

COURSE OVERVIEW

(Data modeling)

MARCUS BIRKENKRAHE

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- Who am I?
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- What are your expectations?
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 - Decision intelligence
 - Many-model thinking
 - Process Modeling
 - Linear models
 - Linear regression in R
 - Agile management
 - Robotic Process Automation
 - Unified Modeling Language
 - Process mining
 - Schedule (see Syllabus)
- How will we do it?
 - Classroom sessions
 - Lecture scripts with exercises
(GitHub)
 - Reading assignments
 - Lab sessions
 - Stuff you bring to class
- What do you have to do to pass?

- Weekly lab practice (> 50%)
- Weekly participation (> 50%)
- Final essay (> 50%)
 - What constitutes an essay?
 - Do you have essay examples?
 - Can I write a scientific essay?
- Final exam (> 50%)
- What's next?
 - In the course
 - Your challenges
- Any questions?

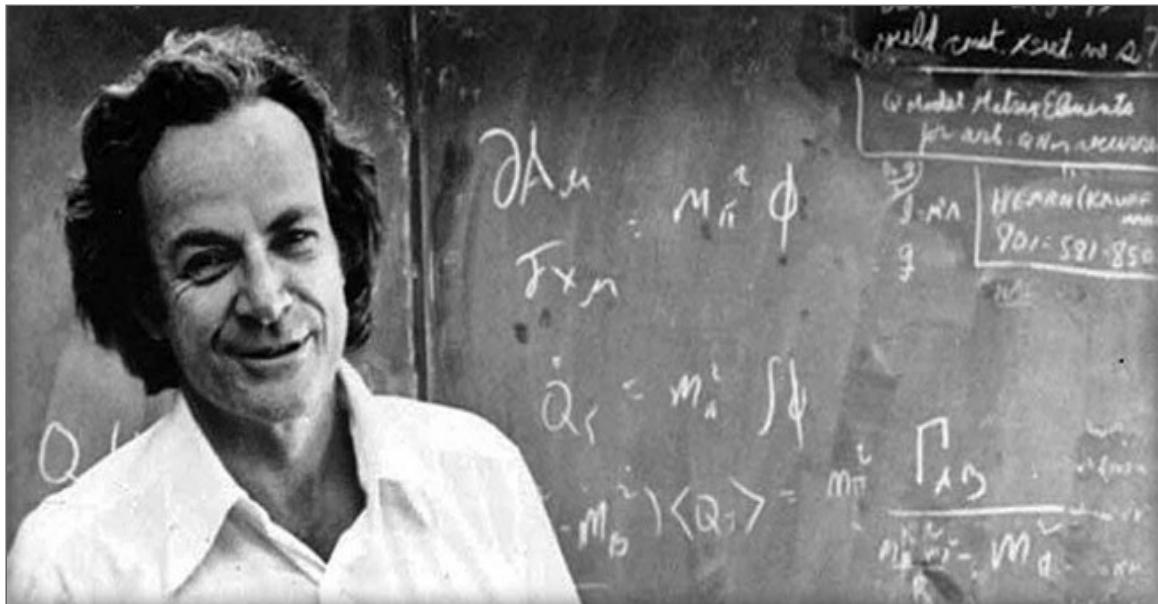
WHAT'RE YOU GOING TO LEARN TODAY?

- Who is your lecturer?
- Who are you and what do you want?
- Which topics will we cover?
- How will we do it?
- What do you have to do to pass?
- What's next?

WHO AM I?



SCIENCE



- Development of WWW
- PhD theoretical particle physics
- 60 research publications
- Assoc. Ed. Int. J. of Data Science
- Ed. Board Int. J. of Big Data Mgmt.
- Scientific member [d-cube@Berlin](#)

INDUSTRY



- Executive at Accenture & Shell
- Coach and consultant
- Certified psychotherapist
- Startup mentor

TEACHING



- Business informatics @HWR Berlin
- Visiting professor of data science @Lyon
- Adviser for CPU @LA
- Internship supervision

PLEASURE



- Playing: **Assassin's Creed Valhalla** (2020)
- Reading: **Waugh, Sword of Honour** (1952-1961)
- Watching: **The Middle** (2009-2018)

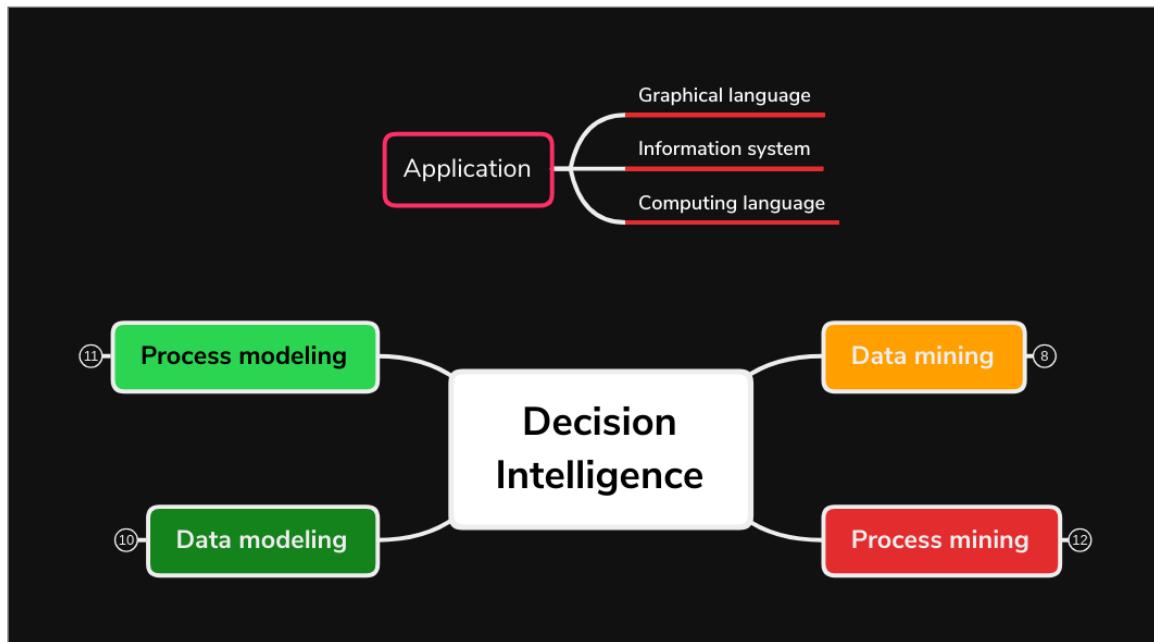
WHAT ARE YOUR EXPECTATIONS?

- What do you want to learn here?
- What would you like to avoid?
- What did you take away from another course?
- What did you really not like in another course?

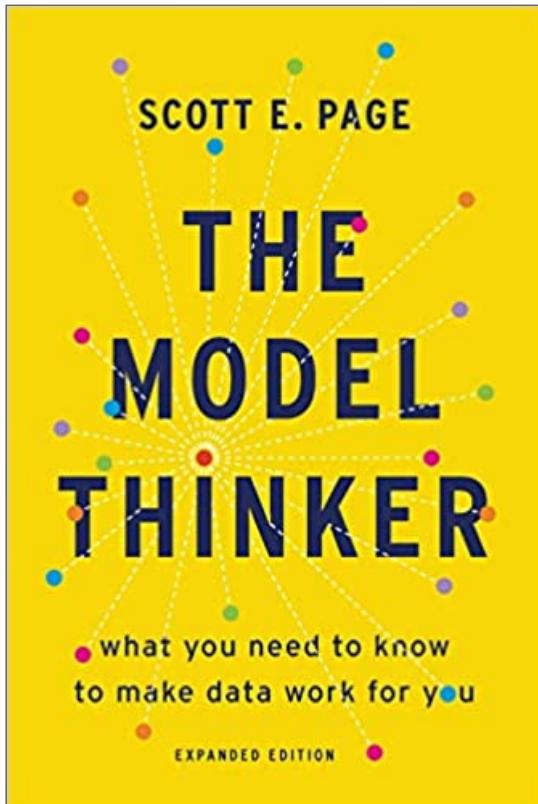
WHICH TOPICS WILL WE COVER?



DECISION INTELLIGENCE

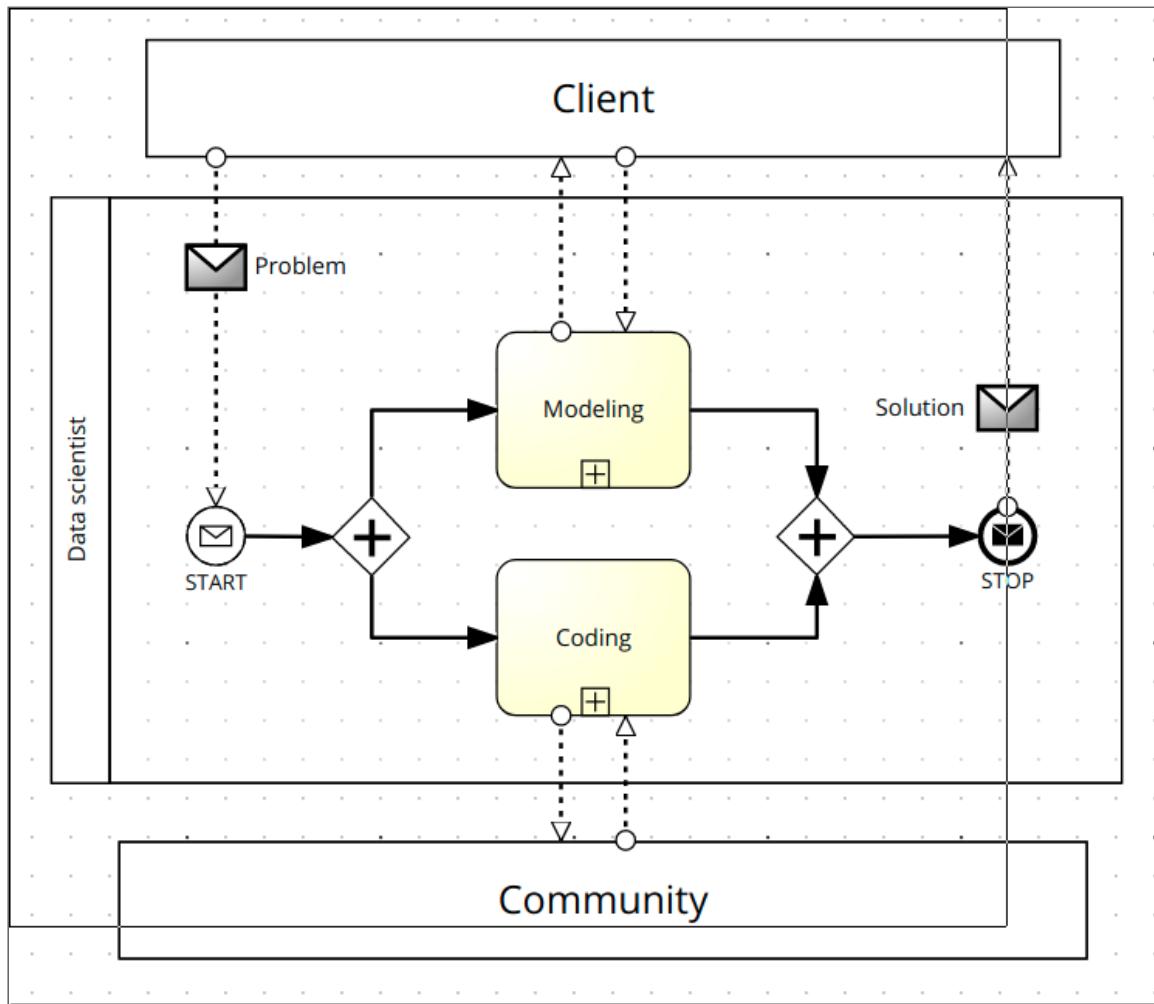


MANY-MODEL THINKING



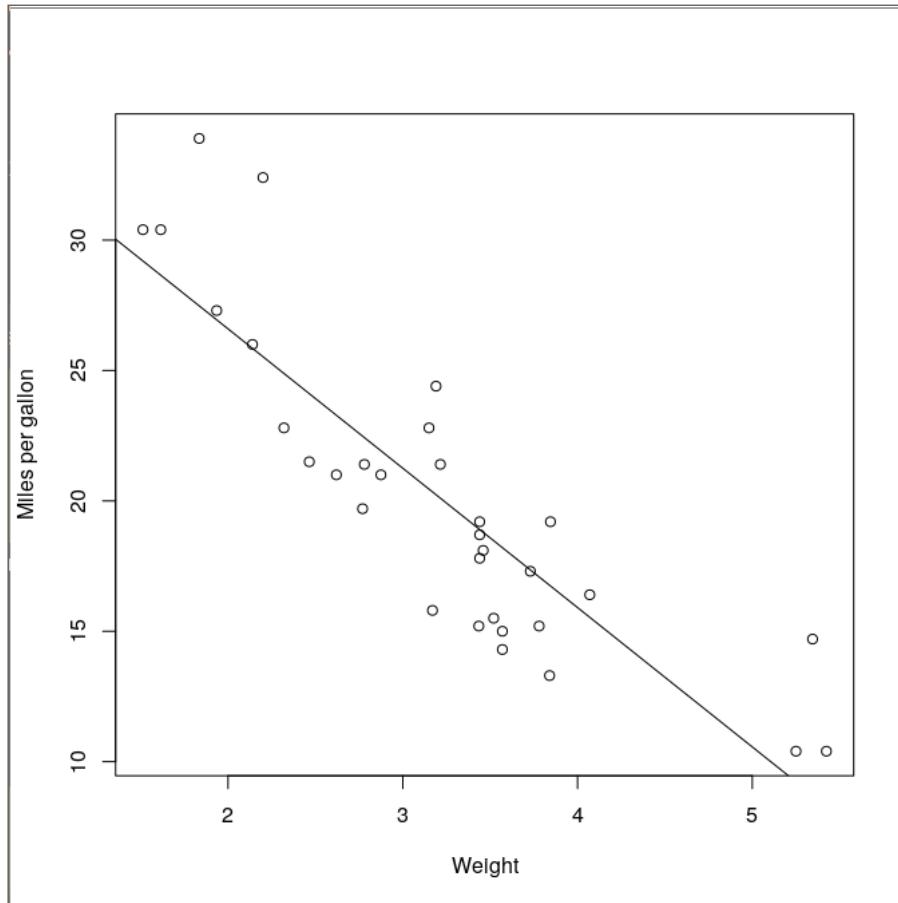
Expanded edition, Basic Books 2021

PROCESS MODELING



Source: Signavio / 19 May test lecture

LINEAR MODELS



Source: R plot

LINEAR REGRESSION IN R

```
x <- mtcars$wt  
y <- mtcars$mpg  
plot(x,y,xlab="Weight",ylab="Miles per gallon")  
lm_model <- lm(y~x,data=mtcars)  
abline(lm_model)
```



AGILE MANAGEMENT

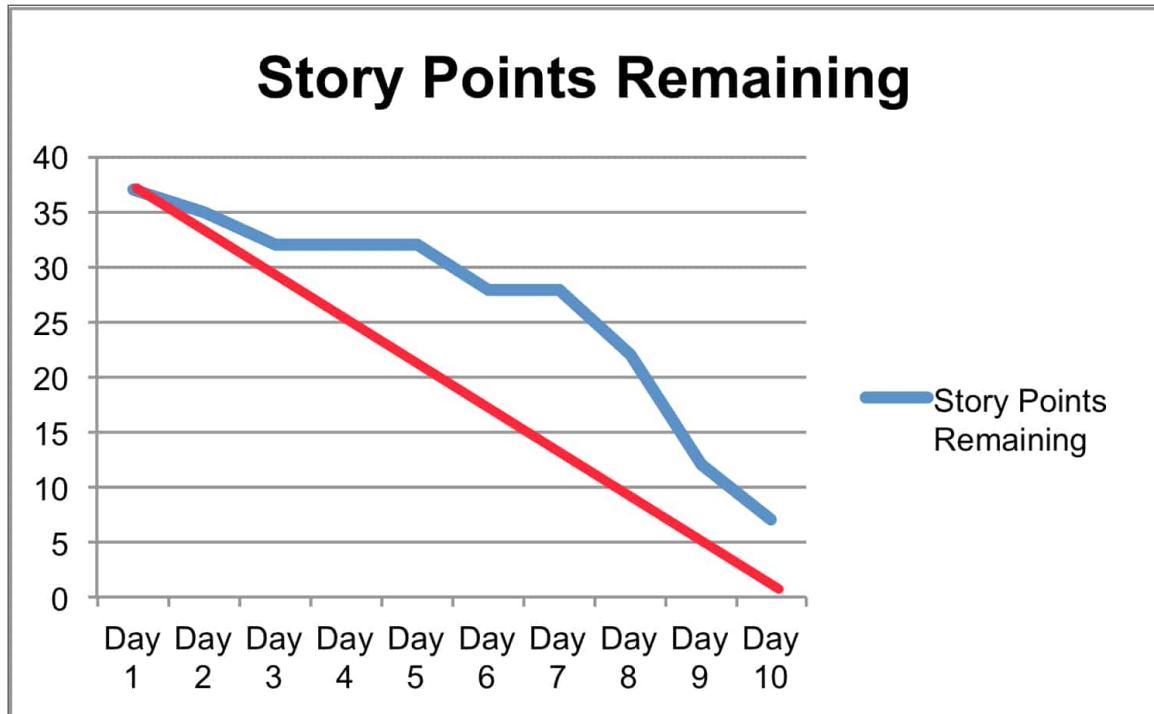


Image: Scrum burndown chart

ROBOTIC PROCESS AUTOMATION

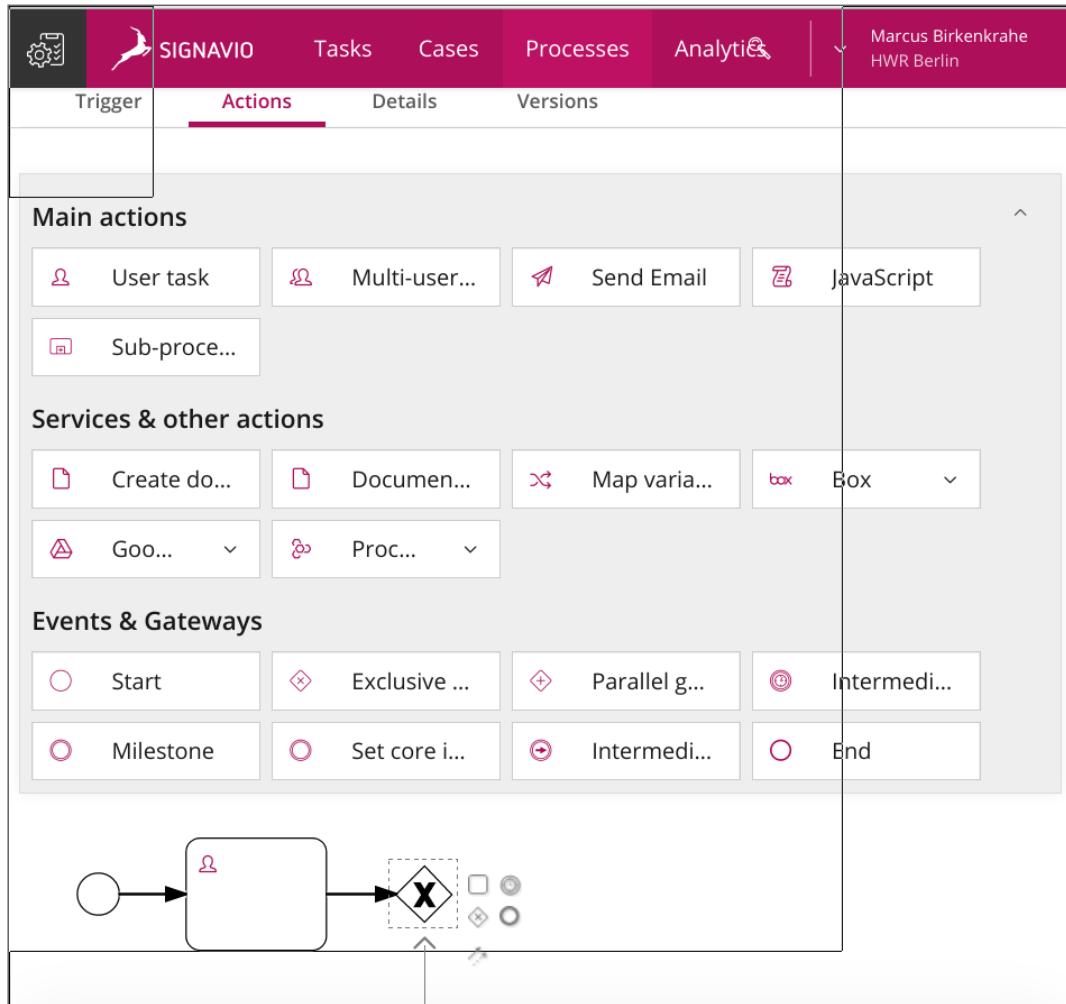


Image: [Signavio Workflow Accelerator](#)

UNIFIED MODELING LANGUAGE

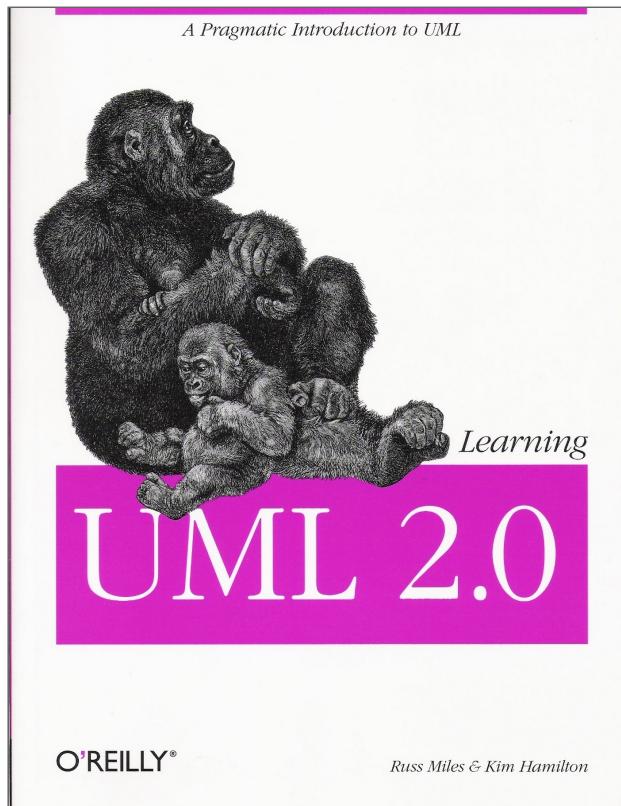


Image: [Learning UML 2.0](#) (2006)

PROCESS MINING



Image: Celonis dashboard

SCHEDULE (SEE SYLLABUS)



Image: [Princeton U.](#)

HOW WILL WE DO IT?



CLASSROOM SESSIONS



LECTURE SCRIPTS WITH EXERCISES ([GITHUB](#))

The screenshot shows a GitHub repository page for 'dsc101' by 'birkenkrahe'. The URL is <https://github.com/birkenkrahe/dsc101>. The page features a navigation bar with links for Pulls, Issues, Marketplace, and Explore. Below the navigation is a search bar and a 'Raise issues' button. A pink box highlights the 'Issues' tab. To the right are 'Watch' and 'Unwatch' buttons, with a count of 1. A green box highlights the 'Discussions' tab. Other tabs include 'Code', 'Pull requests', and 'Discuss'. The main content area shows a list of files: '1_overview' (selected, highlighted with a blue box), 'LICENSE', and 'README.md'. The '1_overview' file was updated 15 minutes ago. The 'LICENSE' file was committed 2 months ago. The 'README.md' file was updated 15 minutes ago. On the right side, there's an 'About' section with a description of the repository: 'Repository for DSC 101 - Data science methods and tools', a 'Readme' link, and a 'GPL-3.0 License' link. Below that are sections for 'Releases' (no releases published) and 'Packages' (no packages published). The 'README.md' content is displayed in a large box, with the 'Lectures' section highlighted by a large blue box.

READING ASSIGNMENTS



- Image: Unsplash ([@tomhermans](#))

LAB SESSIONS



- Image: Unsplash ([@Emin Baycan](#))

STUFF YOU BRING TO CLASS



- Image: Unsplash ([@Evan Demicoli](#))

WHAT DO YOU HAVE TO DO TO PASS?



WEEKLY LAB PRACTICE (> 50%)



WEEKLY PARTICIPATION (> 50%)



FINAL ESSAY (> 50%)



Source: Unsplash ([@Aaron Burden](#))

WHAT CONSTITUTES AN ESSAY?

- IMRaD structure ([video](#))
- Research question
- Literature review
- Methodology
- Results (e.g. glossary)
- Discussion with limitations
- References

DO YOU HAVE ESSAY EXAMPLES?

- Chapters in "Model thinking"
- (Parts of) Research papers
- Scientific or industry blogs

CAN I WRITE A SCIENTIFIC ESSAY?

- Keep It Simply Scientific (IMRaD)
- Read and take notes (see [FAQ](#))
- Researchers are beginners

FINAL EXAM (> 50%)



Final exam: date TBD

WHAT'S NEXT?



IN THE COURSE

- Lecture "Decision intelligence"
- Lab discussion "many-model thinking"
- Data vs. models (2 optional articles)
- What is a model anyway?

YOUR CHALLENGES

What?

When?

Read "Many-model thinking" Aug 24

Complete test challenge* Aug 24

List possible research questions Sep 2

Check FAQs x 2 in GitHub n.d.

Ask questions (class/GitHub) n.d.

**) do this every week until December*

ANY QUESTIONS?



This presentation is available online.