

TDDE48: Mobile Networks

Linköping University, Sweden, Fall 2023

Niklas Carlsson

<https://www.ida.liu.se/~nikca89/>

People involved in course



- Examiner and lecturer
 - Niklas Carlsson, Senior Associate Professor



- Course secretary
 - Annelie Almquist



- Director of studies
 - Patrick Lambrix, Professor + Division Head

A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

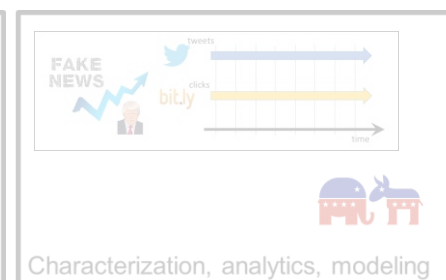
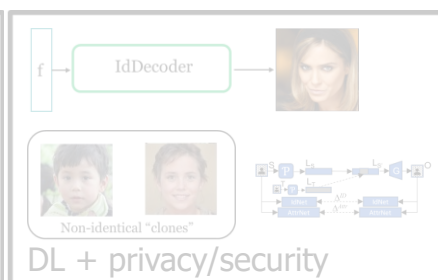
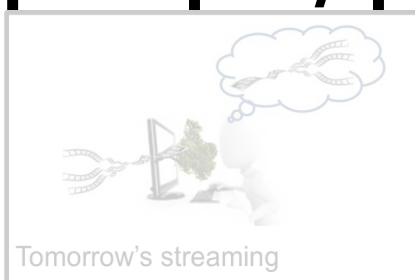
More info: <https://www.ida.liu.se/~nikca89/>

A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

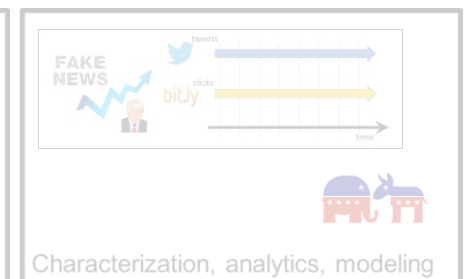
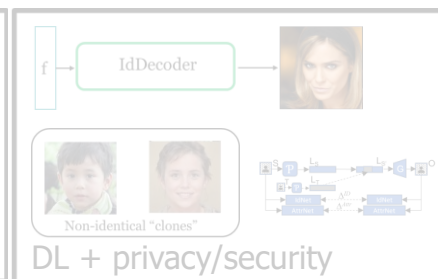


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

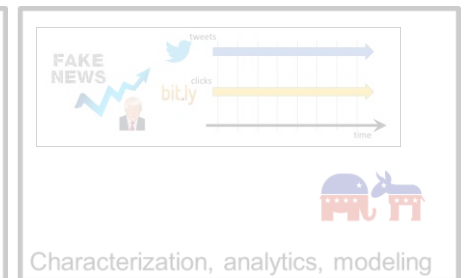
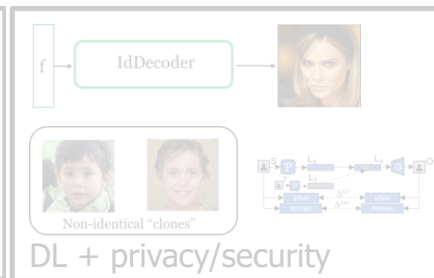


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions



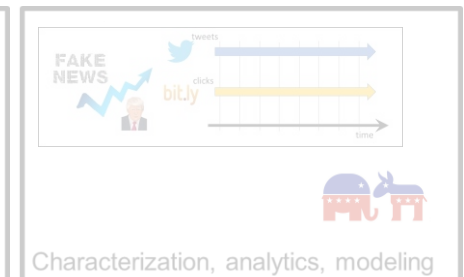
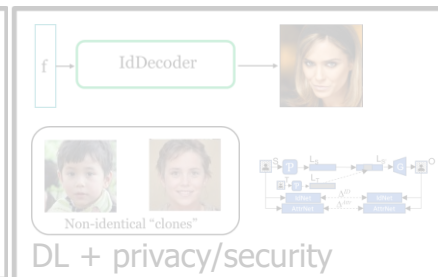
More info: <https://www.ida.liu.se/~nikca89/>

A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

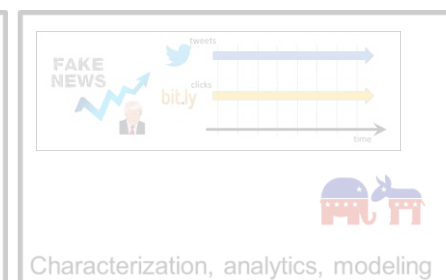
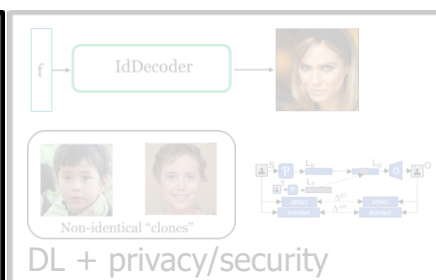


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

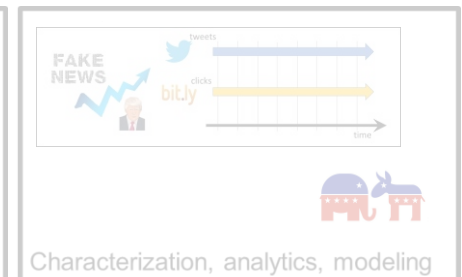
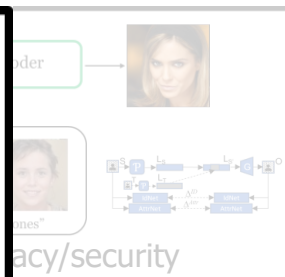
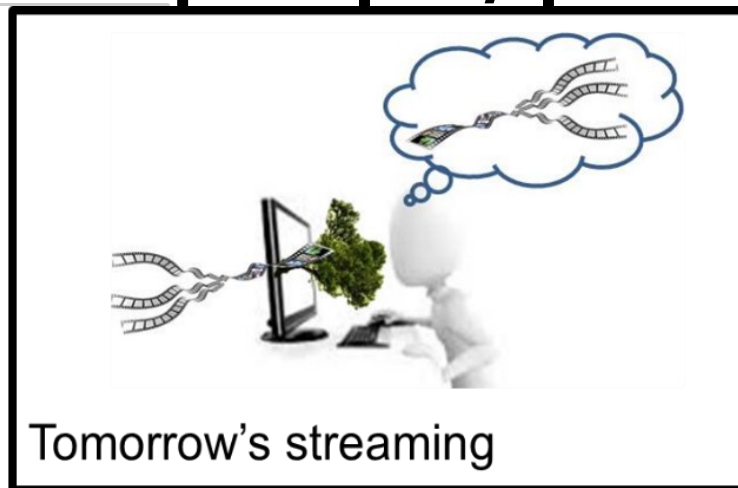


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions



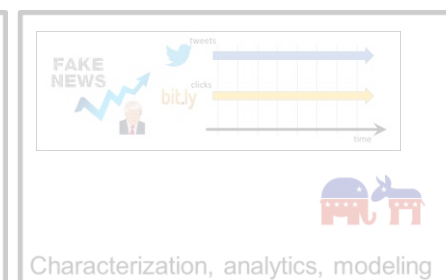
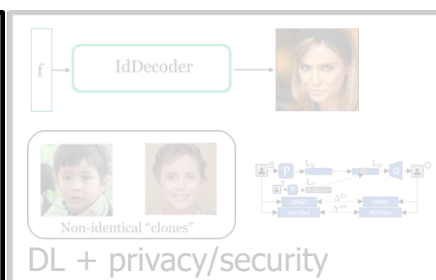
More info: <https://www.ida.liu.se/~nikca89/>

A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

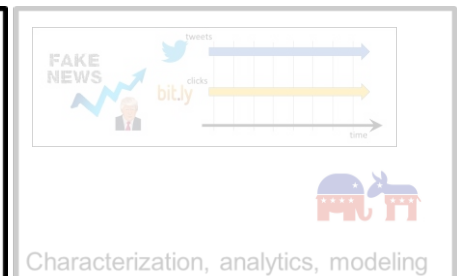
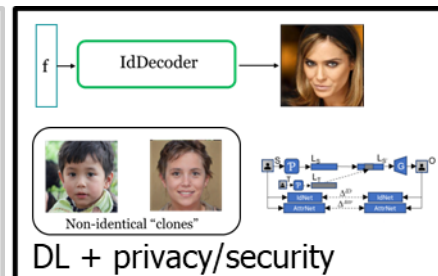
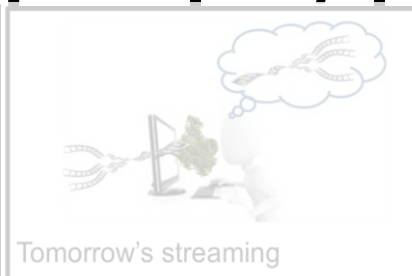


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

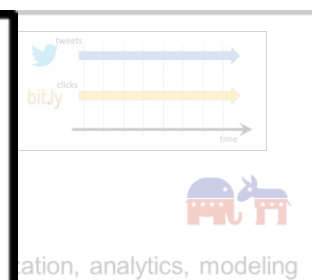
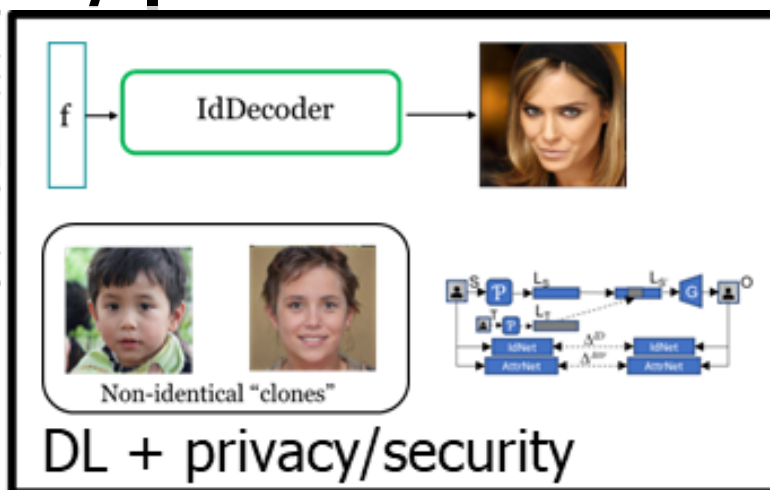
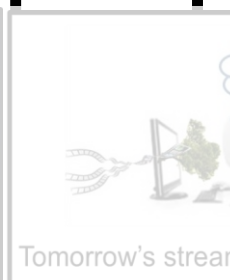


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions



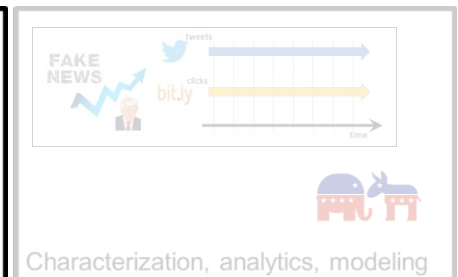
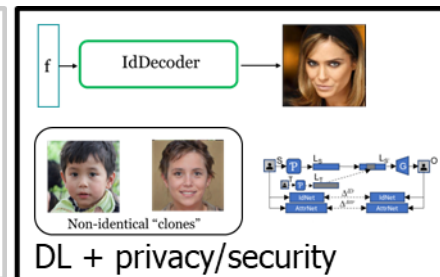
More info: <https://www.ida.liu.se/~nikca89/>

A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

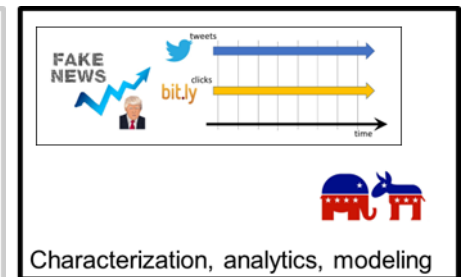
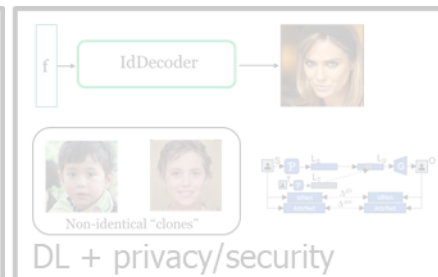
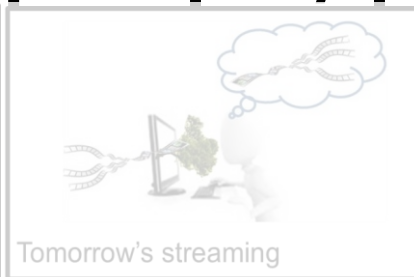


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

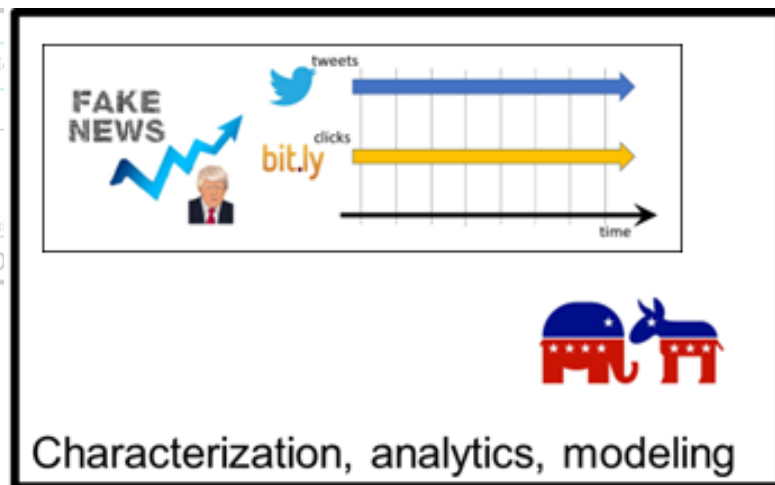
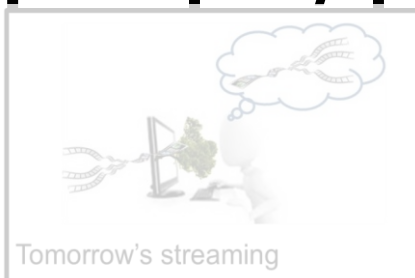


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions



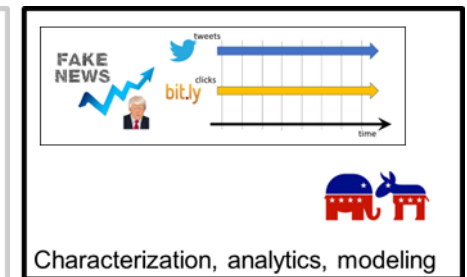
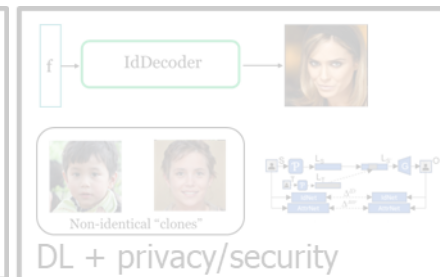
More info: <https://www.ida.liu.se/~nikca89/>

A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions

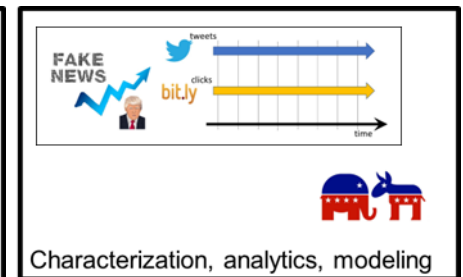
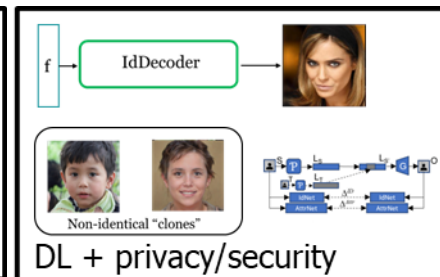
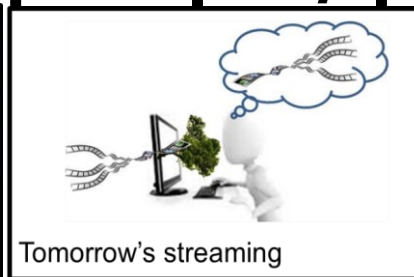


A few words about my research

Interest/aims: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely

Methodologies: E.g., measurement, mathematical modeling, optimization, system design, real-world experiments, data analytics, statistical methods

Current example topics/questions



My expectations

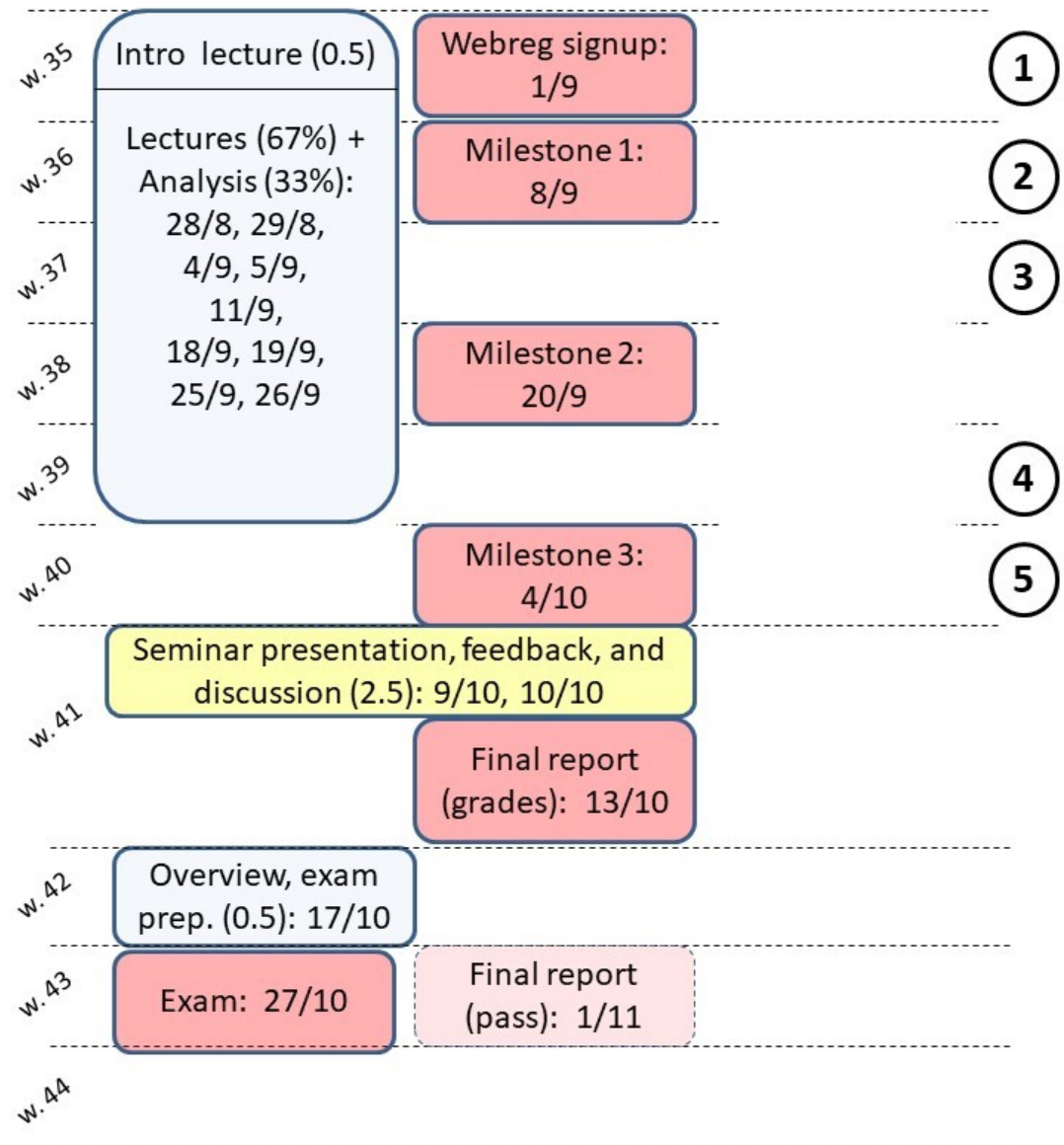
- Attend lectures, identify information sources, and read ...
 - Aim to provide insights during lectures
 - Not time to cover everything during lectures
 - Lots of resources; e.g., textbooks, research articles
- Work hard
 - Attend and pay attention during lectures (...)
 - Read after class (e.g., to fill blanks)
 - Make sure you **understand** all the material
- Please follow deadlines and office hours

What to expect; what is covered?

- Design principles for mobile systems
 - Conceptual view
- Design, resource, and performance tradeoffs in mobile systems
 - General working knowledge of protocols/applications
 - Detailed knowledge of selected protocols/applications
- Glimpse into the future
 - Emerging trends and technologies

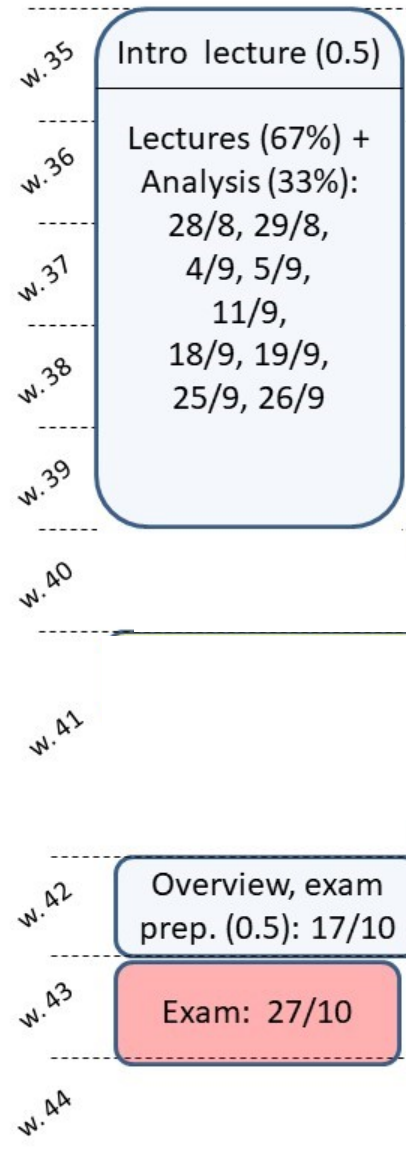
Course Overview

- Nine lectures: Mix of theory and analysis of systems
 - A written exam
- Project: Three milestones, a written report, and a seminar presentation
- Scenarios used in PBL groups, projects, and some analysis lectures
- See website for more information ...



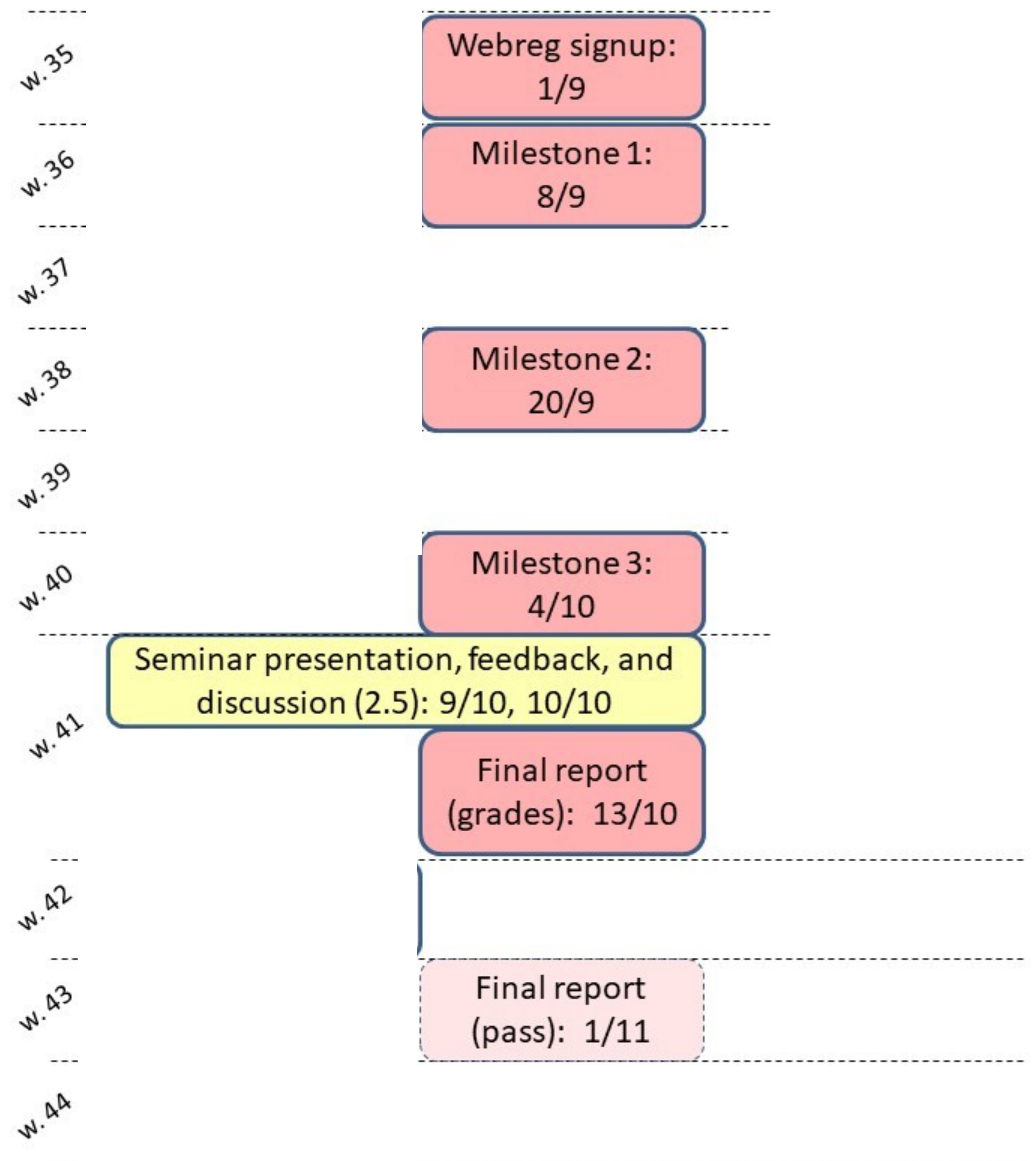
Course Overview

- Nine lectures: Mix of theory and analysis of systems
 - A written exam
- Project: Three milestones, a written report, and a seminar presentation
- Scenarios used in PBL groups, projects, and some analysis lectures
- See website for more information ...



Course Overview

- Nine lectures: Mix of theory and analysis of systems
 - A written exam
- Project: Three milestones, a written report, and a seminar presentation
- Scenarios used in PBL groups, projects, and some analysis lectures
- See website for more information ...



Course Overview

- Nine lectures: Mix of theory and analysis of systems
 - A written exam
- Project: Three milestones, a written report, and a seminar presentation
- Scenarios used in PBL groups, projects, and some analysis lectures
- See website for more information ...

w. 35

w. 36

w. 37

w. 38

w. 39

w. 40

w. 41

w. 42

w. 43

w. 44

1

2

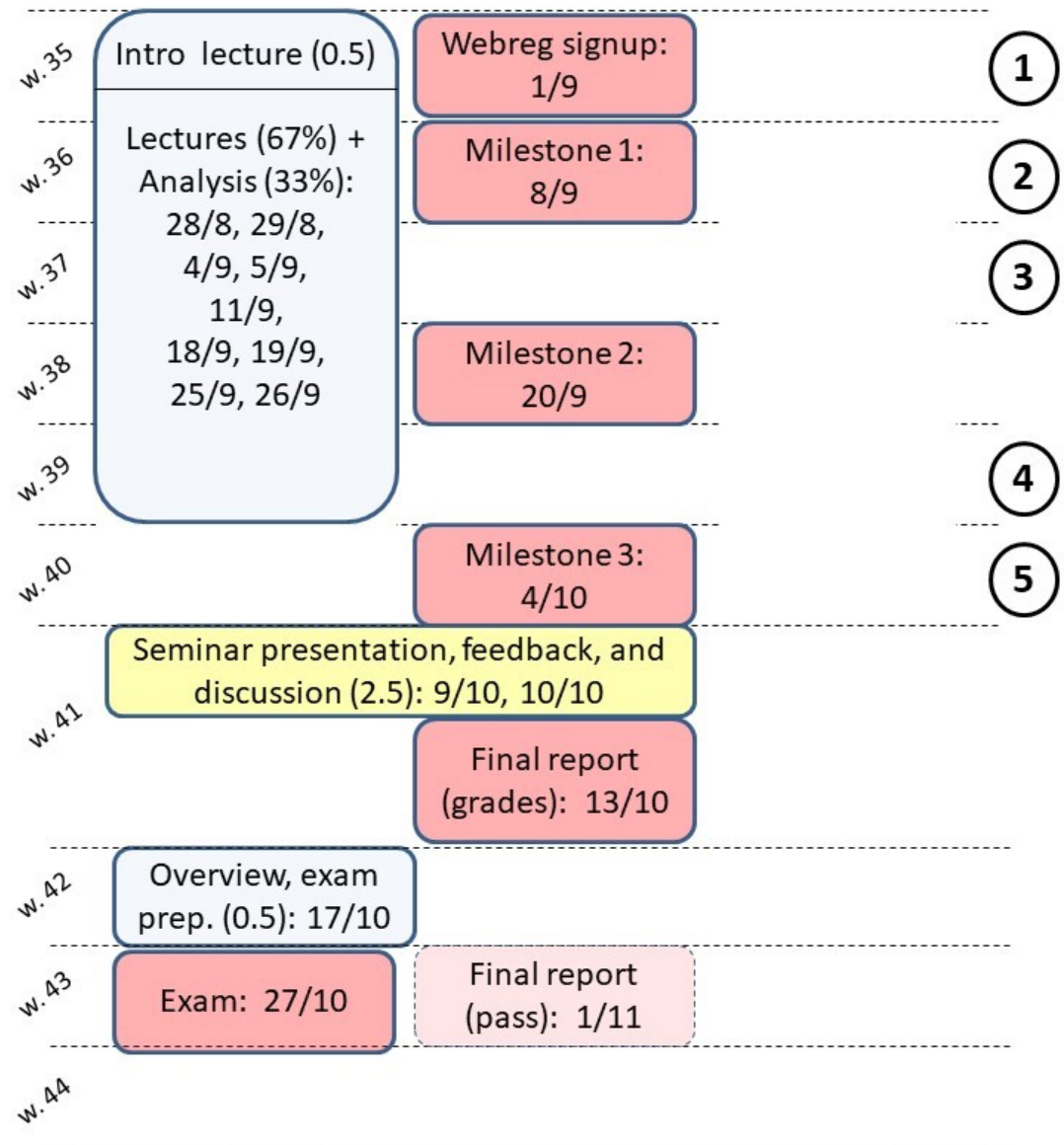
3

4

5

Course Overview

- Nine lectures: Mix of theory and analysis of systems
 - A written exam
- Project: Three milestones, a written report, and a seminar presentation
- Scenarios used in PBL groups, projects, and some analysis lectures
- See website for more information ...



Past **student** feedback/evaluation(s)

- Evaluate: Last year's course evaluation
 - 8/35 answered (mostly well-like, relevant, time on upper side ...)
 - Also include some negatives from 2 years ago (... to avoid 2-year cycle)
- Positive "success" examples
 - The project, peer-feedback, bonus points, valuable knowledge/skills
- Suggested improvements lectures [combined last 2 years]
 - Connection between projects, lectures, and exam (Yes, ... **depth+breadth**)
 - A lot of information in lectures (Yes, ...)
 - Less detailed information on slides (**Always try to find balance**)
 - More examples + a slower pace would make it easier (**Always try to find balance**)
 - My goal is that you (as a group) will build as good **understanding** as possible (e.g., of tradeoffs) and that effort will be rewarded
- Suggested improvement for projects [not last year, but ...]
 - Want more/earlier project guidance from the examiner (**Typically discuss in lectures + some group feedback + peer review**)

(more) student feedback ...

- Scenarios/vinjetter [2-year cycle in feedback]
 - Vinjetter based on project subjects. Difficulty discussing one groups project, while making it relevant for everyone. Instead of the vinjetter, we mostly decided for ourselves what we wanted to do ... (Please take your responsibility and practice the skills targeted here. The world is not homogenous.)
 - Too open ended + more like optimization (By design, PBL. Motivate.)
- Comments on exam [No new feedback]
 - Difficulty answering some exam questions with only slides + book (See previous **balancing** question; so please attend lectures. Yes, you will need to spend time building a deeper understanding and connecting the pieces. Please allocate time + study together ...)
 - Most of the learning came from studying to the exam itself (Yes, this is per design; see above questions + work with old exams ...)
 - More old exams available (No, but see IDA's student office ...)

(yet more) student feedback ...

- Miscellaneous [from 2 years ago]
 - Nice to get one or two examination questions per BG meeting where we can discuss the answers (but only if there are concrete answers).
` ` This would yield a more practical feel for the subject." (Not what I want you to spend the BGs doing ... BUT good to discuss as a group. Also, no "example" answers will be provided.)

Student question during class

- Why English?
 - Terminology and information/books etc. in English
 - Easier/better help from Google etc.
 - Examiner/instructor do better job in English
 - Prepare you for the international job market
 - Can of course still ask questions in Swedish (if you are uncomfortable asking in English)