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< >	Basic Informatics-E2 Basic Informatics-E2				EVEN Jani Juhani luc
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The transformation from am industrial society to an informational society that started in the seventies means that information has been playing an increasing role in society. Then, the development and adoption of modern communication technologies and internet gave it a central role in the economy. Nowadays, with the widespread use of smartphone and social media, information is part of every aspect of our lives. A huge amount of information at our disposal. As a result, in any career path, one must understand how information is processed by computers and be able to access, analyze, and visualize information.

This course introduces the fundamentals for understanding how information is processed by computers. We will learn how the collection, organization, and management of a large quantity of information is achieved. Then, we will introduce techniques for searching and analyzing large amount of information. In addition to " classical approaches", recent technologies taking advantages of deep neural network will be presented. Finally, we will introduce ways of presenting and visualizing the information. The students will learn about the necessary technologies to extract knowledge from large amount of information, analyze that information and format the results in an appealing manner for presentation.

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Students will learn how it is possible to handle large amount of information in an efficient manner. They will also acquire a general knowledge about information processing systems and an understanding of what techniques to use for a given problem.

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The course starts with an overview presenting the different topics that will be covered to get a general idea of the content.

Then, the first part will present techniques for automatic information processing and management:

 information processing system

 information storage (entity relationship model, relational databases)

 unstructured information (xml)

The next part will focus on accessing information:

 information retrieval and indexing (search engines)

 graph theory (page rank)

The next part we will deal with the representation of information by computers:

 information quantification (entropy)

 information acquisition (sampling and quantization)

 information representation (coding)

Then, will introduce techniques for information analysis:

 data mining

 " classical" machine learning (classification and clustering)

 deep neural networks-based machine learning

Finally, visualization techniques and information presentation will be discussed:

 diagram, graph and heatmap creation

Basic Informatics-E2(2)

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One to two sessions for each item.
The schedule and contents are subject to change based on class progress.

Total   14 classes, 1 Feedback session

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This is a beginner course: no prior experience is required. However, some mathematical developments require to be familiar with basic probabilities. Some basic computer skills are required for accessing the material (web browser) and submitting the assignments (writing or scanning). No programming skill is required as algorithms are presented using pseudo code in plain English.

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The evaluation will be based on an assignment given around midterm (50%) and a final examination (50%).

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No textbook, handouts.

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Some references will be given in class.

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The students are expected to review the new material within the week of delivery in order to smoothly follow the course.

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There is no specific office hour. Students can use e-mails for important communications, assignments, and questions.

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