The seminar 2: Literature (re)search and the state of art preparation

Objectives of the seminar:

- to explain the initial steps for the project preparation
  - to introduce how to prepare literature (re)search,
  - to introduce how to prepare the state of the art,
  - how to cite,
  - to explain the purpose of the annotation and the abstract

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Introductory words

Your goal is to prepare the analysis and the design of the multi-agent system (MAS). Firstly, it has to be clear for which purposes the MAS will be used – which kind of problem the MAS is going to solve. There is a list of projects from which you should choose the topic for your project, see *TopicsForProject-year.docx*. Selection of the topic is the first step in the project preparation. Literature research is the second step. What is the literature (re)search and why is it necessary for our projects?

What is the literature (re)search and why is it necessary for our projects?

According to the online The Writer´s Handbook (http://writing.wisc.edu/Handbook/ReviewofLiterature.html), the literature (re)search (or review) is described in the following way: "*The format of a review of literature may vary from discipline to discipline and from assignment to assignment. A review may be a self-contained unit -- an end in itself -- or a preface to and rationale for engaging in primary research. A review is a required part of grant and research proposals and often a chapter in theses and dissertations. Generally, the purpose of a review is to analyze critically a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles.*"

The much simpler definition of the literature (re)search or review can be the following (http://guides.library.harvard.edu/literaturereview): "*A literature review is an assessment of a body of research that addresses a research question.*"

Our goal is not to realise some type of scientific research, but we have to know something more about our topic of our project. For many of you, your selected topic will be new. So, in our point of view, the purpose of the literature review is to identify what is already known about our topic. We will specify only the textual description of the actual state of the selected application area without a comparison of papers. Textual description will be based on relevant, suitable and reliable literature sources (5 – 8). Literature review is based on the study of literature sources. Facts are collected and written with the goal to receive overview how the problem can be solved with the MAS (in our case). Preparation of the literature review will not be useful only for our subject, but for any problem solving (e. g. during preparation of your seminar works, bachelor or master thesis).
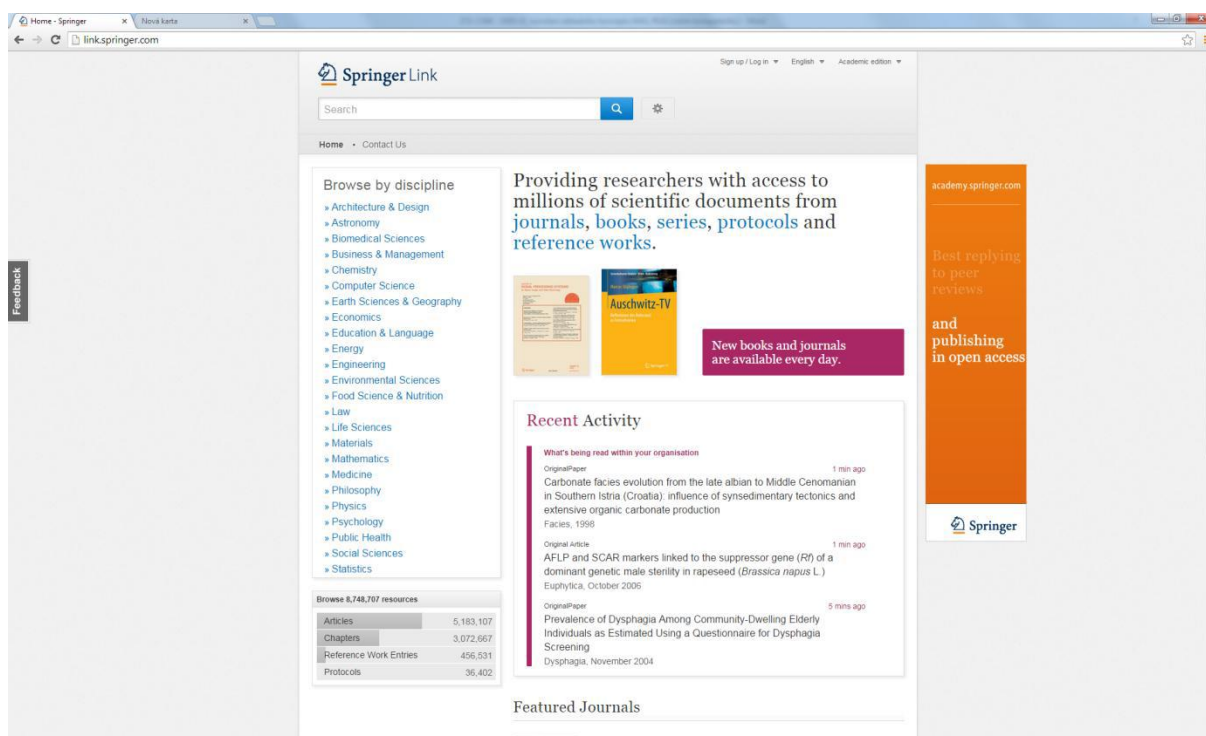
Your goal is to choose the topic, i. e. to decide what the MAS should do (i. e. for which purposes the MAS will be used). The MAS should not be used for trivial purposes. The MAS should solve a non-trivial problem. It is supposed to discuss the topic with your teacher before the preparation of detailed analysis and design. You should choose the topic from the list that is prepared for you, please see the Ukazky, Husakova.Martina.

You can use various literature sources for literature review preparation. In case of project preparation, use the following reliable sources which are found in the scientific databases:

- **Springer** – a publisher accessing database www.springerlink.com
- **Elsevier** – a publisher accessing database www.sciencedirect.com
- Scopus - https://www.scopus.com/

These scientific databases offer a lot of freely (not all of them) available scientific papers that are accessible from the IP school address (UHK buildings or virtual rooms, see IT support of the FIM UHK). The databases are also available on the UHK webpages: https://www.uhk.cz/cs-CZ/UHK/Centralni-pracoviste/Univerzitni-knihovna/Databaze-a-e-zdroje#UHK-Article

Main pages of both databases (Springer, Elsevier) are depicted on the figures below.

Springer Link database

ScienceDirect database

Springer database offers searching sources according to the filters. Firstly, it is necessary to add a search keyword into the empty field ("Search"), see figure below. Results can be narrowed with additional parameters. The figure below depicts graphical interface after specification of the first query - "agent".

1. Search field. You can use more keywords in this field.
2. Do not tick this field. If you thick it, you receive documents with restricted access (with a lock symbol). You should be interested in only full-texts.
3. You can set the ordering of results.
4. Click on this field for browsing additional options.
5. You can restrict the time horizon in which the papers were published.
6. You can restrict browsing according to the type of the document. Browse mainly the papers occurring in ARTICLES and CHAPTERS.

7. You can restrict disciplines. Probably, you will be interested in the "Computer Science".
8. You can set the language. English and Czech is an allowed language.

You can use the Elsevier database analogically, see figure below. This figure depicts the graphical interface of the Elsevier database.

1. Field for adding primary keywords. As you can see, there are additional parameters that you can use for literature searching.
2. You can restrict the year of literature publishing.
3. You can restrict the type of publication, e. g. journal, ...
4. You can set the topic of the interest.
5. You can set type of a content. A journal or a book will be the most important for us.
6. Mark the field for downloading the document in the future.
7. If you can see "PDF (size)", the document is freely available. If you can see "Purchase PDF", the document is not freely available.
8. IF you can see the green icon on the right side of the document´s title, the document is full-text. Open-access documents have orange colour.

There is a high probability that you will have to browse more documents than the required amount (5 – 8). You can suppose that you browse 15 – 20 or more documents for receiving 5 – 8 suitable and relevant documents. It is not necessary to read all of them from the beginning to the end. Read only the abstracts and decide if it makes sense to read the whole document. A typical document (an article) has 6 – 10 pages. Book chapters have 20 – 30 pages, sometimes more.

Include the newer materials into your state of the art preparation, i. e. use the following scale 2010 – 2017.

How to cite?

A citation is a way of giving credit to individuals for their creative and intellectual works that you utilized to support your research. It can also be used to locate particular sources and combat plagiarism. Typically, a citation can include the author's name, date, location of the publishing company, journal title, or DOI (Digital Object Identifer).

A citation style dictates the information necessary for a citation and how the information is ordered, as well as punctuation and other formatting

How to do I choose a citation style?

There are many different ways of citing resources from your research. The citation style sometimes depends on the academic discipline involved. For example:

- APA (American Psychological Association) is used by Education, Psychology, and Sciences
- MLA (Modern Language Association) style is used by the Humanities
- Chicago/Turabian style is generally used by Business, History, and the Fine Arts

For our purposes, we are going to use one of the most used citation styles – Harvard station, please see documentation in the Ukazky (Harvard_Complete.pdf and Harvard-Style-Guide-Dec-2014.pdf).

Annotation

After completion of the literature review, the mind map should be created, but this step is going to be explained more deeply in the next seminar. Annotation is required for the project, too. It follows the PEAS specification.

Annotation should offer a brief overview about your project, especially about the purpose and functions of the multi-agent system. The content of the annotation <u>should not include</u>:

- length of a text > 10 rows,
- results of your work,
- used methods,
- pictures,
- citations.

An abstract is different from the annotation, because it often includes the results of the research and used methods.

Good example of the annotation

"*The Diploma Thesis is focused on the interpretation of the concept ontology, the use of ontologies, their creation and application in practice. It contains a description of historical development, definition of ontological engineering, characteristics of OWL language (Web Ontology Language) and an outline to work with ontologies. The target is centered primarily on the knowledge representation using the OWL language, through selected versions of a specific editor. Subsequent comparison of selected versions based on specific criteria and appropriate recommendations for a defined target group. The Diploma Thesis also includes documentation of the resulting ontology in the form of figures and tables. The work is completed by the end of a certain recommendations, which is based on the creation of ontology in practice and comparison of different versions of the editor.*" (author: K. Báčová)

Bad example of the annotation

"*The Diploma Thesis is focused on the interpretation of the concept ontology, the use of ontologies, their creation and application in practice. It contains a description of historical development, definition of ontological engineering, characteristics of OWL language (Web Ontology Language) and an outline to work with ontologies. The target is centered primarily on the knowledge representation using the OWL language, through selected versions of a specific editor. Subsequent comparison of selected versions based on specific criteria and appropriate recommendations for a defined target group. It was find out that the Protégé editor 4.2.1 can be recommended for those users which ...* "*

This example of the annotation is not well prepared, because the annotation should not include results of the work.

End of the seminar

Exercises

- Choose the topic for your project, see the list with topics: Ukazky ...
- Open the library Springer and ScienceDirect, and try to find some documents relating with the multi-agent systems and with your topic of interest.
- Prepare the state of the art for your application domain.

The most important keywords:

- Literature review
- Citation
- Citation styles
- Harvard notation
- Annotation
- Abstract

References

- The Writer´s Handbook, [online], [cit. 31. 8. 2015], available: http://writing.wisc.edu/Handbook/ReviewofLiterature.html
- http://pitt.libguides.com/citationhelp
- https://library.leeds.ac.uk/skills-citations-harvard