Theory of Science - Deliverables

Hilmar Gústafsson

Deliverable 1

1. Write one paragraph summary of the area where you do your current project.
2. Find two suitable workshops and two suitable conferences where your current project work could be possibly published. The submission deadline for the conferences/workshops should be in this or next year. For each workshop/conference provide its full name, acronym, an URL to the homepage of the event and the submission deadline.

Project Summary

My group and I will be continuing with the multi-group project aStep, with an emphasis on Deep Learning. More specifically, we are working on the classification of spatial data. (Road Networks)

Workshops

- IEEE International Conference on Big Data 2019
  - IEEE BigData 2019
  - http://cci.drexel.edu/bigdata/bigdata2019/CallWorkshops.html
  - Deadline: 20 April 2019
- IEEE Cognitive Communications for Aerospace Applications Workshop
  - CCAAW
  - http://ieee-ccaa.com
  - Deadline: February 18, 2019

Conferences

- Third International Conference on Intelligent Computing in Data Sciences
  - (ICDS)
  - http://www.researchnetwork.ma/icds2019/index.html
  - Deadline: 30 April 2019
- IEEE International Conference on Computational Intelligence and Computing Research
  - ICCIC
  - http://www.itfrindia.org/2019ICCIC/
  - Deadline: 31 October 2019

Deliverable 2

1. In groups, rewrite the title and abstract of your last year project. You should try to apply the rules/suggestions mentioned during the lecture and your target audience are computer science students that just finished their second year at the university. The basis for the abstract is your group work but it should be then individually improved (after the feedback you get) before it is added to your report.
2. In the report write the names of all students participating in the preparation of the title/abstract.

Title

Decision Trees for Robot Based Lego Classification

Abstract

The universal problem of owning Lego pieces is stepping on them. We suggest a method to improve the well-being of feet by applying robotics to this problem. We develop an embedded system capable of sorting Lego pieces. We develop the system in two parts, a Lego robot and a machine intelligence unit. We analyze several commonly used image classification algorithms on a custom image data set. We observe the accuracy of these algorithms using k-fold cross-validation and a confusion matrix. Based on the results of this analysis, we choose Decision Tree Classification, which we estimate to have an accuracy of 94.9% based on the aforementioned analyses. We choose methods for preprocessing based on practical tests. Finally, we create a system capable of classifying Lego pieces with an estimated accuracy of 68.3% in practice.

The writers of the original deliverable were:

Hilmar Gústafsson

Rasmus Grønbæk

Rolf Sehested

Tamas Winkler

Deliverable 3

1. Read the above mentioned paper How to Present a Paper in Theoretical Computer Science: A Speaker's Guide for Students by Ian Parberry.
2. Write a summary of the content of the paper (one paragraph).
3. List five points mentioned in the paper where you think are your majour weaknesses when giving a (slide) presentation and where you would like to improve in the future.

Summary

The paper describes some methods of preparing, writing and giving a talk. Its main focus is the scientific domain, but most of the tips can be generalized to a wider setting. It discusses the appropriate use of *transparencies,* or slides, and general presentation tips using projectors, microphones, etc. It also covers some social aspects of giving a talk, such as the appropriate way to deal with questions afterwards.

Improvements

- Use Repetition
- Remind, don't Assume
- Use a Top-down Approach
- Communicate the Key Ideas
- Provide a Road-map

Deliverable 4

1. Write your answers on the questions in cases A, B, C and D covered during the lecture (see the lecture slides).
2. Did your opinion on some of the ethical issues changed after you discussed the cases in the groups/classroom? Comment briefly on how if your answer to this question was positive.
3. In the report write the names of all students participating at the group discussion.

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1. Cases

Case A

1. If she is of the opinion that Ben did not contribute, she has the option to retract the paper from the conference and try to publish in a journal; but he does not deserve to be considered author; she could try to publish in another way or gather the resources in another way, take a loan, crowd source.
2. He could have contributed further if he wanted to be considered co-author; informed of the formalities in the beginning; he should have taken the discussion of authorship the moment it came up.
3. She could have taken steps to formalize their mutual expectations at the beginning: but no.

Case B

1. There is the possibility of irresponsible conduct in crediting Bob for the work Anna did to the point where he is awarded a PhD if he did not contribute sufficiently, when before adding Anna's previous work he had not contributed sufficiently to be awarded a PhD, she did not inform professor P the problem was solved or mostly solved.
2. Clearly inform the professor, or the professor should have asked for clarification about the change in the report's content.
3. A higher authority should be informed, Bob could be removed as co-author of the paper by information of retraction if possible and directed to complete his PhD independently.

Case C

1. If each paper it is separated into is a significant contribution by itself then it would be justified.

2. Alphabetical order; or assistant professor first to acknowledge seniority.
3. A section where the authors clarify who are responsible for which of the most significant contributions.

Case D

1. Acknowledge and include the existence of those results, clarify that the results are suspect, note that they do not account for those results in the statistical analysis.
2. If it is noted that the results are not included, then it is reasonable to exclude those in the analysis.
3. Check onlineethics.org or ask the university ombudsman.

2. Opinions after the discussions

I had felt that the professors had more responsibility than I now do. The professors are not responsible for the quality or ethical correctness of the work their students do - at least until the final evaluation. Until then, they are simply advisors, where the main responsibility is placed on the students themselves.

3. Participants

Malte Zoëga Andreasen

Rune Skifter Kristensen

Hilmar Gústafsson

Michael Christensen

Martin Rix Andersen

Rasmus Bundgaard Eduardsen

Bjarke Hillmer Møller

Lasse Østergaard

Deliverable 5

1. Write your answers on the questions in cases A, B and C covered during the lecture (see the lecture slides).
2. Did your opinion on some of the ethical issues changed after you discussed the cases in the groups/classroom? Comment briefly on how if your answer to this question was positive.
3. In the report write the names of all students participating at the group discussion.

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1. Cases

Case A

1. Do you see any cases of irresponsible conduct? Plagiarism. Listing a manuscript as "submitted" although it wasn't. The professor didn't check the report for plagiarism in his reviews. Mark didn't take the university requirement for individual results seriously enough.
2. If so, what would have been the appropriate responsible conduct? Mark should have cited the texts instead of copying them verbatim, or paraphrased the main ideas with appropriate references. He should have just avoided listing the manuscript. The professor should check all submissions for plagiarism, by e.g. using a program for this purpose. Mark should have taken the university requirements more seriously.
3. What actions should be taken in the present situation, if any? We agree that Mark should receive some sort of punishment. It could either be:
4. Get kicked out for plagiarism
5. Get another chance at submitting the thesis, but losing his post-doc position due to the deadline which he will miss.

Case B

1. Do you see any cases of irresponsible conduct? John pitches the work of his colleagues without their knowledge. John also seems to make some big promises to ComCom without being able to follow up.
2. If so, what would have been the appropriate responsible conduct? John should have discussed this with his colleagues first, and been more clear about the situation with ComCom.
3. What actions should be taken in the present situation, if any? They should discuss the matter and make a decision together, and should all be in agreement. It is possible that ComCom would want to make a contract with the university instead.

Case C

1. Does Ben have any way of receiving credit for his work? Yes,
2. As he only wrote an abstract and a presentation on the technique, there's presumably plenty more he could write in an article. He could release this article, citing Dr. Freeman's conference paper (hopefully with Dr. Freeman's permission), and clarify that Dr Freeman's technique is based on a conversation they had.
3. He could contact Dr. Freeman and they could discuss ways that Dr. Freeman could give him credit. It is possible that the conference hasn't been held yet, which would make it easier to give credit to Ben.
4. Should he contact Dr. Freeman in an effort to have his work recognized? Yes, see previous answer.
5. Is Ben's advisor mistaken in encouraging his students to be so open about their work? No, as long as the students have some proof of their work (such as presentations, drafts, etc.), then they should feel free to discuss their ideas, with the understanding that they will be cited.

2. Opinions after the discussions

It would have been fine in Case A for Mark to reference his manuscript as long as he hadn't lied about it already being submitted. I guess we can reference whatever *we* deem to be the most reliable source available, even if that source isn't yet released. (He could have released it as a draft, too.)

Also, I understood the rules of plagiarism to be up to a certain percentage, but now I understand that any plagiarism is wrong, and it makes sense. Otherwise, where would we place the limit?

3. Participants

Hilmar Gústafsson – hgusta16

Mads Stenkær – mstenk16

Michael Christensen – mc16

Andreas Stenshøj – astens16

Mathis Højer Svendsen – mhsv16

Martin Simonsen – msimon16

Peter Fogh Bugtrup - pbugtr16

Deliverable 6

1. Select and read one paper of your interest from the recommended reading of blocks 1 to 5. (The paper by Ian Parberry from block 3 cannot be selected.)
2. Write a one paragraph summary of the content of the paper.
3. Why did you choose this paper and what was the most important thing that you can perhaps use in your future professional career?
4. What topic(s) covered during the first part of the course did you find most interesting?

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1. I selected and re-read Philip Koopman's "How to Write an Abstract".
2. **Summary**: A concise description of the construction of an abstract. It presents a checklist and some general advice, such as keeping it fully self-contained, meeting the word count limitation, and using key phrases, to make your abstract easier to find.
3. I chose this paper because it fits a surprising amount of useful information into very little text, just as an abstract should. I've wanted a recipe for an abstract every semester of my stay at the university, and finally one is provided. I intend to apply these principles as I continue to study for my Master's degree, and although I don't intend to pursue a career in academia, I believe the ability to write abstracts can be useful in business as well.
4. I was the most interested by the parts about writing a scientific paper, and I wish we had this course on the first semester instead of PBL.