Master's Programme
Statistics and Machine Learning
Linköping University

Programme Director: Bertil Wegmann

Division of Statistics and Machine Learning (STIMA)
Department of Computer and Information Science (IDA)

LINKÖPING UNIVERSITY

Master's programme
Statistics and Machine Learning

Programme history 2007 -

- Initially established through a collaboration between two divisions within the Department of Computer and Information Science:
    - The divison of Statistics and Machine Learning (STIMA)
    - The division of Database and Information Techniques (ADIT)

- Statistics, Data Analysis and Knowledge Discovery, 2007 – 2011

- Statistics and Data Mining, 2012 – 2017

- Statistics and Machine Learning, first version, 2018 – 2023

- Statistics and Machine Learning, current version, 2024 –

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Aims:

- To build advanced models for explaining complex real-life systems and predicting new events
- **To extract, organize, explore and use advanced software to analyze large volumes of data**
- To learn how to discover important information from large and complex data sets
- **To get an in-depth knowledge of models and methods in Statistics and Machine Learning**

Competences:

- Statistical modeling, Machine learning, programming, big data, data mining, visualization methods, databases etc

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Entry requirements:

- Bachelor's degree equivalent to a Swedish Kandidatexamen in one of the following
  subject areas:
  -statistics
  -mathematics
  -applied mathematics
  -computer science
  -engineering
  or a similar degree

- Completed courses with passing grade in following subjects:
  - calculus
  - linear algebra
  - statistics
  - programming

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Year 1	Credits
Statistics	24
Machine Learning	24
Programming	9
Other	3

Semester 3	30 credits elective
Statistics	21
Machine Learning	21
Computer science	12

Semester 4	Credits
Master thesis in statistics	30

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Year 1

Semester 1		Semester 2	
Period 1	Period 2	Period 3	Period 4
Advanced Academic Studies (3 credits)	Machine Learning (9 credits)	Advanced Data Mining (6 credits)	Big Data Analytics (6 credits)
Advanced R programming (6 credits)		Deep Learning (6 credits)	
	Introduction to Python (3 credits)	Computational statistics (6 credits)	Bayesian learning (6 credits)
Statistical methods (9 credits)			

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Year 2

Semester 3		Semester 4	
Period 1	Period 2	Period 3	Period 4
Time series and Sequence Learning (6 credits)	Text Mining (6 credits)	MASTER THESIS (30 credits)	
Visualization (6 credits)	Multivariate statistical methods (6 credits)		
Probability theory (6 credits)	Bioinformatics (6 credits)		
Advanced Machine Learning (6 credits)	Database Technology (6 credits)		
Research project (6 credits)			
EXCHANGE STUDIES			

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Statistics and Machine Learning

- *Admitted students 2021 - 2025*
  - 174 students from 28 different countries

Students' background
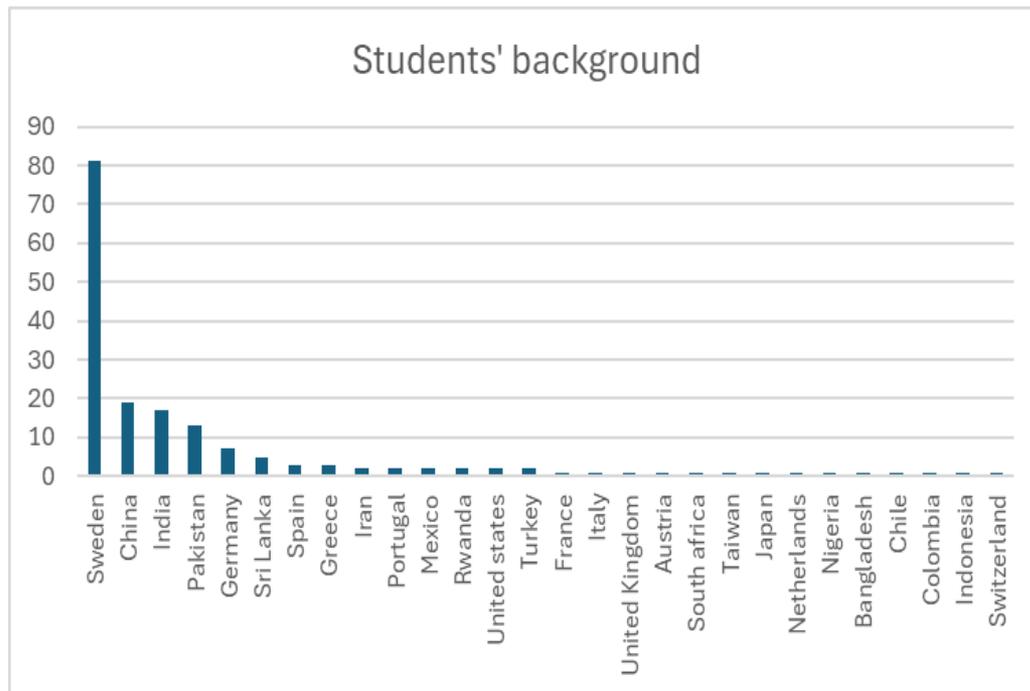
- Majority of students from engineering programmes

- Minority of students with a major in statistics, mathematics, or quantitative social sciences

Master's programme
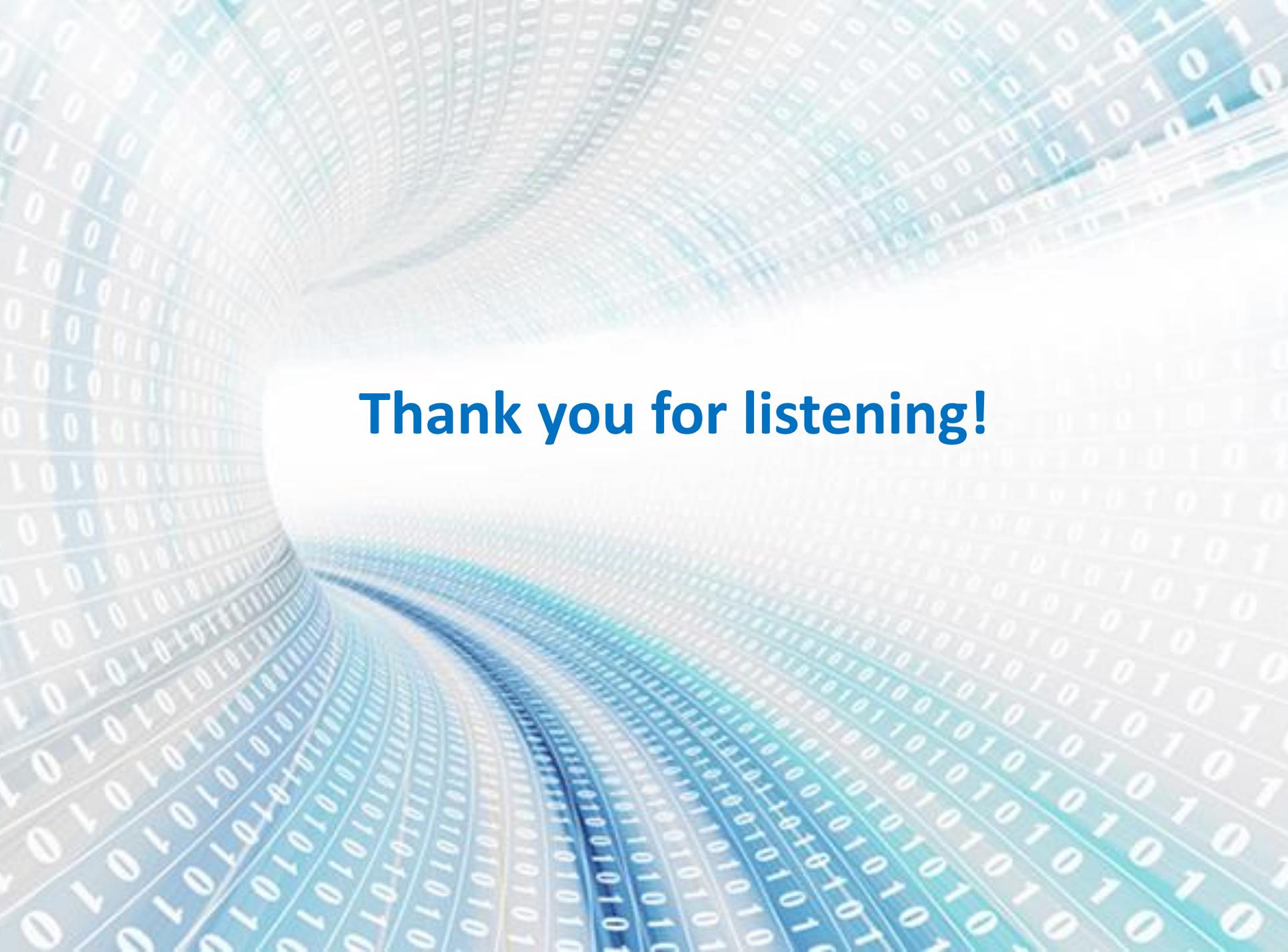## Statistics and Machine Learning

- ## *Strengths*

  – Strong integration of statistics and machine learning

  – Graduates are in high demand on the labour market

  – Many students receive job offers from their thesis project hosts

  – Students report high satisfaction with the programme based on quality evaluations

- ## *Challenges*

  – Heterogeneous student backgrounds

  – Relatively few students from the EU

  – Student social environment

  – Less students attend computer labs

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- *Challenge with lab reports*

  – Most programme courses are highly lab-intensive

  – Some students increasingly rely on AI tools to complete lab assignments

  – Misuse of AI tools for lab reports without understanding the content

  – Need for more oral examinations or follow-up discussions to verify learning

  – Lab tasks may need to be redesigned to account for AI usage, but understanding must still be demonstrated

Thank you for listening!