CURRICULUM
COGNITIVE, SOCIAL AND ECONOMIC DATA ANALYTICS
Master of Science in Data Science
Giuseppe Sartori
Introduction

• This curriculum prepares data scientists to understand complex issues in **cognitive, social, behavioral, and economic sciences**

• It provides methodologies and instruments that allow extracting relevant information from cognitive, behavioral, social and economic data
What about CSE?

Example of topics of interest:

• Prediction of personality, preferences, and user behaviour; digital marketing;
• Lie detection and the use of cognitive and behavioural data in security;
• Machine learning in psychology and in neuroimaging applications;
• Human computer interaction in data science and information visualization;
• Brain-Computer Interface technologies; affective computing;
What about CSE?

An example of practical integration between Cognitive/Social/Economic Science and Data Science: the Cambridge Analytica data scandal

1. In 2014 a Facebook quiz invited users to find out their personality type.

2. The app collected the data of those taking the quiz, but also recorded the public data of their friends.

3. About 305,000 people installed the app, but it gathered information on up to 87 million people, according to Facebook.

4. It is claimed at least some of the data was sold to Cambridge Analytica (CA) which used it to psychologically profile voters in the US.

5. CA denies it broke any laws and says it did not use the data in the US presidential election.

Just a data scientist with a background in psychology could did it!
What about CSE?

An example of practical integration between Cognitive/Social/Economic Science and Data Science: **mind reading**

Data scientists with a background in neuroscience can read minds: it’s a machine learning task!
What about CSE?

An example of practical integration between Cognitive/Social/Economic Science and Data Science: **improve safe driving**

Data scientists with a background in cognitive science can automatically extract emotions from faces and use it to improve autonomous devices.
What about CSE courses?

Courses put an emphasis on notions coming from

- Statistics
- Machine Learning
- Economics and finance
- Psychology (cognitive science, behavioural science, neuroscience, social science)
Prospective student's background

We welcome students with a **good background** in

- Cognitive Science or Social Science
- Economic Science
- Statistics
- Computer Science

Prospective students should

- Have an attitude to apply computer science and statistics to social, economics, psychological and neuroscience problems
What we expect from students

This curriculum is conceived as a **multi-disciplinary platform** that enables students:

- to handle models/methods coming from statistics, mathematics and machine learning
- to apply them to business and marketing, social and behavioral studies, cognitive science and neuroscience, and academic or corporate research.

Students will acquire **basic concepts for the different**
What to expect...

Students will be presented with real-word applications in the fields of economics and finance, social science, cognitive science and neuroscience.

Students will learn how to successfully analyze, interpret and manage data in order to provide critical information that can be used to improve policies and practices in society, organizations, business, and research.
Employment Prospects

After this two-year programme students can choose between:

- An employment in companies that use cognitive, behavioral, social and economic data to develop new products and technologies
- An employment in the marketing field, where the acquired knowledge and skills will be critical for analyzing market needs and user
- A research-oriented career (in companies or academia)
Employee's required skills

Mixed background

- Able to approach cognitive/economic/social problems
- Able to implement statistical and computational model to analyze data
Our graduates
2 recommended courses + 2 elective courses to complete the study plan
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<td>FINANCIAL MATHEMATICS FOR DATA SCIENCE</td>
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<td>1 COURSE BETWEEN: DEEP LEARNING VISION AND COGNITIVE SERVICES KNOWLEDGE AND DATA MINING</td>
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