

Welcome to ...

TDTS21 Advanced Networking



Niklas Carlsson, Associate Professor
<https://www.ida.liu.se/~nikca89/>

Everything is becoming connected



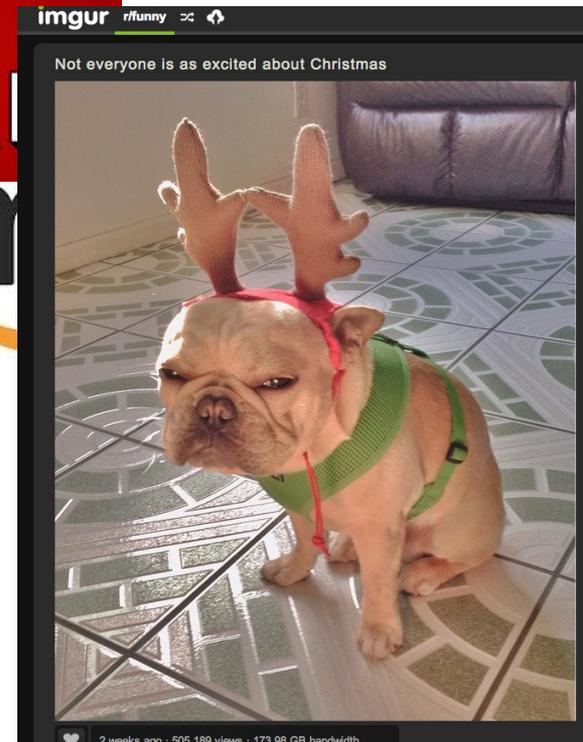
Consider first yourself

- How many of you already have checked your e-mail, social media, text (or logged into zoom!) ...
 - Today?
 - In the past hour?

Well, all!

Computer networks are ubiquitous

- Networks touch every part of our daily life
 - Web search
 - Social networking
 - Watching movies
 - Ordering merchandise
 - Wasting time



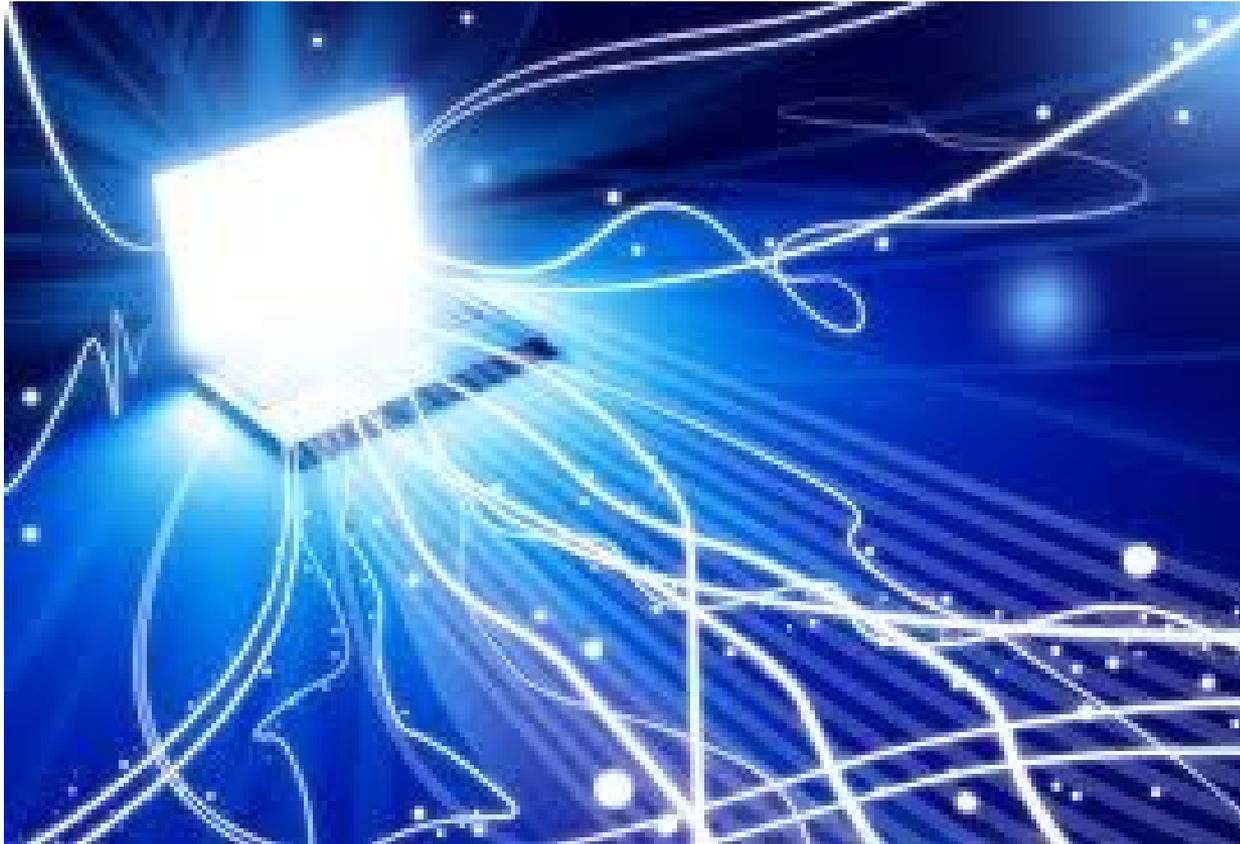
...but ...

Kick starting science ...



What do you have in the future?

What do you have in the future?



How does it keep going?

Or maybe more realistically ...

- Work at company ...

How do we build services that are ...



Efficient

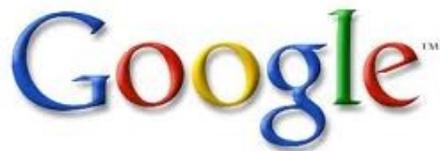


Secure

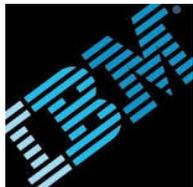
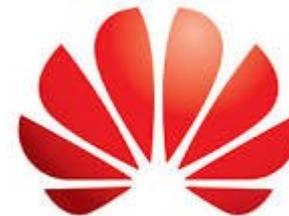


Reliable

Important problem faced every day by many companies, including ...



... or ...



... I mean almost every company!



This course we will dive deeper into this exciting and important topic based on **your interest** and help you **build knowledge towards becoming experts** on these topics ...





Examiner and lecturer

– Niklas Carlsson

Research interest/goals: Provide system insights and solutions that help deliver tomorrow's services both effectively and securely ...



Course secretary

– Annelie Almquist



Director of studies

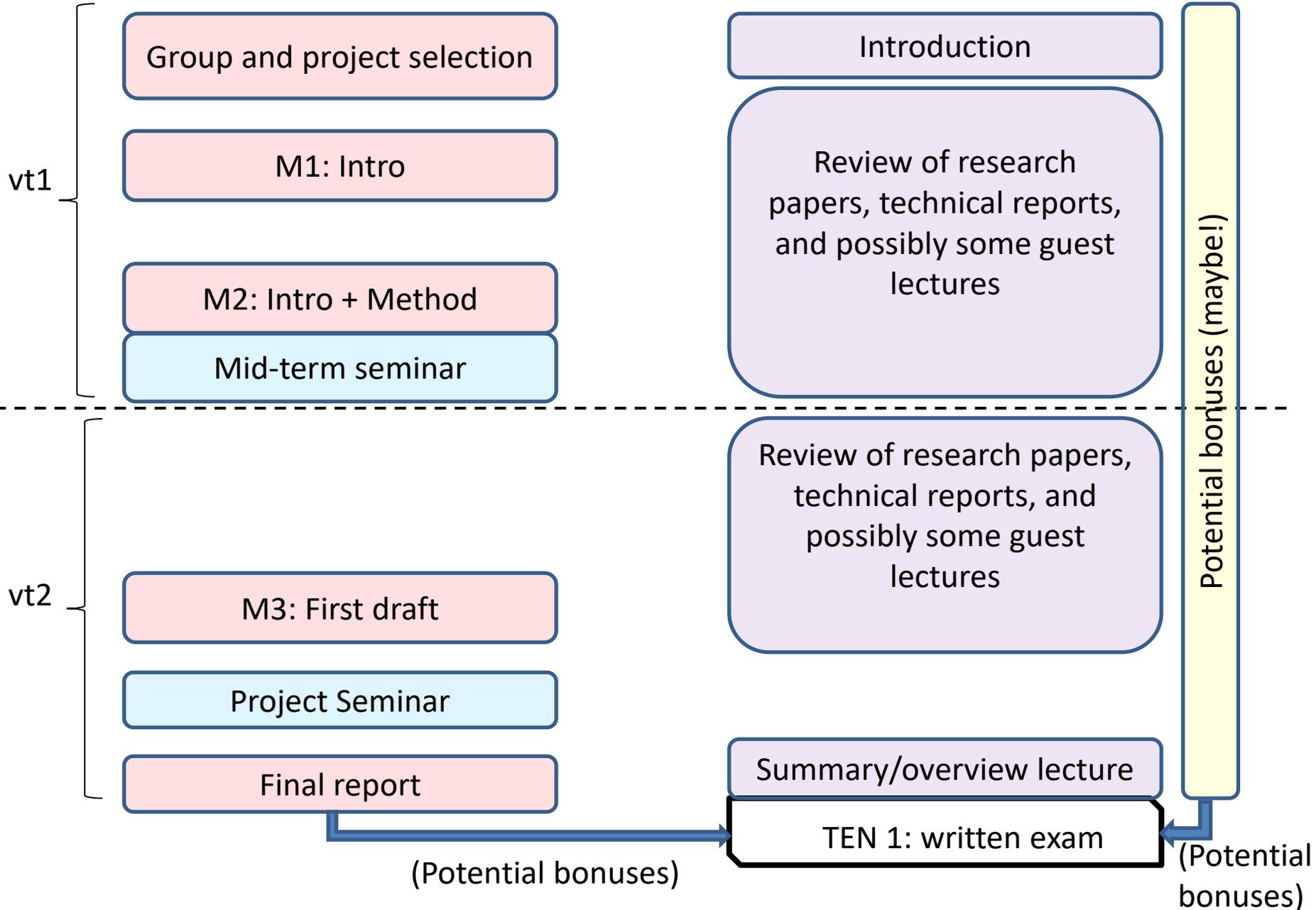
– Patrick Lambrix

Structure of the Course

- Reading and analyzing research papers
 - Design and evaluation of protocols and applications
 - Summarize, critique, and compare papers
- Classroom/zoom time
 - Brief overview of background material
 - Discuss and debate research papers
- Research project
 - Milestones and deliverables

Projects

Theory



Example: Research paper lectures

- Overview (some introduction to topic)
- Discussion of research papers
 - Expected to have read at different depths
 - Typically, roughly one “deep” read and one “lighter” read per week
- Lead the discussion for some paper(s)
 - Some papers picked by students, other by examiner
 - Deeper discussion: At least two students assigned
 - Brief overview: Possibly individual papers here (based on interest)

Participants / team

- Who you are
- What program
- Interest in topics? [allowed to change later ...]
- ===

Order: Dawid, Somiya, Sheyda, Animesh, Abose, Gustaf, ...

How to Read

You May Think You Already Know
How To Read, But...

You Spend a Lot of Time Reading

- Reading for grad classes
- Reviewing conference submissions
- Giving colleagues feedback
- Keeping up with your field
- Staying broadly educated
- Transitioning into new areas
- Learning how to write better papers 😊

It is worthwhile to learn to read *effectively*

Keshav' s Three-Pass Approach: Step 1

- A ten-minute scan to get the general idea
 - Title, abstract, and introduction
 - Section and subsection titles
 - Conclusion
 - Bibliography
- What to learn: the five C' s
 - Category: What type of paper is it?
 - Context: What body of work does it relate to?
 - Correctness: Do the assumptions seem valid?
 - Contributions: What are the main research contributions?
 - Clarity: Is the paper well-written?
- Decide whether to read further...

Keshav's Three-Pass Approach: Step 2

- A more careful, one-hour reading
 - Read with greater care, but ignore details like proofs
 - Figures, diagrams, and illustrations
 - Mark relevant references for later reading
- Grasp the content of the paper
 - Be able to summarize the main idea
 - Identify whether you can (or should) fully understand
- Decide whether to
 - Abandon reading in greater depth
 - Read background material before proceeding further
 - Persevere and continue for a third pass

Keshav's Three-Pass Approach: Step 3

- Several-hour virtual re-implementation of the work
 - Making the same assumptions, recreate the work
 - Identify the paper's innovations and its failings
 - Identify and challenge every assumption
 - Think how you would present the ideas yourself
 - Jot down ideas for future work
- When should you read this carefully?
 - Reviewing for a conference or journal
 - Giving colleagues feedback on a paper
 - Understanding a paper closely related to your research
 - Deeply understanding a classic paper in the field

<http://ccr.sigcomm.org/online/?q=node/234> (original)

<https://svr-sk818-web.cl.cam.ac.uk/keshav/wiki/index.php/HTRAP> (latest)

Other Tips for Reading Papers

- Read at the right level for what you need
 - “Work smarter, not harder”
- Read at the right time of day
 - When you are fresh, not sleepy
- Read in the right place
 - Where you are not distracted, and have enough time
- Read actively
 - With a purpose (what is your goal?)
 - With a pen or computer to take notes
- Read critically
 - Think, question, challenge, critique, ...

Again, research paper lectures

- Overview (some introduction to topic)
- Discussion of research papers
 - Primary: At least “three-pass read”
 - Secondary: At least “two-pass read”
 - Optional: At least “one-pass read”
- Lead the discussion for some paper(s)
 - Deeper discussion: At least two students assigned, expected to have done at least “three-pass read”
 - Brief overview: Possibly individual papers here (based on interest), “two-pass read” expected (but to feel prepared it may be good to do some steps from the “three-pass read”)