MASTER’S PROGRAMME IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER SCIENCE

- Leading institution in Computer Science in Finland
- Students and employees 2015
  - 1,688 students (55 PhD students; nearly 32,000 credits)
  - 182 employees (178.3 FTE, 31.8% foreign, 21.8% female)
- Part of the Faculty of Science
- Located in Exactum, Kumpula Campus
- Renowned for high quality of research and teaching
TEACHING

- BSc programme and two MSc programmes specialising into
  - Computer Science
  - Data Science
- Most MSc courses in English
- Teaching is based on research
- New activity: MOOCs
- National unit of excellence in higher education (Ministry of Education), 2007-2009 and 2010-2012
## DEGREES

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RESEARCH

- Focal areas of research
  - Algorithms
  - Networking and services
  - Software systems
  - Data science
  - Bioinformatics

- Novel areas: security, human-computer interaction, computational creativity, big data, Internet of Things, cloud computing

- PhD education

- 30 research groups, Helsinki Institute for Information Technology, member in three CoEs (cancer genetics, computational inference, inverse problems)

Research highlight 2014: Computational poetry in Frankfurt Book Fair
PROFESSORS

N. Asokan
Security and privacy

Aapo Hyvärinen
Neuro-informatics

Giulio Jacucci
Interactive systems, HCI

Jussi Kangasharju
Data networks and distributed systems

Jyrki Kivinen
Machine learning, algorithms

Tommi Mikkonen
Software systems

Tomi Männistö
Software engineering

Valtteri Niemi
Security

Petri Myllymäki
Intelligent systems, probability models

Veli Mäkinen
Algorithmic bioinformatics

Jukka Paakki
Software systems

Sasu Tarkoma
Distributed systems and data communications

Hannu Toivonen
Data mining, bioinformatics, comp creativity

Esko Ukkonen
Algorithms, combinatorial pattern matching, bioinformatics, machine learning

Ville Mustonen
Bioinformatics

Pan Hui
Data science

Master's Programme in Computer Science
LINUX

- The Linux OS
  - Started in 1991 and version 1.0 released in 1994
  - Linux turns 25 years in 2016
  - The department uses Linux since about 20 years

- Linus Torvalds
  - Developer of the Linux OS was a student and employee at the department in 1988-1997
2 YEAR PROGRAMME

Master’s degree in Computer Science 120 cr

Advanced studies in computer science 80 cr

Core studies 15 cr

Study track specific studies 30 cr

CS colloquium 5 cr

Master’s thesis 30 cr

Other studies 40 cr
Core studies 15 cr
2 courses offered by each study track
-> pick 3 courses from 6 options

Algorithms
- Discrete algorithms 15 cr
- Machine learning 15 cr

Networking and services
- Networking 15 cr
- Security 15 cr
- Collaborative and Interoperable systems 15 cr
- Human Computer Interaction 15 cr

Software systems
- Software engineering 15 cr
- Programming techniques 15 cr
- Data management 15 cr
• Master’s thesis presentations
• PhD student presentations
• Research talks
• Project presentations
• Invited talks
• Academic writing / peer review
PATH TO MASTER’S THESIS

- Core studies -> study track -> module -> seminar -> thesis

CS colloquium guides the process
CORE COURSES

• Pick any 3 of the following:
  • Design and Analysis of Algorithms
  • Introduction to Machine Learning
  • Distributed Systems
  • Networked Systems and Services
  • Introduction to Big Data Management
  • Ohjelmistoarkkitehtuurit
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