

Control prin învățare (Learning Control)

Semester Project

This text describes the objectives, the procedure, and logistics of the semester project for the course “Learning Control”. This project will be graded separately from the course, within the standalone semester project discipline. The students have the option of choosing to do their project for this course or for other courses in the semester.¹

Objectives

With the introduction of electronic publications and other modern media, recent research results are becoming available at a very high pace and are easily accessible to most academic institutions as well as to the industry. However, effectively finding information through literature search is not at all easy and many students struggle with such a task. Therefore, this project aims to help students gaining experience with searching literature and writing a survey. In particular, the objectives of this project are to (i) acquire knowledge on recent research results through literature research, (ii) learn to effectively use search engines on the Internet, (iii) write a concise paper summarizing the findings, and (iv) present the results in a conference-like presentation.

Procedure in a nutshell

The project should be worked out along the following steps: form a group of two students, select a suitable topic and make sure you understand its goal, search the literature and process the results, write a paper, review and improve the paper, prepare a presentation, review and improve the presentation, hand in the paper and present the results in an interactive session. More details on each step are given below.

Groups and responsibilities within a group

Form a group of two students. Due to the large volume of work it is not possible to do this assignment alone. You are yourself responsible for finding a partner. Efficient teamwork is important for a successful outcome of this project. One of the group members is responsible for writing the paper, while the other prepares and presents the talk.

You have to critically review each others’ work as follows: the presenter reviews the paper and the writer reviews a presentation tryout. Be critical, but fair: a review indicating everything is perfect when there are, in fact, issues to be addressed, is not helpful! The review comments must be used to improve the paper and presentation. Review forms are available for download from the course page and they have to be delivered together with the paper. Decide among yourselves who will do what and also decide how to divide other parts of the work (e.g. searching and reading articles, and so on).

Selecting a topic

Meet with your group partner and select a suitable topic (assignment) from those listed on the course website. Send an email to the responsible lecturer (Lucian Bușoniu, lucian@busoniu.net) mentioning your selection. The selection is not final until confirmed by the lecturer! Select your topic as soon as possible. The deadline is 15 March.

Literature research

An assignment will typically consist of several questions related to an accompanying article. Use these questions as a guideline for your study and integrate the answers in the logical flow of your paper. However, keep in mind that the paper should be readable; do not structure it in a question–answer way! Do not restrict your reading to the article attached to the assignment, search for related articles as needed; sufficient understanding of the subject will most likely require further reading. Divide the work in an appropriate way.

Several tips for searching and reading articles:

- Always try to organize your reading by relevance. You will never have the time to read all the articles that seem interesting. A good starting point are the references cited in the paper accompanying the assignment.

¹This project is based on the literature assignment for the course “Knowledge-based control systems”, at TUDelft.

- In engineering, journal articles are typically preferable to conference articles. They are usually better written, more detailed and better thought over than conference articles. An exception to this rule is when you need to search for very recent results, which may not be published in journals yet. Most search engines (e.g., IEEE Xplore) allow you to select only results from journals.
- A good search result on a specific research topic is between 10 and 30 articles (preferably not more than 20 for the purpose of this project). This is of course just a rule of thumb, if the topic is highly popular you might get a lot of good results, if it is not so popular, very few. Also, if you are looking for a particular article, a single result is perfectly OK.
- You do not need to read all the articles page-by-page. A high-level scan is recommended as a first step, to determine the relevance of the article. For instance you can read the abstract, introduction and conclusions, and scan the technical contents. If you deem the article not interesting at this point, just file it somewhere and do not give it more time.

Summarizing, the recommended search steps are: 1) search by keywords; 2) if you get many search results, save only those that appear to be more relevant; 3) scan the abstract, introduction and conclusions, if the article is not relevant, put it away; 4) read the most relevant articles with care.

Writing the paper

Work on your paper regularly as you find new results in the literature, do not postpone the writing to the last moment. Research as you write, and write as you research! Initially, not all writing has to be formal and polished. Some writing is done simply to generate thoughts and to keep a record of ideas, however crude, so they can be reviewed and revised later. Pay attention to the structure of the final paper (which, of course, must be polished!). Organize around key sentences – readers of scientific papers expect to find one key point per paragraph. The point of the paragraph should be contained in a key sentence, located early in the paragraph and supported by the rest of the paragraph. Use the usual structure of scientific papers: Abstract, Introduction, one or more technical sections in the body of the paper, Conclusions and References. Use the feedback from the review to improve the paper. Proofread the final version of the paper at least a couple of times before delivering it, watching out for typos and mistakes, unclarity, awkward formulations, etc.

Preparing the presentation

A good way to design a presentation is top-down: think about the overall structure first, and then go hierarchically down into the details, filling each section with content. Using pen and paper at the design stage is generally very helpful. Try to find a good balance between high-level explanations and technical detail; use examples where necessary. Include an introduction, motivation, a clear problem statement, and – at the end – a concise summary and some conclusions: the ‘take-home message’ that you want to leave the audience with. When deciding on the level of the presentation, take into account the background of your audience (engineering students and teachers). Most (perhaps all) of the topics will be fairly specialized; you cannot assume the audience will be familiar with such topics, so you need to spend some time introducing them!

Rehearse your presentation beforehand, making sure that you do not exceed the allotted time interval (see below), but also that you do not fall significantly short of filling it. Since not everyone will be acquainted with the presenter, it is very important to introduce yourself clearly to the audience when starting to present.

Deliverables

As an outcome of this project, you have to hand in:

1. A paper describing your findings of the literature study. The paper must be written in a two-column format, using the 11-point Times Roman font, single spaced and must be between two and four pages in length. The first page of the paper must clearly indicate the name of the paper writer, and – separately – the name of the presenter (who is therefore the paper reviewer).
2. Two review forms: one for the draft paper and one for the presentation tryout.
3. A presentation, which will be held at an interactive session.

You can choose to write your paper, presentation, and forms in either English or Romanian. If you wish to have Romanian versions of the review forms, please contact the lecturer.

Please, send the paper and review forms in PDF (no other formats, please) by e-mail to Lucian Buşoniu (lucian@busoniu.net). Along with the paper, e-mail also your presentation. Two formats are supported for the presentation: (a) Adobe PDF, and (b) Microsoft Powerpoint. If you use (b) Powerpoint, please include a backup version of the Powerpoint file in PDF format. Do not forget to include any external files needed by your presentation, such as demonstration movies.

Deadlines and presentation session

Choose your topic by March 15th, 2013, following the instructions above. The project deliverables described above must be handed in before **May 15th, 2022, 24:00 (midnight)**. A session will be organized for all the presentations; the date and location of this session, as well as the time slot for your presentation, will be announced later. Each presentation will get 20 minutes, 15 minutes talk and 5 minutes at the end for questions.