



University of
South Australia

INFS 5100 Predictive Analytics

SP5 2023

Srećko Joksimović & Mahmoud (Mat) Ghazi

Acknowledgement of country

We respectfully acknowledge the Kaurna, Boandik and Barngarla First Nations Peoples and their Elders past and present, who are the First Nations' Traditional Owners of the lands that are now home to the University of South Australia's campuses in Adelaide, Mount Gambier and Whyalla. We are honoured to recognise our connection to the Kaurna, the Boandik and the Barngarla lands, and their history, culture and spirituality through these locations, and we strive to ensure that we operate in a manner which respects their Elders and ancestors. We also acknowledge the other First Nations of lands across Australia with which we conduct business, their Elders, ancestors, cultures and heritage.



University of
South Australia

Image courtesy of the artist and Mimili Maku Arts, University of South Australia Art Collection by the artist, Ngupulya PUMANI, b. 1948 Mimili, South Australia. Pitjantjatjara.

slido



How are you feeling today?

ⓘ Start presenting to display the poll results on this slide.

slido



Why this course?

ⓘ Start presenting to display the poll results on this slide.

Overview

- Course overview
 - Introduction
 - Course aims and objectives
 - Learnonline
 - Course content
 - Assessment
- Introduction to Data Mining



Course instructors

- Srećko Joksimović
- Data Scientist (Senior Lecturer)
 - Education Futures, Centre for Change and Complexity in Learning
- Background
 - Computer science, education, learning analytics, data science
 - PhD in Learning analytics, University of Edinburgh (Scotland)
- Learning analytics
 - “...augmenting abilities of individuals to solve complex problems in collaborative settings”



Course instructors (Practical)

- Mat (Mahmoud) Ghazi
- Background
 - MSc: Data Science, UniSA
 - B.S: Software Engineering



Predictive analytics

- What is predictive analytics?
- Course aim:
 - Understand how to process data for the need of analytics, how to build different types of classification models (classifiers), how to compare and evaluate those models, and how to use models to classify new objects into different categories.



Prerequisites

- INFS 4018 Business Intelligence and Analytics
- INFS 4019 Relational Databases and Warehouses



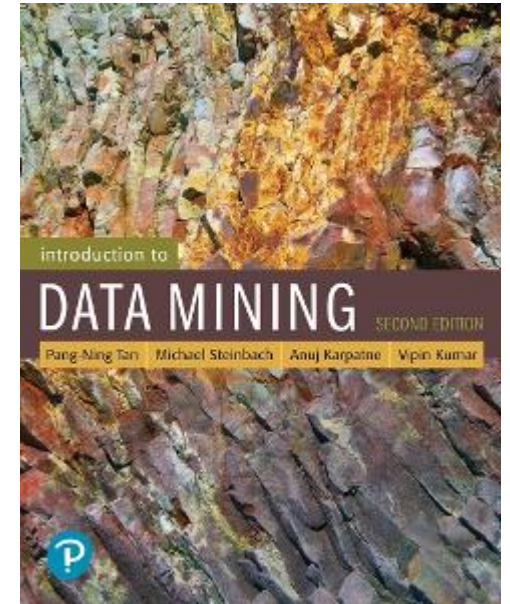
Course objectives

- CO1.** Apply standard processes to prepare large data sets for data exploration.
- CO2.** Perform data exploration on large data sets using visualisation, statistical techniques, and data mining techniques to identify relationships and opportunities.
- CO3.** Develop accurate descriptive and predictive models based on large data sets.
- CO4.** Perform predictive analytics on large data sets using an industry standard software tool-set.



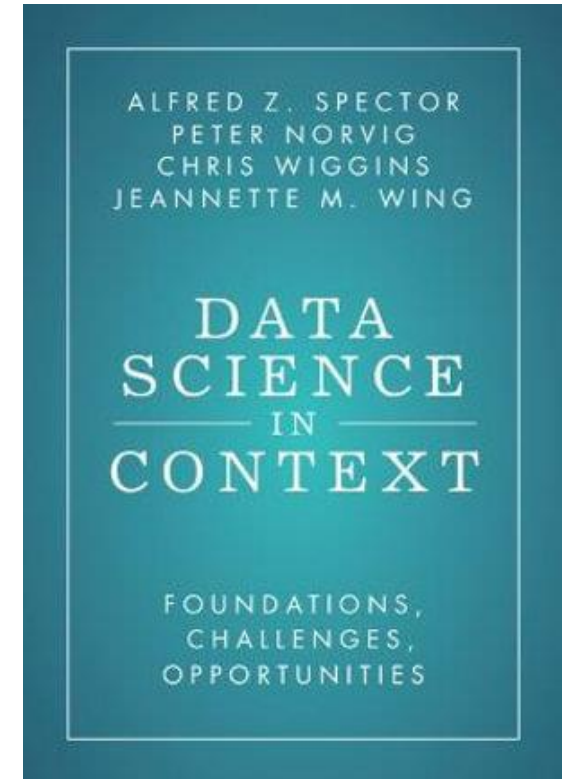
Textbook

Tan, P.-N., Steinbach, M., & Kumar, V. (2014). Introduction to Data Mining: *Pearson New International Edition*. Pearson



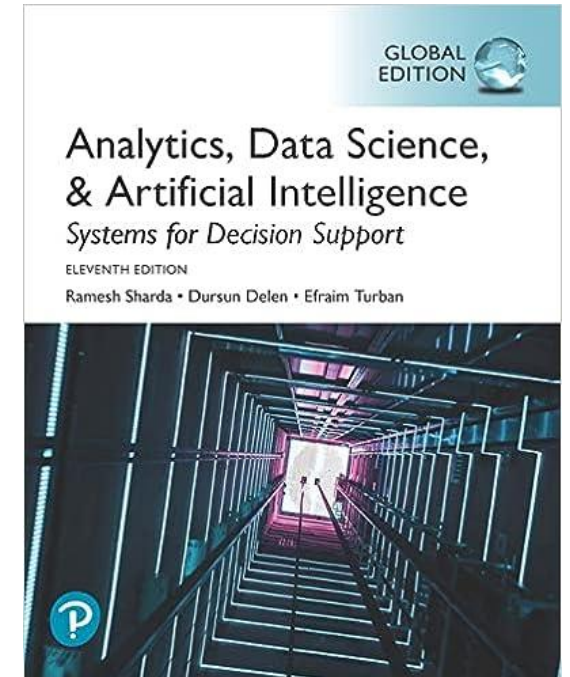
Another interesting book

Alfred Z. Spector, Peter Norvig, Chris Wiggins, & Jeannette M. Wing (2023). Data Science in Context: Foundations, Challenges, Opportunities: *Cambridge University Press*. GB



And one more...

Sharda, R., Delen, D., & Turban, E. (2020).
Analytics, Data Science, & Artificial Intelligence:
Systems for Decision Support



University of
South Australia

Software and technologies



learnonline

The screenshot shows the LearnOnline interface for the University of South Australia. The top navigation bar includes the university logo, the course name "INFS 5100 (SP5 2021) - Predictive Analytics", and the user's name "Srecko Joksimovic". The sidebar on the left contains a list of navigation options: Dashboard, Course Outline, Content, Assessment, Grades, Extensions, and Resources. The main content area displays the "Introduction" page, which includes a welcome message and two paragraphs of text about the course's aim and the growth of digital technologies.

University of South Australia SPS 2021 Predictive Analytics

Dashboard > Introduction

Introduction

Welcome to Predictive Analytics (INFS 5100)!

The aim of this course is to help you understand how to process data for the need of analytics, how to build different types of classification models (classifiers), how to compare and evaluate those models, and how to use models to classify new objects into different categories.

The growth of digital technologies has produced tremendous quantities of data. As more of our lives become technological - mobile phones, wearables, social media, online learning - the scale and scope of data continues to not only increase, but accelerate. To respond, organizations are confronted with the need to think differently about all aspects of the data cycle. It is no longer feasible to manage data in the way that data has been managed in the past. Structured and hierarchical approaches, such as library classification systems, are incompatible with the tremendous amounts of data now at the fingertips of average citizens. PW Anderson stated "more is different", indicating the qualitative shift in how large quantities of data are managed.

Data mining, in that sense, represents a technology that blends traditional data analysis methods with sophisticated algorithms for processing large volumes of data. As such, it opened novel and exciting opportunities for exploring and analysing new types of data, as well as approaching known data types in new ways.



Lectures



- Tuesday 9.10am-11am (online – Zoom link on learnonline)
 - Internal students, **attendance expected**
 - External students, **welcome to join**
- The Flipped Classroom Model
 - Videos for each topic/week are already uploaded
 - Please watch the video for the current week **BEFORE** coming to the classroom.
- Review activities
 - Before most of the classes, we will revisit some of the concepts introduced
 - Practical work, elaborate further on the most challenging concepts
- Visiting lecturers – TBC



Practical

- Week 2 – Week 12
 - Internal students –
 - » Tuesday 2.10pm-3pm, MLK/P1-13;
 - » Tuesday 3.10pm-4pm, MLK/P1-13
 - External students – online (self-paced)
- Not graded
- Extremely important for your assignments!
- Step-by-step instructions
- Google Colab – share with your course instructor



 ADMINISTRATION 

Course administration

Turn editing on

Edit settings

Course completion

Users

Filters

Reports

Gradebook setup

Extensions

Backup

Restore



Import

Reset

Question bank

Recycle bin

Site administration

 NAVIGATION 

Home

Dashboard

Site pages

My courses

EDUC 5033 (17802)

EDUC 5033 (18881)

EDUC 5033 (20857)

EDUC 5228 (14989)

EDUC 5244 (15809)

EDUC 5244 (18618)

INFS 5100 (19928)

Participants

Grades

INFS 5100 (SP5 2020) - Predictive Analytics

Introduction

TO DO

- ✓ Read suggested materials.

✓ Read the course outline and familiarise your self with the course structure. Make sure you understand what is included in the course assessment.


✓ Watch recommended videos.

✓ Share (in discussion forum) any additional materials you might find relevant for the course.
- ☐
- ☐
- ☐
- ☐




What you will learn?

- What is Predictive Analytics
- What **IS** Data Mining and what **IS NOT** Data Mining
- Motivational challenges associated with data mining
- Difference between supervised and unsupervised learning
- ☐
- ☐
- ☐
- ☐

Readings

-  Textbook: Chapter 1. Introduction (available through library.unisa.edu.au)
- Tan, P.-N., Steinbach, M., & Kumar, V. (2014). Introduction to Data Mining: Pearson New International Edition. Pearson (available at https://bit.ly/data_mining_textbook).
- ☐

Videos

-  A definition of data mining (via [Lynda.com](https://www.lynda.com) - 1m 8s)
- The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.
-  What's data mining and predictive analytics (via [Lynda.com](https://www.lynda.com) - 2m 5s)
- The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.
-  What are the essential elements? (via [Lynda.com](https://www.lynda.com) - 1m 48s)
- The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.
-  Predictive analytics (via [Lynda.com](https://www.lynda.com) - 2m 14s)
- The video is a part of the Data Analytics for Business Professionals course, by John Johnson.
- ☐
- ☐
- ☐
- ☐



Assessment (INFS 5100)

- Continuous assessment (20%) - Week 3, 5, 8, and 11
- Assignment 1 (25%) – Week 7, data exploration
- Assignment 2 (25%) – Week 10, decision trees
- Assignment 3 (30%) – Week 13, different classification methods



Additional Resources

- Not mandatory, but highly recommended
- Short LinkedIn Learning videos

Videos

 [A definition of data mining \(via Lynda.com - 1m 8s\)](#)

The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.

 [What's data mining and predictive analytics \(via Lynda.com - 2m 5s\)](#)

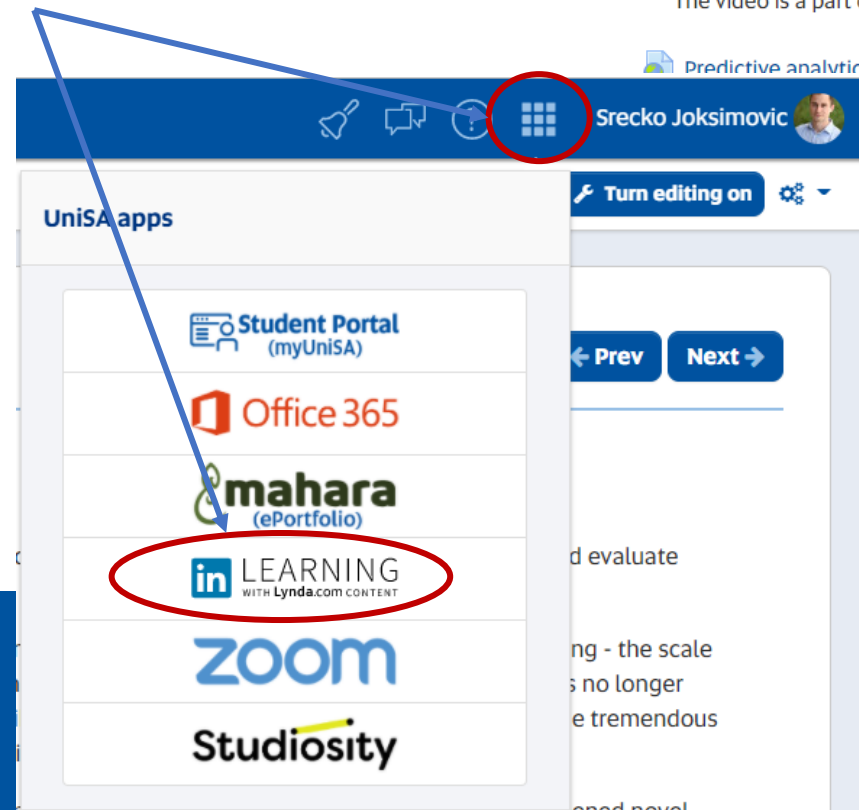
The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.

 [What are the essential elements? \(via Lynda.com - 1m 48s\)](#)

The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.

 [Predictive analytics \(via Lynda.com - 2m 14s\)](#)

the Data Analytics for Business Professionals course, by John Johnson.



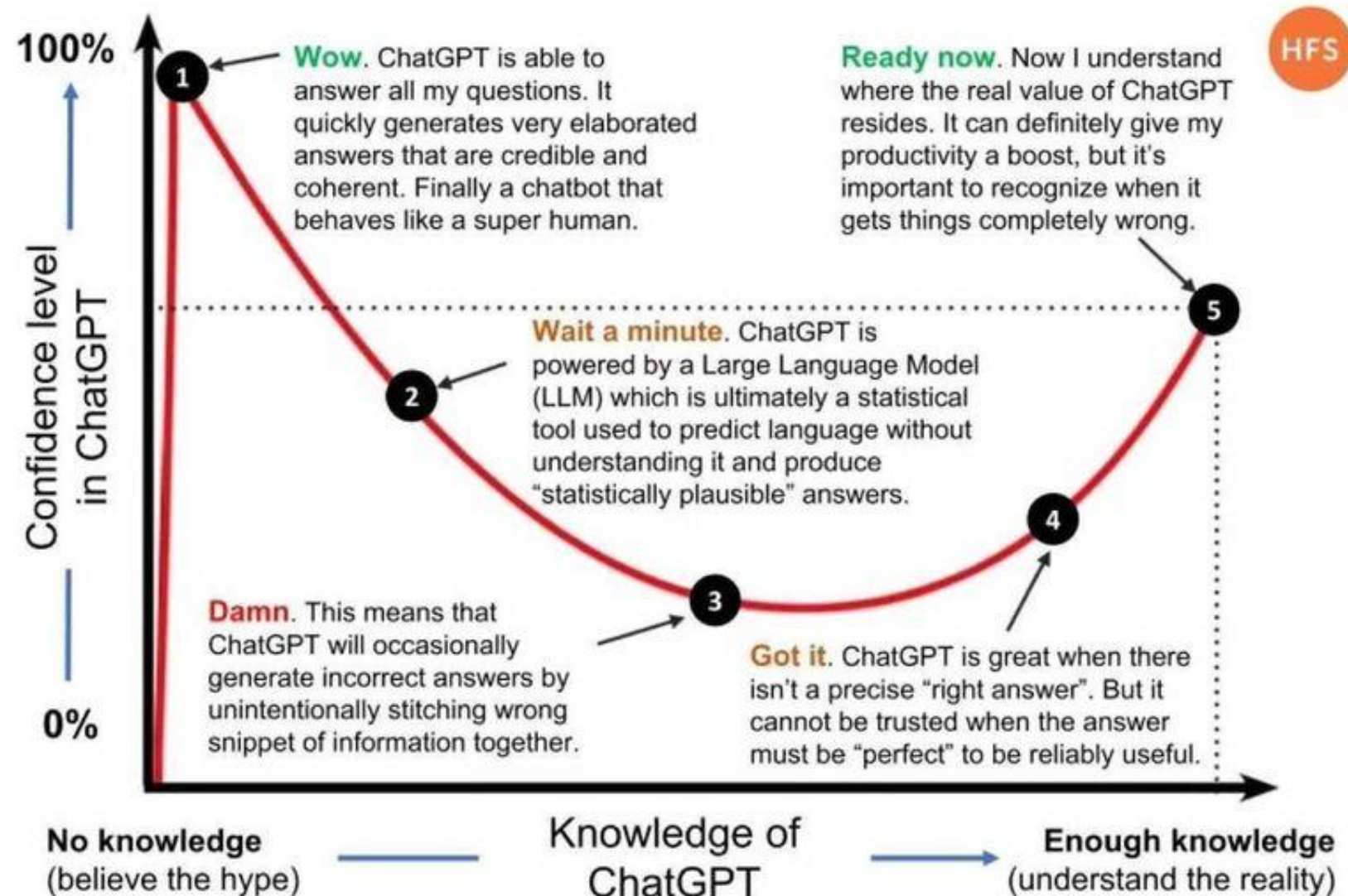
University of
South Australia

Office Hours and Communication

- Available upon request
 - We will not have a predefined time for office hours
 - Feel free to reach out whenever you have a question or problem you are trying to solve
- External students
 - We will meet every two weeks (TBC)
- Message learnonline
- Email
- Discussion forum
 - Course related, assignments, resources



ChatGPT – Yes, you MUST use it





University of
South Australia

INFS 5100 Predictive Analytics

Q&A

slido



Any questions?

① Start presenting to display the poll results on this slide.