This attachment contains the following PDFs:

- KTH_DD2421_ML_CourseInfo
- KTH_DD2421_ML_syllabus
- KTH_DD2434_AdvancedML_CourseInfo
- KTH_DD2434_AdvancedML_syllabus
- Transcript of Records Qiao Ren
- UvA_ML1

DD2421 Machine Learning 7.5 credits

Maskininlärning

About course

Course information

Course development and history

Administrate

Show course information based on the chosen semester and course offering:

Choose semester

Offering and execution

No offering selected

Select the semester and course offering above to get information from the correct course syllabus and course offering.

Course information

*** Retrieved from** Course syllabus (Autumn 2020 -)

Content and learning outcomes

Course contents *

The course is intended for both undergraduate and graduate students in computer science and related fields such as engineering and statistics The course addresses the question how to enable computers to learn from past experiences It introduces the field of machine learning describing a variety of learning paradigms, algorithms, theoretical results and applications. It introduces basic concepts from statistics, artificial intelligence, information theory and probability theory in so far they are relevant to machine learning

The following topics in machine learning and computational intelligence are covered in detail

- nearest neighbour classifier
- decision trees
- bias and the trade-off of variance
- regression
- probabilistic methods
- Bayesian learning
- support vector machines
- artificial neural networks
- ensemble methods
- dimensionality reduction
- subspace methods.

Intended learning outcomes *

After passing the course, the student should be able to

- describe the most important algorithms and the theory that constitutes the basis for machine learning and artificial intelligence
- explain the principle for machine learning and how the algorithms and the methods can be used
- discuss advantages with and limitations of machine learning for different applications

in order to be able to identify and apply appropriate machine learning technique for classification, pattern recognition, regression and decision problems.

Course Disposition

No information inserted

Literature and preparations

Specific prerequisites *

Completed courses in all following subjects:

- the equivalent SF1626 of multivariable analysis
- probability theory and statistics e quivalent SF1912/SF1914/SF1915/SF1916/SF1920/SF1921/SF1922/SF1923/SF1924
- programming equivalent DD1337/DD1310/DD1312
- algorithms and data structures equivalent DD1338/DD1320/DD1321/DD1325.

The above requirements are the specific entry requirements to the Master's programme (two-year) in machine learning.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. This applies only to students who are first-time registered for the prerequisite course offering or have both that and the applied for course offering in their individual study plan.

Recommended prerequisites

No information inserted

Equipment

No information inserted

Literature

No information inserted

Examination and completion

If the course is discontinued, students may request to be examined during the following two academic years.

Grading scale *

A, B, C, D, E, FX, F

Examination *

- LAB1 - Laboratory Work, 3.5 credits, Grading scale: P, F
- TEN1 - Examination, 4.0 credits, Grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

The exam is written.

Opportunity to complete the requirements via supplementary examination

No information inserted

Opportunity to raise an approved grade via renewed examination

No information inserted

Examiner

Atsuto Maki

Ethical approach *

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.

Further information

Course web

Further information about the course can be found on the Course web at the link below. Information on the Course web will later be moved to this site.

Course web DD2421

Offered by

EECS/Intelligent Systems

Main field of study *

Computer Science and Engineering

Education cycle *

Second cycle

Add-on studies

No information inserted

Contact

Atsuto Maki (atsuto@kth.se)

Supplementary information

In this course, the EECS code of honor applies, see:
http://www.kth.se/en/eecs/utbildning/hederskodex

KTH

- Study at KTH
- Research
- Cooperation
- About KTH
- News & events
- Student at KTH
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- KTH Intranet

Organisation

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- KTH Schools
- Competence centres
- President
- University Administration

Services

- Timetables
- Course and programme directory
- Course, programme and group webs
- Learning management system (Canvas)
- Webmail

KTH Royal Institute of Technology
SE-100 44 Stockholm
Sweden
+46 8 790 60 00

- Contact KTH
- Work at KTH
- KTH on Facebook
- KTH on YouTube
- Contact web site administrators

DD2421 Machine Learning 7.5 credits

Maskininlärning

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

On 04/21/2020, the Head of the EECS School has decided to establish this official course syllabus to apply from autumn semester 2020, registration number: J-2020-0642.

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the student should be able to

- describe the most important algorithms and the theory that constitutes the basis for machine learning and artificial intelligence
- explain the principle for machine learning and how the algorithms and the methods can be used
- discuss advantages with and limitations of machine learning for different applications

in order to be able to identify and apply appropriate machine learning technique for classification, pattern recognition, regression and decision problems.

Course contents

The course is intended for both undergraduate and graduate students in computer science and related fields such as engineering and statistics The course addresses the question how to enable computers to learn from past experiences It introduces the field of machine learning describing a variety of learning paradigms, algorithms, theoretical results and applications. It introduces basic concepts from statistics, artificial intelligence, information theory and probability theory in so far they are relevant to machine learning

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- regression
- probabilistic methods
- Bayesian learning
- support vector machines
- artificial neural networks
- ensemble methods
- dimensionality reduction
- subspace methods.

Specific prerequisites

Completed courses in all following subjects:

- the equivalent SF1626 of multivariable analysis
- probability theory and statistics e quivalent SF1912/SF1914/SF1915/SF1916/SF1920/SF1921/SF1922/SF1923/SF1924
- programming equivalent DD1337/DD1310/DD1312
- algorithms and data structures equivalent DD1338/DD1320/DD1321/DD1325.

The above requirements are the specific entry requirements to the Master's programme (two-year) in machine learning.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. This applies only to students who are first-time registered for the prerequisite course offering or have both that and the applied for course offering in their individual study plan.

Examination

- LAB1 - Laboratory Work, 3.5 credits, grading scale: P, F
- TEN1 - Examination, 4.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

The exam is written.

Ethical approach

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Autumn 2020

Course information

DD2434 Machine Learning, Advanced Course 7.5 credits

Maskininlärning, avancerad kurs

About course

Course information

Course development and history

Administrate

A second course in machine learning, giving a broadened and deepened introduction to the area.

Show course information based on the chosen semester and course offering:

Choose semester

Offering and execution

No offering selected

Select the semester and course offering above to get information from the correct course syllabus and course offering.

Course information

*** Retrieved from** Course syllabus (Autumn 2020 -)

Content and learning outcomes

Course contents *

The basics of the probabilistic method.

Probabilistic modelling.

Dimensionality reduction.

Graphical models.

Hidden Markov models.

Expectation-Maximization.

Variational Inference.

Networks in variational inference.

Intended learning outcomes *

After passing the course, the student should be able to

- explain and justify several important methods for machine learning
- give an account of several types of methods and algorithms that are used in the field of deterministic inference methods
- implement several types of methods and algorithms that are used in the field based on a high-level description
- extend and modify the methods that the course deals with

in order to be able to do a degree project in deterministic inference methods.

Course Disposition

No information inserted

Literature and preparations

Specific prerequisites *

Completed courses in machine learning equivalent DD2421/DD2431 and probability theory and statistics equivalent SF1901.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. This applies only to students who are first-time registered for the prerequisite course offering or have both that and the applied-for course offering in their individual study plan.

Recommended prerequisites

No information inserted

Equipment

No information inserted

Literature

No information inserted

Examination and completion

If the course is discontinued, students may request to be examined during the following two academic years.

Grading scale *

A, B, C, D, E, FX, F

Examination *

- LAB1 - Labs, 4.0 credits, Grading scale: A, B, C, D, E, FX, F
- TEN1 - Exam, 3.5 credits, Grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Opportunity to complete the requirements via supplementary examination

No information inserted

Opportunity to raise an approved grade via renewed examination

No information inserted

Examiner

Jens Lagergren

Pawel Herman

Ethical approach *

- All members of a group are responsible for the group's work.
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Further information

Course web

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Course web DD2434

Offered by

EECS/Intelligent Systems

Main field of study *

Computer Science and Engineering

Education cycle *

Second cycle

Add-on studies

No information inserted

Contact

Jens Lagergren (jensl@kth.se)

Supplementary information

Grading criteria are made available when the course starts.

In this course, the EECS code of honor applies, see:
http://www.kth.se/en/eecs/utbildning/hederskodex

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Sweden
+46 8 790 60 00

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- KTH on Facebook
- KTH on YouTube
- Contact web site administrators

DD2434 Machine Learning, Advanced Course 7.5 credits

Maskininlärning, avancerad kurs

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

On 04/21/2020, the Head of the EECS School has decided to establish this official course syllabus to apply from autumn semester 2020, registration number: J-2020-0569.

Decision to discontinue this course

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the student should be able to

- explain and justify several important methods for machine learning
- give an account of several types of methods and algorithms that are used in the field of deterministic inference methods
- implement several types of methods and algorithms that are used in the field based on a high-level description
- extend and modify the methods that the course deals with

in order to be able to do a degree project in deterministic inference methods.

Course contents

The basics of the probabilistic method.

Probabilistic modelling.

Dimensionality reduction.

Graphical models.

Hidden Markov models.

Expectation-Maximization.

Variational Inference.

Networks in variational inference.

Specific prerequisites

Completed courses in machine learning equivalent DD2421/DD2431 and probability theory and statistics equivalent SF1901.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. This applies only to students who are first-time registered for the prerequisite course offering or have both that and the applied-for course offering in their individual study plan.

Examination

- LAB1 - Labs, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Exam, 3.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
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Official Transcript of Records

Qiao Ren
19940218-T482

2020-06-11

Completed courses		Scope	Grade	Date	Note
DD2380	**Artificial Intelligence**	6.0 hp	C	2019-10-25	1
TEN1	Exam	(2.0 hp)	P	2019-10-25	2
LAB1	Labs	(4.0 hp)	P	2019-10-25	2
DD2421	**Machine Learning**	7.5 hp	B	2019-10-25	1
TEN1	Examination	(4.0 hp)	B	2019-10-25	1
LAB1	Laboratory Work	(3.5 hp)	P	2019-10-25	2
DD2434	**Machine Learning, Advanced Course**	7.5 hp	C	2020-05-25	1
TEN1	Exam	(3.5 hp)	A	2020-01-14	1
LAB1	Labs	(4.0 hp)	D	2020-05-25	1

Parts of uncompleted courses		Scope	Grade	Date	Note
DA2205	**Introduction to the Philosophy of Science and Research Methodology**	(7.5 hp)			
HEM2	Assignments	3.0 hp	P	2019-12-23	2
TEN1	Examination	3.0 hp	C	2020-01-07	1
DD2437	**Artificial Neural Networks and Deep Architectures**	(7.5 hp)			
LAB2	Laboratory assignments	4.0 hp	P	2020-05-16	2

60 credits (hp) represent a full academic year.

Notes
1 Grading scale: Excellent (A), Very Good (B), Good (C), Satisfactory (D), Sufficient (E)
2 Grading scale: Pass (P)

The above is an excerpt from the register of student records.

Sum of credits: 31,0

Manja Schubert, International Coordinator
KTH Royal Institute of Technology
School of Electrical Engineering and Computer Science

Grading Scale in KTH:

Grades

Grading scale

As the main option, KTH uses a seven-grade goal-related grading scale (A, B, C, D, E, Fx, F) for grades on first and second cycle courses, but not for degree projects. The same grading scale will be used preferentially for courses that are part of access programmes. A–E are grades corresponding to a pass, with A being the highest grade. The grade Fx indicates that the result is close to a pass for a module and that the module may be upgraded to a pass. The grade Fx cannot be used as a final grade for courses.

The grades pass (P) and fail (F) are used for degree projects. These grades can also be used as final grades for other courses, if there are exceptional reasons.

Reference:
https://www.kth.se/en/student/studentliv/studentratt/examination/betyg-1.324443

UNIVERSITY OF AMSTERDAM

Course Catalogue 2019 - 2020

Machine Learning 1

Course catalogue number	52041MAL6Y
Credits	6 EC
Language of instruction	English
Time period(s)	Sem. 1 Sem. 2 See also
College/graduate	Graduate School of Informatics
Lecturer(s)	dr. P.D. Forré (co-ordinator)
Contact	Education Desk FNWI Science Park 904 B1 020 5257100 servicedesk-esc-science@uva.nl
Is part of	Master's Computational Science (Joint Degree) Master's Artificial Intelligence

Objectives

- The student can explain, motivate and distinguish the main areas of machine learning in general and on examples.
- The student can explain the major statistical learning frameworks/principles together with their advantages and shortcomings.
- The student knows the major linear and non-linear statistical models together with their advantages and disadvantages, can explain them and the made model assumptions, can reason about and inside them, and can manipulate them.
- The student can set up learning objectives with the taught models, can train and evaluate them and can assess the quality of fit.
- The student can implement all the above in Python and apply the learned principles and models to real world problems and data sets.

Contents

This course is lecture based, with homework assignments and programming assignments.

The curriculum is based on chapters 1,2,3,4,5,6,7,9,14 of the book *"Pattern Recognition and Machine Learning"* by C. Bishop:

- · Statistical learning principles
- · Linear regression
- · Linear classification

- · Neural networks
- · Kernel methods
- · Dimensionality reduction
- · Clustering methods
- · Ensemble methods

Recommended prior knowledge

Calculus, Linear algebra, probability theory, statistics, programming.

Registration

More information about procedures and registration periods can be found at
http://student.uva.nl/ai/az/item/course-registration.html

Teaching method

- Lecture
- Computer lab session/practical training
- Self-study
- Discussion forum
- Exercise group
- Homework exercise
- Programming assignment
- Practice exercise

Time

The schedule for this course is published on DataNose.

Study materials

- Literature:
  - C.M. Bishop, 'Pattern Recognition and Machine Learning', 2006, Springer, ISBN 0-38-731073-8

Min/max participants

Limited capacity AI core courses

This course is part of the core curriculum of the master programme AI. Please note that due to limited capacity students of the MSc AI students have priority for this course. Students of other GSI master programmes are allowed to register for this course, but please note that there is a limited number of places available.

Students from the other GSI programmes can request registration for this course in datanose or by e-mail and will be put on a waiting list.
Request registration here:

https://datanose.nl/#specialenrol or by sending an e-mail to vakaanmelding-fnwi@uva.nl .

Assessment and testing

- Homework assignments (20%), programming assignments (20%), final exam (60%).
- There will be 5-6 homework and 3 programming assignments.
- To pass the course the student needs to have at least 50% of the points in the final exam (tentamen).
- The grade of the resit exam will replace 100% of all the grades in the course (final exam, lab assignments, homework exercises).