ICTH PhD TEACHING MODULE — itee PhD information technology electrical engineering

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

PHD IN INFORMATION AND COMMUNICATION TECHNOLOGY FOR HEALTH

PHD IN INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Module Title: Data Science for Patient Records Analysis

Lecturer: Marcello Cinque

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CV: Marcello Cinque is associate professor at the University of Naples Federico II. He graduated cum laude in Computer Engineering in 2003 and received a PhD in Computer and System Engineering in 2006. He is a chair and/or technical program committee member for several conferences on dependable systems, including PIMRC, DEPEND, and DSN. He is co-author of over 90 peer-reviewed papers in computer engineering. His interests include system monitoring and field failure data analysis of distributed and real time systems. He teaches operating systems and real time systems.

Lecturer: Carmela Bravaccio

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CV: Carmela Bravaccio is associate professor at the University of Naples Federico II. She graduated cum laude in Medicine in 1992 and received the PhD in neuropsicopatology of learning processes in evolutionary age. Her research interests are on autistim and pathological development of infants. She is author of several scientific publications in peer-reviewed journals.

ECTS Credits: 2.5

Lectures are online on the University platform Microsoft Teams.

Team Code:

https://teams.microsoft.com/l/team/19%3aadfa48ccab5a4ea18cd9af8d80dc910b%40thread.tacv2/conversations?groupId=b9c6aa7e-65c0-4a78-b180-a071e7b19631&tenantId=2fcfe26a-bb62-46b0-b1e3-28f9da0c45fd

Overview

The course provides an overview of data science methods and tools, from data preparation to data modeling and validation, and it is intended for PhD students in science and engineering disciplines who need to use machine learning and data analysis as part of their research. The course focuses on the application of the analyzed methods for the analysis of patient records, in the context of a real case study.

There will be a final assessment.

Dates

Date	Hours	Lecturer(s)
10 february 2021	9.00-11.00	Cinque
17 february 2021	15.00-17.00	Cinque
24 february 2021	15.00-17.00	Cinque
3 march 2021	15.00-17.00	Bravaccio
17 march 2021	9.00-11.00	Cinque/Bravaccio
TBD	Assessment	

Content

I Lesson - Introduction: Introduction to data science. Statistical analysis of data. Machine Learning and Data Mining. Examples

II Lesson – Data preparation: extraction of relevant numerical data and features selection. Use of ML Tools: Knime. Relevant examples on patient records

III lesson – Machine Learning: Classification: Decision trees, Bayesian inference, regression. Unsupervised methods: clustering. Model evaluation.

IV Lesson – Patient Records: Presentation of patient records for a real case. Homework assignment.

V Lesson – Case study: Application of methods to real anonymized records. Presentation of results from students as part of the assessment.

Notes

Doctoral Students are requested (starting from Lesson II) to bring their own notebook with Knime installed.
Doctoral Students with noticeable experience on this Module topics can participate as Tutors.
Participants to the module (including those interested to the Tutorship positions) are requested to send an e-mail to prof. Cinque with the following: Student name, name of the PhD course, PhD cycle.

Info: **Prof. MARCELLO CINQUE -** tel. 081 7683874 – marcello.cinque@unina.it