School of Computer Science
University of Guelph

CIS*6030
Information Systems

Fall 2022

Instructor

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Course Objectives and Topics

An information system is used to store, process and analyze data. Information systems can be categorized into operational and analytical. An *operational* information system is used as the platform to support an organization's day-to-day operation. An *analytical* information system is used to analyze data to provide knowledge and information for an organization to make decisions. In recent years, more and more analytical information systems have been built to store and analyze large amounts of data for decision support.

In this course we will mainly study techniques for analytical information systems. The major topics include

- Physical data storage: files, indexing, and hashing
- Big data: characteristics, data types, NOSQL, analytics
- The Hadoop system: distributed file system and MapReduce programming
- Relational database model and SQL: data organization and querying
- Supervised and Unsupervised machine learning for analytics
- Support vector machine for analytics
- Deep learning and convolutional neural networks
- Python and R programming languages for analytics

Recommended Textbooks:

- R. Sharda, D. Delen, and E. Turban, *Analytics, Data Science, & Artificial Intelligence*, Pearson, 2020.
- T. Erl, W. Khattak, and P. Buhler, *Big Data Fundamentals*, Prentice Hall, 2016.
- H. Garcia-Molina, J. Ullman, and J. Widom, *Database Systems The Complete Book Second Edition*, Pearson, 2009.

Course Web:

http://moodle.cis.uoguelph.ca

Assignments and Term Project

1. Four assignments: $(25 + 15 + 20 + 20)\% = 80\%$.
2. Term project: 20%.

Schedule of Assignments and Project

- Assignments (due in):
  - Assignment 1: the week of September 26, 2022
  - Assignment 2: the week of October 10, 2022
  - Assignment 3: the week of October 31, 2022
  - Assignment 4: the week of November 14, 2022
- Term project (due on):
  - December 5, 2022

Note:

- Each assignment and project must be completed **individually**.
- For a programming assignment, use of any code from the Internet or other sources is not allowed.
- All programming assignment submissions will be checked by anti-plagiarism software.
- All cases of **academic misconduct** are handled by the Dean, in conjunction with the School Director. For details please see related pages in the *University of Guelph Graduate Calendar 2022-2023*.
- When you find you are unable to meet an assignment or project due time because of an *illness* or *compassionate* reason, please email the instructor **before** the due time to request an **academic consideration** (including assignment extension, weight adjustment, etc.). Academic considerations will not be granted for other reasons like heavy work loads of other courses or working outside campus.
- Any late assignment or project submissions will not be graded.
- To appeal a grade of an assignment you must request it within two weeks after it is returned.
- Only unchanged assignment submissions can be re-graded.
- Any email regarding the course work should be sent from your *uoguelph.ca* account, and should include "CIS*6030" in the subject.