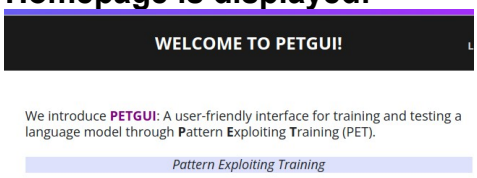
“PETGUI" Evaluation Form

"PETGUI" is a user-friendly interface for training and testing a language model using Pattern Exploiting Training (PET)[1].

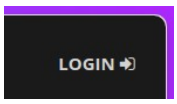
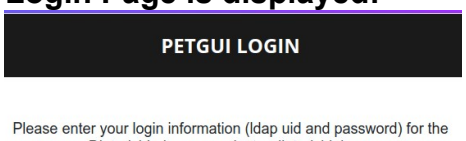
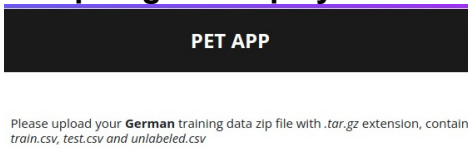
Pattern Exploiting Training (PET)
PET is a semi-supervised training strategy for language models. PET adds phrases in pattern-*verbalizer* pairs to the given data (here: sections from CARDIO:DE[2])
• Example: Section labeled "***Anamnese***": "Severe thoracic tightness after light exertion."
is **transformed** into: "The following section deals with *complaints*: Severe thoracic tightness after light exertion."
• The advantage of PET over other training strategies is the **use of less data**, resulting in a PET-trained model achieving the same (or even better) performance as one trained with standard supervised training.

Step 1: Application start

Action(s)	Expected Display	Did it work?	If not: Please describe display
Please open this link in a browser on a clinical PC	**Homepage is displayed:** 	Yes [] No []	

→You are now on the **Homepage**

Step 2: Login

Action(s)	Expected Display	Did it work?	If not: Please describe display
1. Click  to go to the Login page	**Login Page is displayed:** 	Yes [] No []	
2. Fill in the "username" and "password" fields with your LDAP credentials and then click on	**Setup Page is displayed:** 	Yes [] No []	

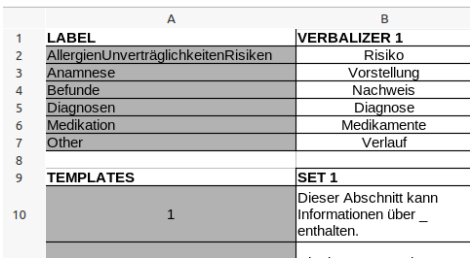
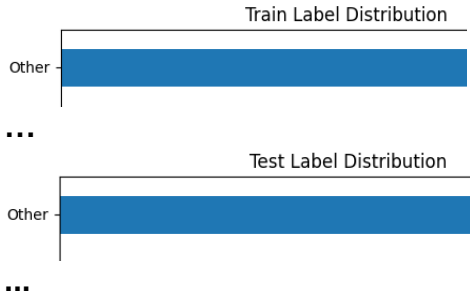
1 Schick et al., 2021. Exploiting Cloze Questions for Few-Shot Text Classification and Natural Language Inference. https://arxiv.org/abs/2001.07676

2Richter-Pechanski et al., 2023, A distributable german clinical corpus containing cardiovascular clinical routine doctor’s letters, Scientific Data, 10, 04 2023. doi: 10.1038/s41597-023-02128-9

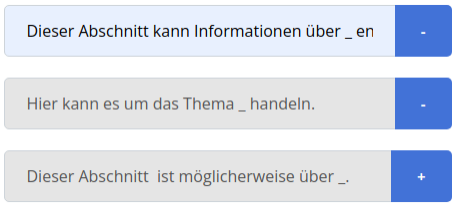
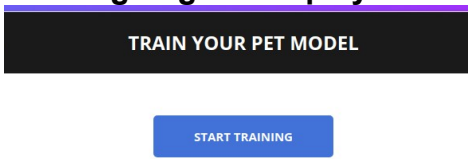
LOGIN			

You are now on the **Setup Page**

Step 3: Set up a *few-shot* training

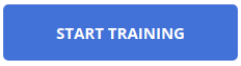
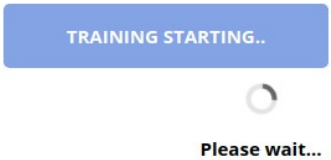
Action(s)	Expected Display	Did it work?	If not: Please describe display
1. Save the german few-shot data on your local machine.	***"train.tar.gz"* wurde auf dem PC gespeichert**	Yes [] No []	
2. **Open the verbalizer and label mappings**[3] *"mappings.ods"* in a separate browser tab.	***Tabelle "mappings.ods"* wurde geöffnet**  A / B 1 LABEL / VERBALIZER 1 2 AllergienUnverträglichkeitenRisiken / Risiko 3 Anamnese / Vorstellung 4 Befunde / Nachweis 5 Diagnosen / Diagnose 6 Medikation / Medikamente 7 Other / Verlauf 8 9 TEMPLATES / SET 1 10 1 / Dieser Abschnitt kann Informationen über _ enthalten.	Yes [] No []	
3. Click on UPLOAD to upload and select the downloaded training data	**Datei wurde hochgeladen:** "*File train.tar.gz uploaded successfully!*"	Yes [] No []	
4. Click on VIEW DATA to see statistics on the uploaded training data 5. HIDE DATA to hide them	**Two graphs showing the label distribtution:**  Train Label Distribution Other … Test Label Distribution Other …	Yes [] No []	
2. Define column numbers: Input"**1" in the left** and "**0" in the right field**	 1 0	Yes [] No []	

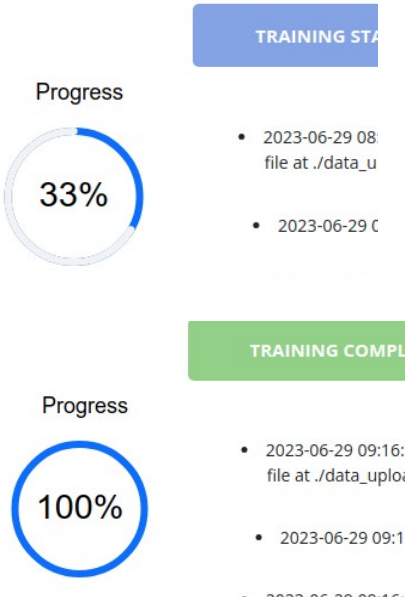
3 A verbalizer represents the respective label in a provided template, e.g.: **Label** *Findings* OR *Anamnese* with a **verbalizer** *Verification OR Complaints*, respectively becomes: "This section deals with *verification OR complaints*."

3. **Define templates:** Input all three entries of the ***SET 1*** row from the ***TEMPLATES table*** of the "mappings.ods" file		Yes [] No []	
4. **Define verbalizers:** Input all entries of the ***VERBALIZER 1 row*** from the **VERBALIZER table** of the "mappings.ods" file		Yes [] No []	
5. **Define your language model:** Select "*gbert-base*" as the language model.		Yes [] No []	
Click "*Submit*"	**Training Page is displayed:** 	Yes [] No []	

→ You are now on the **Train Page**

Step 4: Train the model

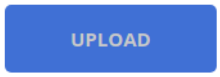
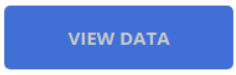
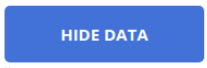
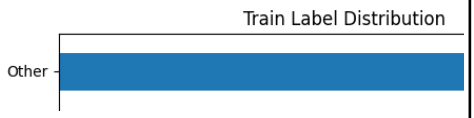
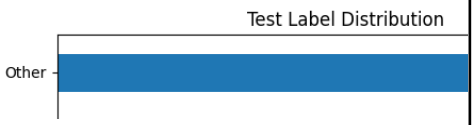
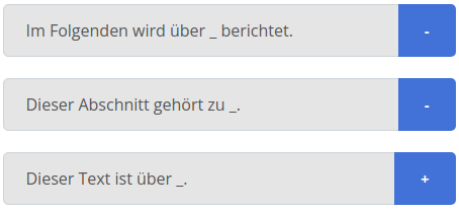
Action(s)	Expected Display	Did it work?	If not: Please describe display
1. Click on  to start PET training	 1.	Yes [] No []	

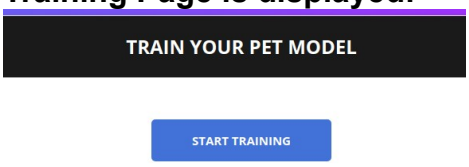
2. Training is initialized. First, “Please wait” is displayed. This can take up to ~ 2 minutes. **3.** Then, progress bar is displayed until training finishes.			
How long did the above step take?	**~1-2 minutes** ◯ **~2-3 minutes** ◯ **~3-5 minutes** ◯ **longer** ◯		
6. Click on SHOW RESULTS to view statistics on model performance[4]	**Tabelle mit Statistiken is displayed** Pattern | Accuracy | Per label performance Label: 0 | Pre: 0.0, Rec: 0.0,F1: 0.0, Supp: 3 *“Pre”* steht für Precision, *“Rec”* für Recall (sensitivity), *“F1”* für F1-measure und *“Supp”* für Support (Anzahl der Samples im Test set).	Yes [] No []	
Please note here the best/worst F1-scores with the according labels			
Next, we adjust the training parameters and start a new training. Click on RUN WITH NEW CONFIGURATION o configure a new training.	**Setup Page is displayed** PET APP Please upload your **German** training data zip file with *.tar.gz* extension, contain *train.csv, test.csv and unlabeled.csv*	Yes [] No []	

→ You are now again on the Setup Page.

4 **Given as Accuracy, Precision, Recall and F1-Score.**

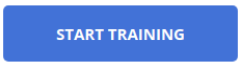
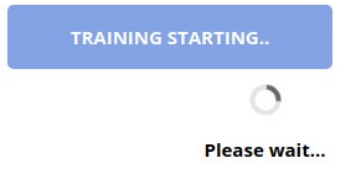
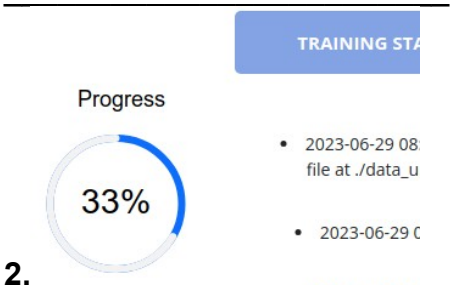
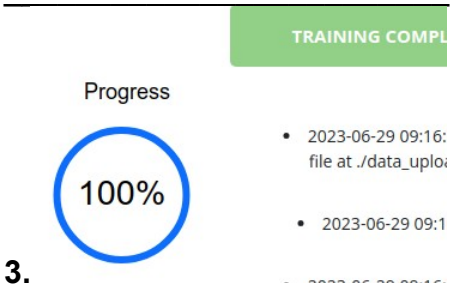
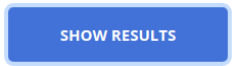
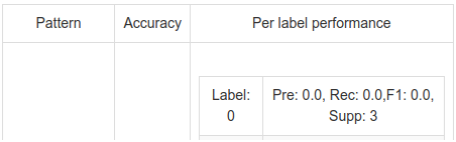
2. *Few-shot* Training

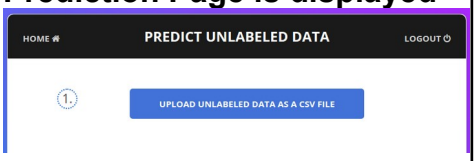
7. **Click on**  **to upload and select the downloaded**	**Datei wurde hochgeladen:** "*File train.tar.gz uploaded successfully!*"	Yes [] No []	
8. Click on  to see statistics on the uploaded training data 9.  to hide them	**Two graphs showing the label distribtution:**  …  …	Yes [] No []	
2. **Define column numbers:** Input "**1" in the left** and "**0" in the right field**		Yes [] No []	
3. **Define templates:** Input all entries of the ***SET 2*** row from the ***TEMPLATES table*** of the "mappings.ods" file		Yes [] No []	
4. **Define verbalizers:** Ginput all entries of the ***VERBALIZER 2 row*** *from the* **VERBALIZER table** of the "mappings.ods" file		Yes [] No []	
5. **Define your language model:** Select "medbertde" as language model.		Yes [] No []	

Click "*Submit*"	**Training Page is displayed:** 	Yes [] No []	

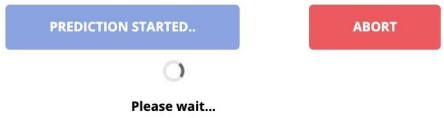
→ You are now on the **Training Page**

Set up 2nd few-shot training

Action(s)	Expected Display	Did it work?	If not: Please describe display
4. Click on  to start PET training **5.** "Please wait" is displayed. This can take up to ~ 2 minutes. **6.** Wait until training progress reaches 100%.	**1.**  **2.**  **3.** 	Yes [] No []	
How long did the training take this time?	**~1-2 minutes ◯** **~2-3 minutes ◯** **~3-5 minutes ◯** **longer ◯**		
10. Click on  to view statistics on model performance **→ Please compare the scores of the two training passes. Consider especially the F1-scores of the labels.**	**Table with statistics displayed** 	Yes [] No []	

Please note here **again** the **best/worst F1-scores** with the according labels.			
Click on  to annotate new doctor's letters with the trained model.	**Prediction Page is displayed** 	Yes [] No []	

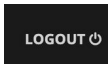
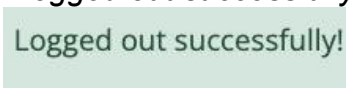
Step 5: Generate predictions

Action(s)	Expected DIsplay	Did it work?	If not: Please describe display
Save the following file to your local machine: https://data.dieterichlab.org/s/DtBKDf57zNYWmm Click *"Upload unlabeled data as a csv file".* 	'File uploaded successfully: File name: data_for_prediction.csv.' Button *"Predict Labels Using PET Model"* is activated.	Yes [] No []	
Click "Predict Labels Using PET Model"  Please wait, this might take a while.	Button changes to *"Prediction Started."*  Once prediction finished, button changes to green:  *Buttons "Download Predicted Data"* and *"Show Chart"* active.		
<u>Optional</u>: You can click "Abort" to stop prediction process and start a new prediction process.	*"Prediction aborted successfully!"*	Yes [] No []	

Step 6: Download labeled data file

Action(s)	Expected Display	Did it work?	If not: Please describe display
Click on *"Download Predicted Data"* 	Labeled Data File is downloaded.	Yes [] No []	

Step 7: Logout

Action(s)	Expected Display	Did it work?	If not: Please describe display
Click "Logout" 	*"Logged out successfully!"* 	Yes [] No []	

Step 8: Evaluate PETGUI

Steps	Comments	(Your tips for improvement)
1. Start		
2. Login		
3. Setup Training		
4. Training		
5. Generate Predictions		
6. Download of Labeled Data File		
7. Logout		

Step 9: Please rate your experience running "PETGUI"

1. **Reasoning**: Were the app **functions** as buttons, texts and descriptions comprehensive for you?

   Not at all 1◯ 2◯ 3◯ 4◯ 5◯ Very

   Comment(s):

   _____

   _____

2. **Display**: Did you find the **general app display** appealing?

   Not at all 1◯ 2◯ 3◯ 4◯ 5◯ Very

   Comment(s):

   _____

   _____

3. **Speed**: Did you find that the following single processes took reasonable amount of time?

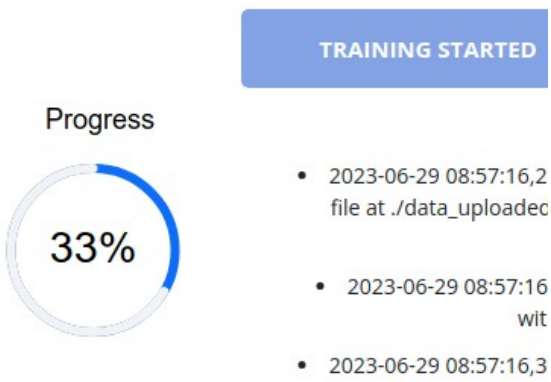
   - **Process 1**: Training Setup - "*Please Wait*"

   Not at all 1◯ 2◯ 3◯ 4◯ 5◯ Very

   Comment(s):

   _____

   _____



   - **Process 2**: Training - "*Training Started*"

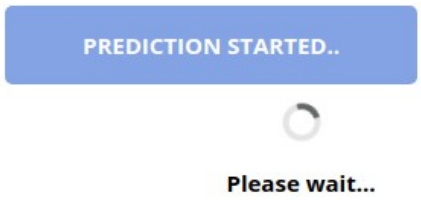
   Not at all 1◯ 2◯ 3◯ 4◯ 5◯ Very

Comment(s):

_____

_____

- **Process 3**: Prediction - "*Prediction Started*"



Not at all 1◯ 2◯ 3◯ 4◯ 5◯ Very

Comment(s):

_____

_____

4. **User interaction and feedback**: Were the responses of the app as buttons, texts and descriptions helpful?

   Not at all 1◯ 2◯ 3◯ 4◯ 5◯ Very

   Comment(s):

   _____

   _____

Thank you very much for your participation! 🙂