Developing your AI project

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Individual projects (examination)

1. Choose an AI research task
2. Evaluate related research (at least 1 article)
3. Design project and identify potential challenges: **use the template!!!**
4. Submit filled in template on **28/9, 13:00** by email (sonja.aits@med.lu.se)
5. Present project and act as opponent for two other projects on **29/9**

Title

Name(s)

Research aim

Overall research aim:

Improve survival of cardiac arrest patients (overall goal of your research programme)

Specific project aim:

AI system which identifies cardiac arrest cases in calls to emergency services

Related work

Summary:

Read publication(s) related to your work (e.g. paper describing the state of the art solution for your specific task or a study using an AI approach for a similar biomedical/life science question).

Summarize main findings with relevance for your project, e.g. type of model, evaluation strategy, data, main results

Reference(s):

Data

Description:

Recordings of emergency services phone calls (n = 10000)

Transcription and stress level score of selected phone calls (n = 300)

Labels: Stroke diagnosis yes/no

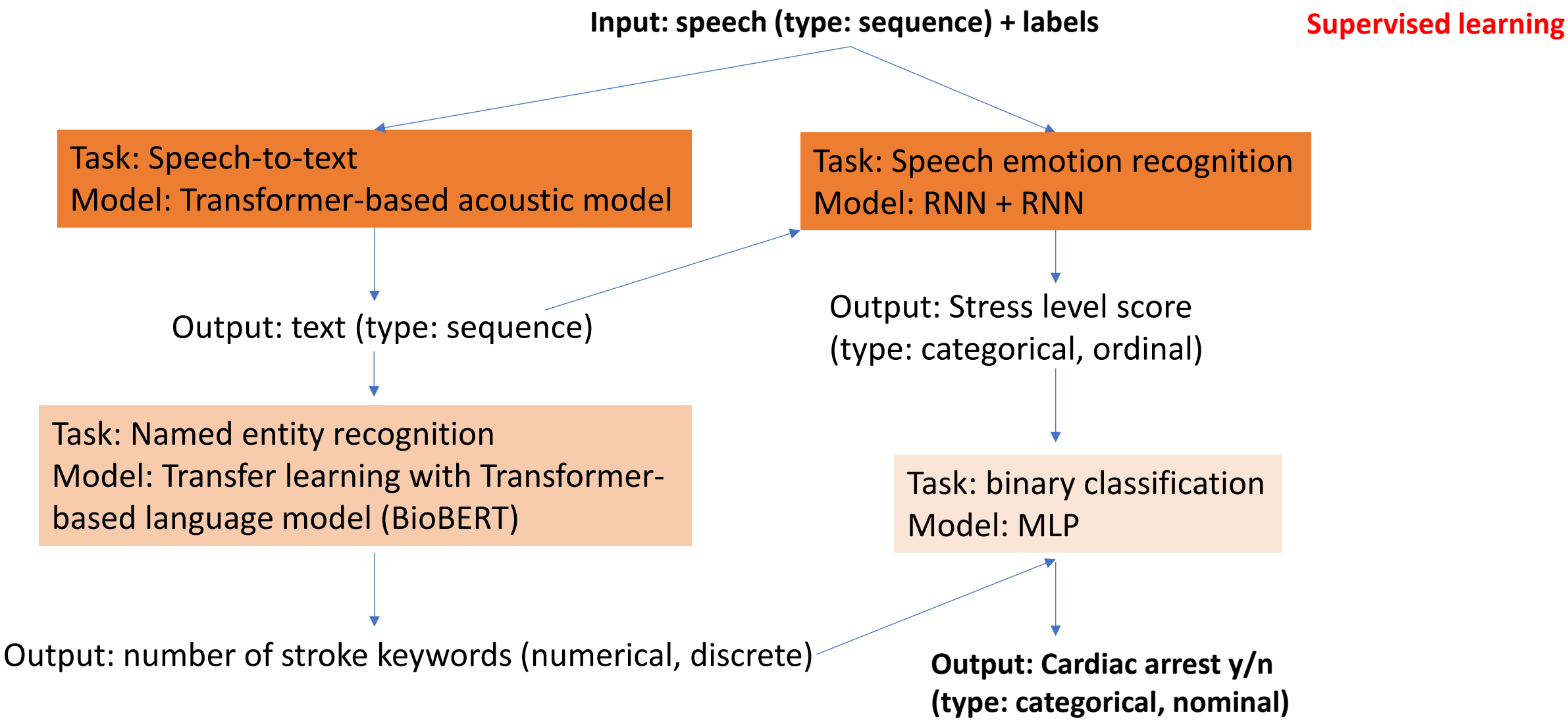
Public data source(s), if any:

Riksstroke quality register

Data preprocessing and augmentation:

Use only first minute of each call

AI strategy


Input: speech (type: sequence) + labels
Supervised learning
Task: Speech-to-text
Model: Transformer-based acoustic model
Task: Speech emotion recognition
Model: RNN + RNN
Output: text (type: sequence)
Output: Stress level score
(type: categorical, ordinal)
Task: Named entity recognition
Model: Transfer learning with Transformer-based language model (BioBERT)
Task: binary classification
Model: MLP
Output: number of stroke keywords (numerical, discrete)
Output: Cardiac arrest y/n
(type: categorical, nominal)

Evaluation

- Confusion matrix
- Precision
- Recall

Technical challenges

Describe expected problems and, optionally, how you plan to address them (e.g. issues related to data/models/evaluation, lack of expertise/infrastructure, etc)

Ethical, legal and societal challenges

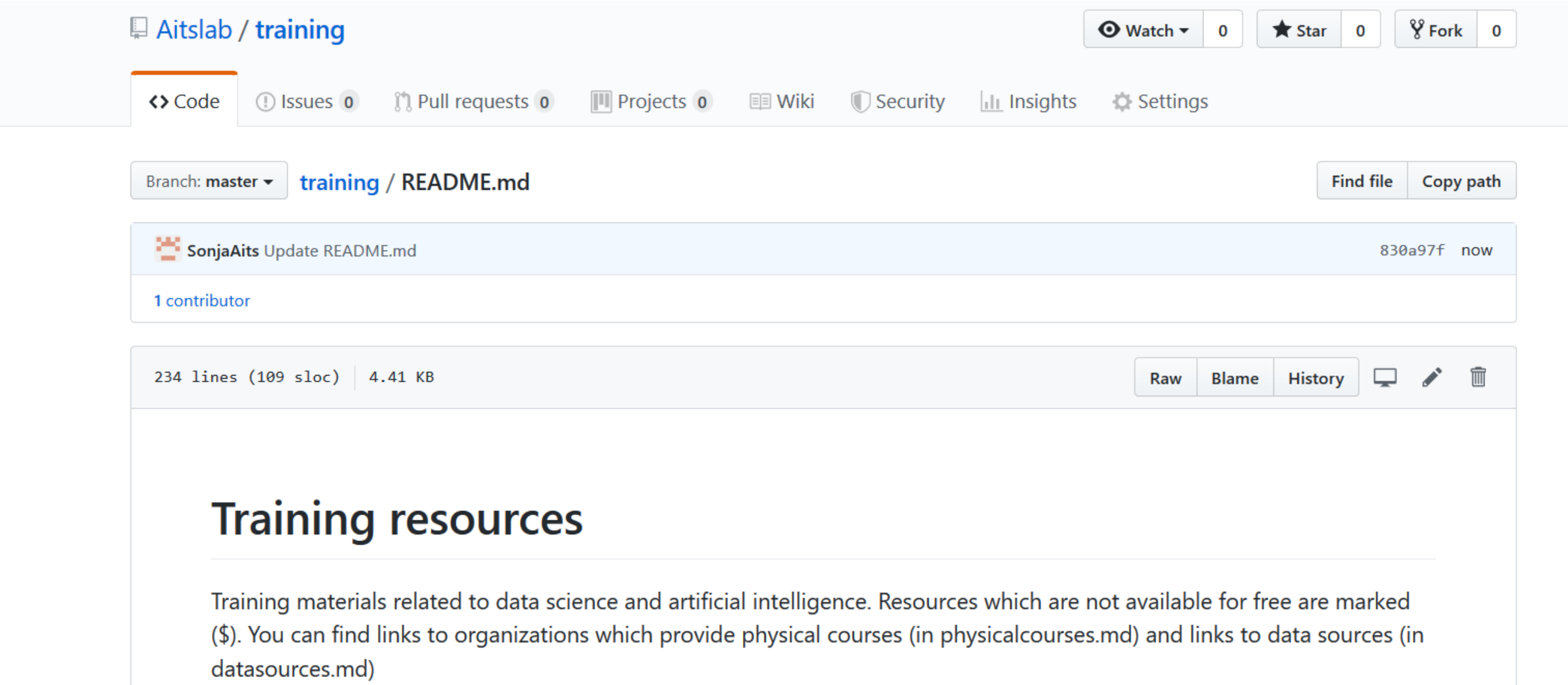
- Describe potential issues and how you plan to address them

Beyond this course…

How to learn more about AI

- On-site courses
- Online courses
- Blogs
  - NLP Progress: http://nlpprogress.com/
  - Towards Data Science
- Youtube
- Books
- Collaborate with pros

https://github.com/Aitslab/training



https://github.com/COMPUTE-LU/

Popular repositories

PLGroup_AI4MedLife-journalclub Public

info for the COMPUTE peer-learning group "AI for Medicine and Life Sciences - Journal Club"

☆ 6

AI4MedLife_imaging_2021 Public

a repo for the course "AI for Medicine and Life Sciences - AI for Image and Video Data" (fall term 2021) at the COMPUTE research school, Lund University (https://www.compute.lu.se/).

Jupyter Notebook ☆ 3 3

PLGroup_PythonforBeginners Public

material for and from the peer-learning group Python for Beginners

Jupyter Notebook

jupyter-course Public

Forked from mlund/jupyter-course

Jupyter Course

Jupyter Notebook 1

.github Public

overview page for COMPUTE research school

AI4MedLife_intro_2023 Public

repo for the PhD level course Artificial Intelligence in Medicine and Life Sciences -Introduction (NTF012F) at Lund University, Dec 2023

Lund has a rich environment of organizations supporting AI in medicine and life sciences

COMPUTE PhD School: https://www.compute.lu.se/

AI Lund: http://ai.lu.se/

HubAI https://hubai.se/

LUBI https://www.lubi.lu.se/

LU eScience Hub

LU profile area Natural and Artificial Cognition

LU profile area Nature-based Future Solutions

LTH profile area Pillars of AI and Digitalization

LTH profile area Engineering Health

eHealth@LU: http://www.ehealth.lth.se

RSG-Sweden - Lund: http://rsg-sweden.iscbsc.org/

eSSENCE: http://essenceofescience.se/

WASP/WASP-HS: https://wasp-sweden.org/ and https://wasp-hs.org/

https://www.compile.lu.se/events/

Events

20 December

From: 2023-12-20 12:00 to 13:15 | Seminarium

AI Lund lunch seminar: How context affects Clarity and Understanding in software development environments

17 January

From: 2024-01-17 12:00 to 13:15 | Seminarium

AI Lund lunch seminar: A Signing Avatar on Stage in Realtime

24 January

From: 2024-01-24 09:30 to 15:30 | Konferens

AI Lund Fika-till-Fika workshop: AI in Public sector 2024

31 January

From: 2024-01-31 12:00 to 13:15 | Seminarium

AI Lund lunch seminar: AI tools and the impact on Education – what are our opportunities, responsibilities and fears?