Introduction to the project

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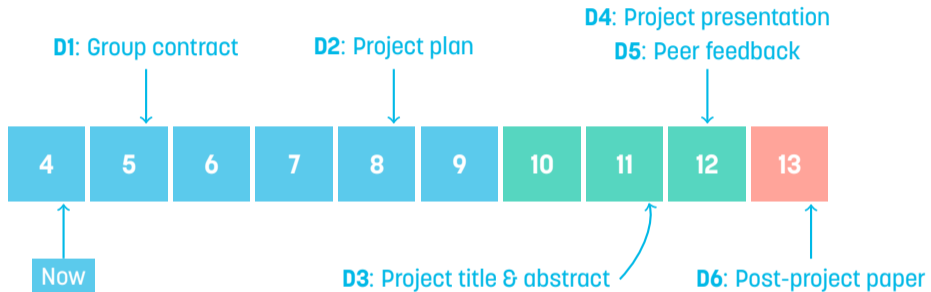
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This introduction session

1. Logistics

2. Practical tips

3. Examples

Project logistics

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The project's main purpose
is to let you assess
the difficulty and feasibility
of language technology applications.

Project timeline

D1: Group contract   **D2**: Project plan   **D4**: Project presentation
D5: Peer feedback

| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

Now

D3: Project title & abstract   **D6**: Post-project paper

Let's look at the ⬈ **project assignments instructions** on the course website!

Practical tips

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A common project structure

1 Choose an **application** of language technology.

2 Choose one or more **concrete systems** that implement this.

3 **Evaluate** the system(s) w.r.t. relevant properties.

4 Draw **conclusions** about the difficulty and feasibility.

Path 1: Start with the application

- **Pick an application** that you find interesting and want to know more about.
  - text classification
  - text generation, chatbots
  - question answering
  - ...

- Look into **software and datasets** that are available for that application.

- Find out how those systems are typically **evaluated**.

Path 2: Start with the data

- **Pick a dataset** that you find interesting and want to know more about.
  - ⬀ Kaggle, ⬀ HuggingFace Datasets, ⬀ Riksdagens öppna data, …
  - Web scraping to gather your own dataset

- Look at the data and develop ideas **what you could do** with it.
  - Also consider: What have *others* done with it?

Implementation work

- **Coding** can be part of a project, but it is **not the main focus**.
  - Remember the learning objective!

- Don't start from scratch; **use existing libraries**!
  - spaCy, scikit-learn, NLTK, Gensim, HuggingFace Transformers, …
  - No requirement on the programming language!

- Anything related to language technology is fine;
  you **can go beyond** the course content!

Evaluate your approach

- **Intrinsic evaluation** using well-defined evaluation measures
  - *e.g.*, accuracy, precision, recall, perplexity, ...

- **Extrinsic evaluation** by embedding the application into a larger system
  - could involve doing a user study

- **Subjective evaluation** by manually analyzing the results
  - *e.g.* How well do the results fit known facts? How well do they fit a theory?

How to get help

- Pitch your project idea to me!

- I am offering **project group meetings** for you to get feedback.
  - Book a time slot through the link on the website.

- I am also available **via e-mail**.

Example projects from previous years

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Book genre prediction

- Can we **predict a book's genre** (e.g. *horror, fantasy, romance*) from a summary of its plot?
  - Text classification problem

- Compare two different models & analyze the most predictive words per genre.
  - "kill" is predictive of horror, "power" is predictive of fantasy

- Also perform a small user study to see how difficult humans would find the task.

Cross-domain sentiment analysis using hotel reviews

- Can we **train a sentiment classification model** on one domain of texts, and later apply it to a different domain?

  – Sentiment analysis: predicting whether a text is e.g. "positive", "negative", or "neutral" towards something.

- Train on hotel reviews, test on product reviews.

  – Data from Tripadvisor & Amazon

- Compare different models, analyze the effect of review length.

  – SVM, BERT, VADER

Quantifying text emotiveness

- Can we detect **how emotionally engaged** someone was when producing a text?

- Consider psycholinguistic theories about how emotiveness can be measured in text.
  - Trager coefficient, aggressiveness coefficient, readiness to action

- Analyze the emotiveness of speeches over time, explain the results.

Lyrics generation

- How difficult is it to automatically **generate song lyrics**?

- Compare two advanced deep learning models.
    - LSTM model trained on song lyrics & ChatGPT

- Challenging to evaluate: conduct a survey with human participants.
    - "How much do you like the lyrics? How realistic do they sound?"

Change of language in Reddit over time

- Can we study **how language changed over time** in specific subreddits?

- Approximate the "change of language" by looking at different features.
    - sentiment analysis
    - average post and sentence length
    - verb/noun ratio

- Relate the findings to events that happened in the real world, and that may be discussed in these subreddits.

More project abstracts
from previous years
are on the course website!