vs. other method/s) is very convincing, but not mandatory.

5. Improving current methods, or proposing a new one

Sometimes, by making small changes on current methods may increase the performance.
If you get a method from some other research and apply it to the problem you picked, and if it works, it becomes your solution to the problem.

6. Experiments

This is the part you show the performance of your method on the specific problem you are addressing. If the experiments are not convincing, you will be rejected.

7. Writing a scientific paper

The best way to learn it is reading others' works. You are already going to read some papers for literature review. So, when doing that, please take some notes about how the others have written. Your advisor will also guide you in that matter.

Evaluation

Your effort in each step will be evaluated by the teacher and the advisor. If you write a paper with a good chance of getting accepted, you will get a high score.
Each week, you need to submit your progress report to Canvas.

FAQ

1. What will be the language of the paper?
    a. If all the authors are Turkish, it must be in Turkish. Otherwise, you are free to choose between Eng/Tur. Rules will be declared when SIU conference is announced.
2. Which criterias are taken into account when a paper is reviewed by the referees?
    a. Here is the paper publication progress in a nutshell:
        i. You prepare a paper, submit it (in our case we will submit it to SIU 2021 conference). 2-4 referees from the related field will be assigned to assess your paper. They will either accept or reject it.
    b. The criterias:
        i. Is the problem important?
        ii. Is the solution novel? In your case, even a slight improvement over the past solutions should be enough.
        iii. Does the test results justify the claim of the paper? Are they convincing?
        iv. The language used in the paper, is it proper? (formal, passive voice, fluent, clear, etc.)