

Computer Science Data Science & Technology

MSc Programme



The richness and importance of the information conveyed by data has led to a rapid increase in its influence. Data of various kinds, such as the enormous online data collections, have become omnipresent in virtually all aspects of society. Digital data have become the key to innovations in both social and scientific domains, ranging from energy, economy, health and climate to bioinformatics and web science.

Degree	Master of Science
Starts	September
Type	full-time
Credits	120 ECTS, 24 months
Language	English
Application deadline	<i>International BSc Degree</i> 15 January (non-EU/EFTA) 1 April (EU/EFTA) <i>Dutch BSc Degree</i> 1 July (Bridging programme*) 31 August (Direct admission)
Tuition fee	€ 18.750 (non-EU) / € 2.168 (EU)
Scholarships	scholarships.tudelft.nl

In the Data Science & Technology (DST) track, you will learn how to engineer and develop systems capable of processing and interpreting massive data sets to extract information and to gain understanding. Fundamental and practical issues of the analysis of data will be addressed. This includes security of data and software, visualisation of information, decision-making from data and high performance computing algorithms.

The DST track is meant to provide students with the knowledge and expertise needed for a professional career in the information

and communication technology and related industries or doctoral studies in data and computer science.

Programme

DST offers you freedom in choosing your subjects and specialisations. Some of the subjects covered in the DST track are:

Medical data

Discovering patterns in medical data streams plays a vital role in the healthcare system. These include large amounts of molecular data based on next-generation sequencing,

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Specialisations

Algorithmics
Computer Graphics and Visualisation
Cyber Security
Embedded and Networked Systems
Interactive Intelligence
Multimedia Computing
Pattern Recognition & Bioinformatics
Programming Languages
Software Engineering
Web Information Systems

Common Core courses

Cyber Data Analytics
Data Visualisation
Pattern Recognition
AI Techniques
Web Science & Engineering
Multimedia Search and Recommendation
Software Architecture
Advanced Algorithms
Distributed Computing Systems

For more information on all courses, please visit: www.studyguide.tudelft.nl

medical imaging and sensory data measuring health activity. To unlock this data, you will learn to, for example, develop pattern recognition algorithms for associating DNA sequence data with diseases, as well as multimedia search and retrieval techniques to gather relevant data and visualise medical data sets.

Energy-relevant data

The gathering and processing of relevant data from among others solar cells, electric cars, and intelligent houses to optimise energy usage. You will learn to develop algorithms to recognise energy usage patterns, user modelling techniques for personalisation and preference elicitation, multi modal data fusion algorithms to integrate data, and visualisation techniques to inform human operators.

Infrastructure operation data

Collecting, storing and analysing data on the operation of various infrastructures, for example transport, telecommunications and Internet infrastructures. You will learn to design algorithms for data analysis in order to optimise networks or make them more robust, for detecting the behaviours and preferences of infrastructure users, and for recognizing features from surveillance videos.

Environment-relevant data

Gathering, storing, enriching, analysing and applying of data on the interaction that humans

have with their living environment. Societal challenges within this area include the need for climate-adaptive buildings and cities, water management in urban environments and improved safety in our delta regions. You will learn techniques and algorithms for the collection, integration and enrichment of data from sensors, humans and infrastructures. You will also learn how to design and implement software and information architectures to model, simulate and analyse the data.

Master's Thesis

In the second year, you will join one of the research groups for your thesis project. It is possible to complete your project in cooperation with international industrial partners.

Examples of Master's Theses

- A music recommendation system that recognises the user's context and automatically recommends suitable music.
- An algorithm that can determine whether a chromosomal disorder, e.g. Down syndrome is present in the DNA.
- A software system for luggage conveyor belts at Schiphol airport. The system recognises the shapes and sizes of luggage, and can make decisions based on this information: it automatically checks for damage and abnormal shapes and pre-sorts the 'abnormal' cases.