DATA SCIENCE AND SCIENTIFIC COMPUTING

International Master Program @ University of Trieste
The Digital Era

https://thispersondoesnotexist.com
“Change has never happened this fast before, and it will never be this slow again”

Graeme Wood (2009)
The Digital Era: Big Data everywhere!

In 2017, we produced more data than in all the rest of human history (the same was true for 2015-2016) [source: IBM]
The Digital Era: Artificial Intelligence

The Deep Learning Tsunami

Why now?

Where are the Intellectuals?

Relevant Theoretical Approaches

Course Structure

The Sudden Emergence of Deep Learning

What's Driving the Tsunami?

Intellectual Significance

Human Impact

Reaching Human Level Performance

1997  2004  2017

Mobile is eating the world

Mobile Drives IT Revolution

IT Revolution enables massive computation

Gaming Revolution Accelerates Computing Gains

Exhaustive Trial and Error is now possible

Emergence of the Common Task Framework
The Digital Era: Future of Jobs

85% of jobs people will do in 2030 do not exist today (IFTF).

...but jobs in Data Science and AI will steadily grow... (WEF2016)

Data Scientist: The Sexiest Job of the 21st Century
by Thomas H. Davenport and DJ. Patil

The Future of Jobs
Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution

Jobs Rated Report 2016: Ranking 200 Jobs

Data Scientist
Overall Rating: 1/199
Median Salary: $128,240
Combines information technology, statistical analysis, and other disciplines to interpret trends from data.

Impact on Humanity

Global Challenge Insight Report

50 Best Jobs in America

This report ranks jobs according to each job's Careerstar Job Score, determined by combining three factors: number of job openings, salary, and overall job satisfaction rating.

1 Data Scientist
4.8/5 Job Score
$110,000 Median Base Salary
4,524 Job Openings

View Jobs
International Master Programme in Data Science and Scientific Computing

The degree is offered by the University of Trieste, in collaboration with the University of Udine, International School for Advanced Studies (SISSA), International Centre of Theoretical Physics (ICTP), and with other research institutions and companies of the area of Trieste - the European Capital of Science in 2020!
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IN ENGLISH

3 CURRICULA

**Artificial Intelligence and Machine Learning**
- Advanced Programming and Algorithmic Design
- Foundations of High Performance Computing
- Probalistic Machine Learning
- Deep Learning
- Reinforcement Learning
- Foundations of AI and ML
- Cyber-Physical Systems

**Data Science and Applications**
- Introduction to Machine Learning
- Statistical Methods for Data Science
- Numerical Analysis
- Data Management for Big Data
- Information Retrieval and Data Visualization
- Data Science for Healthcare
- Data Science for Life Sciences
- Data Science for Social Sciences
- Data Science for Transportation
- Geodata Science

**Computational Science and Engineering**
- Computational Fluid Dynamics
- Computational Physics
- Optimization Models
- Stochastic Modelling and Simulation
- Advanced Numerical Analysis
- Geometric Analysis
- Quantum Computing

Core Courses

Internship (6 cfu) - Seminars (6 cfu) - Thesis (24 cfu - experimental or in a company)
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Who can Enroll?
Students with a Bachelor in Mathematics, Physics, Informatics, Statistics, Engineering, Chemistry, Life and Natural Sciences, Economics, which are skilled in maths and informatics.

Are Scholarships Available?
There are scholarship giving partial support funded by companies (about 2600 euros), granting an internship in the second year. There are also scholarships covering full support (about 800 euros per month) from SISSA and scholarships from Collegio Fonda.

Where are the lectures?
Lectures will be held in Trieste, between the University, SISSA, and ICTP.
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Available places?

There are 60 places, 20 for international students and 40+ for EU students.

Selection procedure?

Selection is based on titles and on an interview, in English. You need a B2 English certificate. If you do not have it, your English will be tested during the interview!

What if I work?

There is an option for working students, to spread the program in 3 or 4 years. Frequency of lectures is not mandatory but recommended!
dssc.units.it