

# Knowledge-Based Control Systems (SC42050)

## Description of the Literature Assignment

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### **Abstract**

The course Knowledge-Based Control Systems (SC42050) is based on a series of lectures and two assignments: a literature assignment and a Matlab assignment. This text describes the objectives, the procedure, and logistics of the literature assignment. The Matlab assignment is described in a separate document which will be distributed later and which is also available in the course website.

## **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 according to our experience, most students struggle with such a task. Therefore, this assignment aims to help students gaining experience with searching literature and writing a survey. In particular, the objectives of this assignment are as follows.

- acquire knowledge on recent research results through literature research
- learn to effectively use search engines on the Internet
- write a concise paper summarizing the findings
- present the results in a conference-like presentation

The assignment should be worked out along the following steps: form a group of four students, select a suitable assignment 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 at a symposium. The total time spending should be about 25 hours per person (that is 100 person-hours per group). More details on each step are given below.

## **Groups Responsibility**

Each student is responsible to find partners for the group. The first two lectures, and especially the breaks, are an excellent opportunity to meet fellow

students and make agreements. You can also use Blackboard facilities, such as the *Discussion Board*. By the end of second lecture you should have to send the group's members information. Efficient teamwork is important for a successful outcome of this project.

For a better team cooperation, you could use the following suggestion: Two of the four group members are responsible for writing the paper and the other two prepare and present the talk at the symposium. You have to critically review each other work as follows: the two presenters review the paper and the two writers review a presentation tryout. In this way, each of student evaluate the other members of the group and the evaluation forms are confidential and should not be discussed with other group members. The reviewers of the draft paper and the reviewers of the presentation tryout, should send their forms by the deadline directly to the assistants via email before symposium. The results of these evaluation forms will show the teamwork quality. Review forms are available for download from the course page and they have to be delivered together with the paper, and the presentation. Decide among yourselves who will do what and also decide how to divide other parts of the work (e.g. searching and reading articles).

Moreover, each group member will also review the paper and/or the presentation of another group. In this way, you will have the possibility to improve the assignment before final submission of the paper/presentation by considering the comments from the other group. The review group will be assigned to each other by the literature assistant. A document Answer to Reviewers has to be submitted, indicating how the comments from the other group were included (or why not).

## Assignment Selection

Start to have discussion inside group partners and select a suitable assignment via the menu item *Literature assignment* on the Blackboard page of this course. You must be enrolled in the course and logged in Blackboard to access this page. Follow the instructions in order to receive your assignment. By the second week of the course period, you should start working on the assignment.

## Literature Research

An assignment will typically (but not necessarily) 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 - not all the members of the group have to read all the articles. Here are 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.

- 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 particular research topic is between 10 and 30 articles (preferably not more than 20 for the purpose of this assignment). 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.

In short the summary of the recommended search steps are as follows.

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

## Paper Preparation

Work on your paper regularly as you find new results in the literature, start from the first day of your assignment, 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. Proofread the final version of the paper at least a couple of times before delivering it, watching out for typos and mistakes, awkward formulations, etc.

## Deadline & Deliverable

As an outcome of this project, you have to send via email the following documents a day before symposium day on April 5, 2017.

- A paper in a format of PDF describing your findings of the literature study. The paper must be written in a two-column, using the 11-point Times Roman font, single spaced and must be between two and four pages in length.
- A presentation in a format of PDF/PPT (PDF is preferred more) presenting your achievements and understanding of the topic. You will present this on symposium day April 5, 2017.
- Two review forms for the draft paper.
- Two review forms for the presentation tryout.

The name of aforesaid documents has to be as the following format using group ID number. Here we use ID as symbol (you should use your group ID number).

- ID-paper.pdf
- ID-presentation.pdf
- ID-R1-paper.pdf
- ID-R2-paper.pdf
- ID-R1-presentation.pdf
- ID-R2-presentation.pdf

One Answer to Reviewers document, compiling the comments from the other group and explaining how you included (or why not) their feedback. Hand-in paper and presentation to the reviewers via email not later than March 22, 2017. As reviewers, compile in one email all your feedback, and send it not later than March 29, 2017. Contact Jens Kober (j.kober@tudelft.nl) if you face any difficulties during this peer-review process.

- ID-A2R.pdf

## Symposium

The following information is important:

- before symposium date you should submit the outcome of your projects via email to the assistant.
- the symposium day is on April 5, 2017.
- Do not bring your own laptops to the symposium; laptops and laser pointers will be provided in both symposium rooms.
- The place and the schedule of the presentations will be announced later on the course web site.