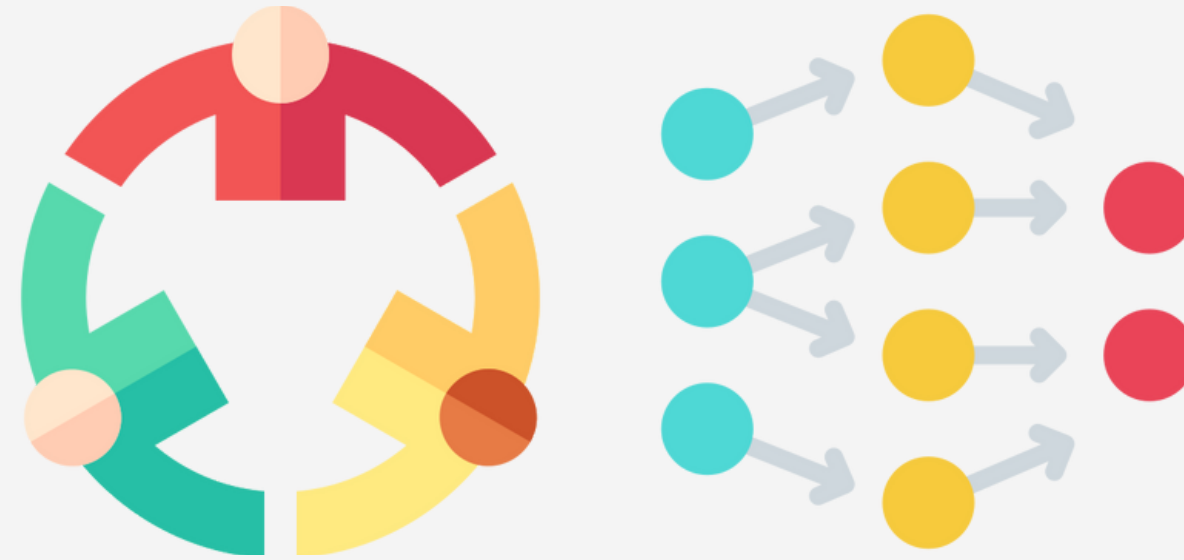


TEACHTOK

Behnoosh Mohammadzadeh &
Jules Françoise
& Baptiste Caramiaux
& Michèle Gouiffès

PRESENTED BY
Abel Henry-Lapassat



TRAVAIL ENCADRÉ DE RECHERCHE

Participation in one of Behnoosh Mohammadzadeh's PhD projects in the field of Collaborative Interactive Machine Teaching, contributing to TeachTOK, from the eponym research article.

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RESEARCH FIELD

Machine Learning, Interactive ML,
and Collaborative IML

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TEACHTOK

Collaborative Interactive Machine
Learning Application displaying and
illustrating research concepts.

03

DEMO SIMPLIFICATION

Mobile simplified version of teachtok
designed to match the context of the
IHM2024 demo night

04

DEPLOYMENT ADAPTATION

Mobile complete adapted version to
match the possible deployment of the
application

05

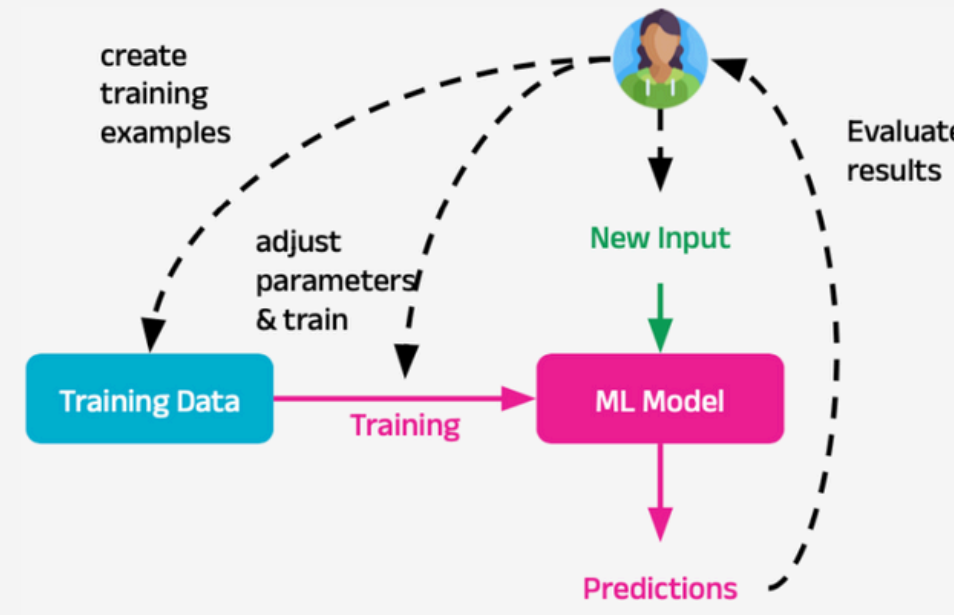
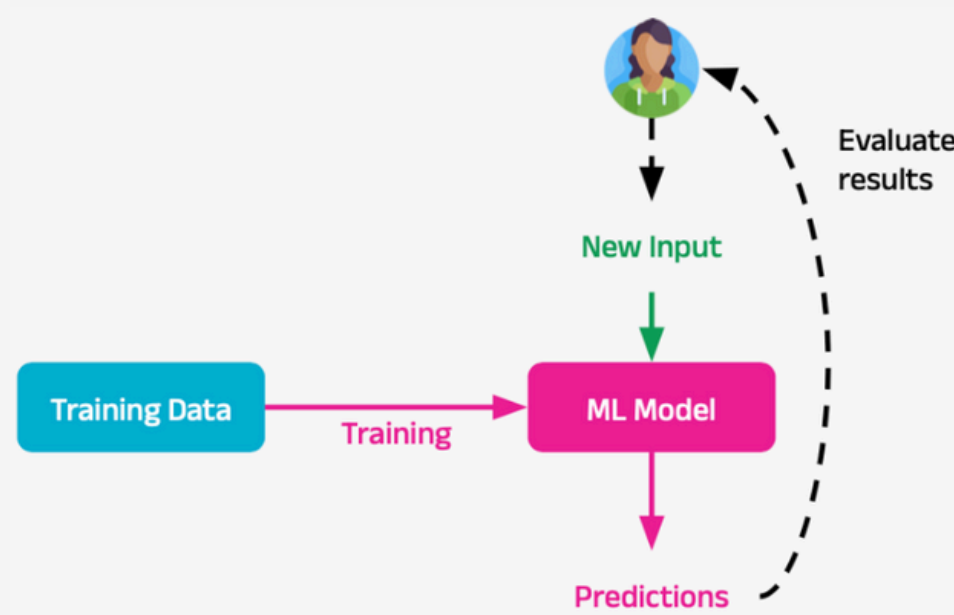
FUTURE WORK

What would have been the next steps
for my TER

06

CONCLUSION

What did I do, what did it brought me,
and personal appreciation



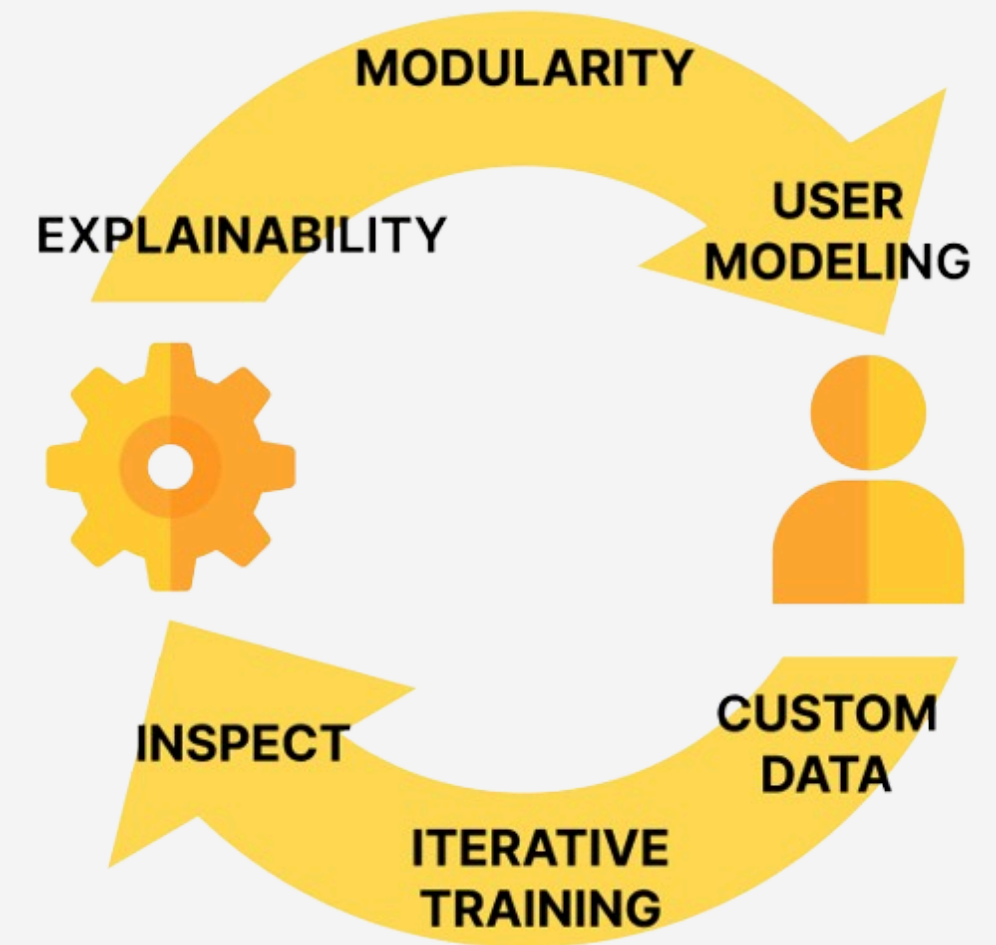
Interactive Machine Learning

Iterative process (unlike regular ML)
 Human in the loop
 Linked to explainable AI

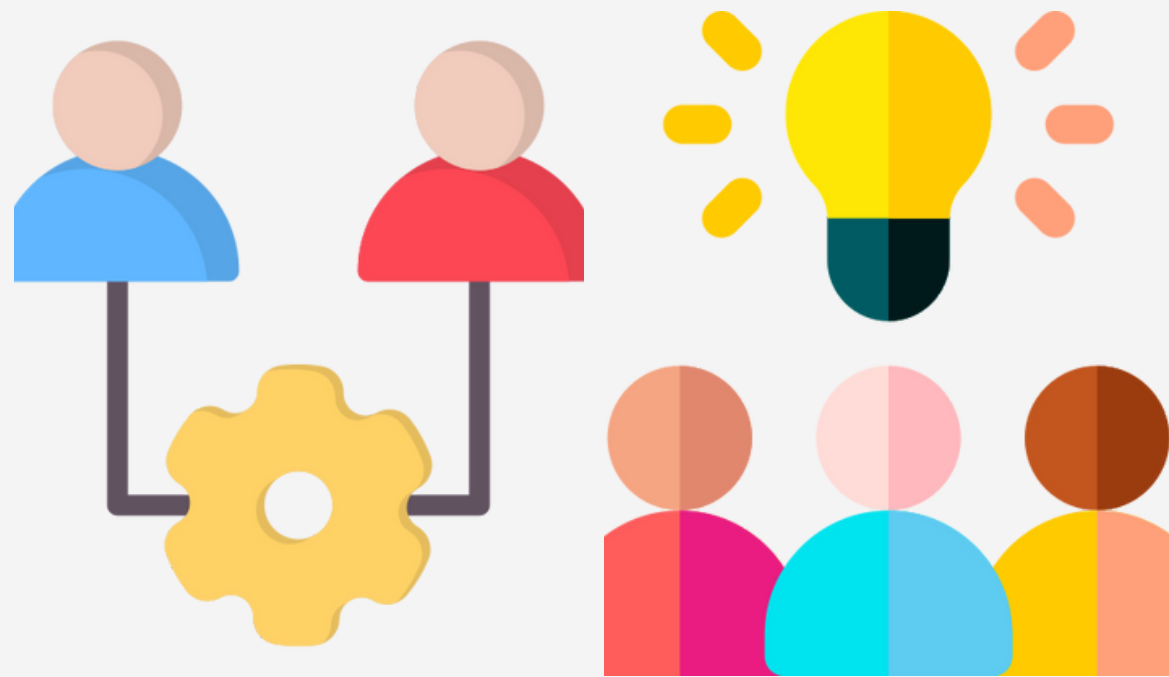
Kind of a fusion of Machine Learning and Human-Computer Interaction, where the aim is to get the best out of ML while making it usable and understandable by novice users.

RESEARCH FIELD

01



01



RESEARCH FIELD

Collaboration is widely studied in HCI, but not that much in the IML field.

Trying to apply these concepts to IML applications

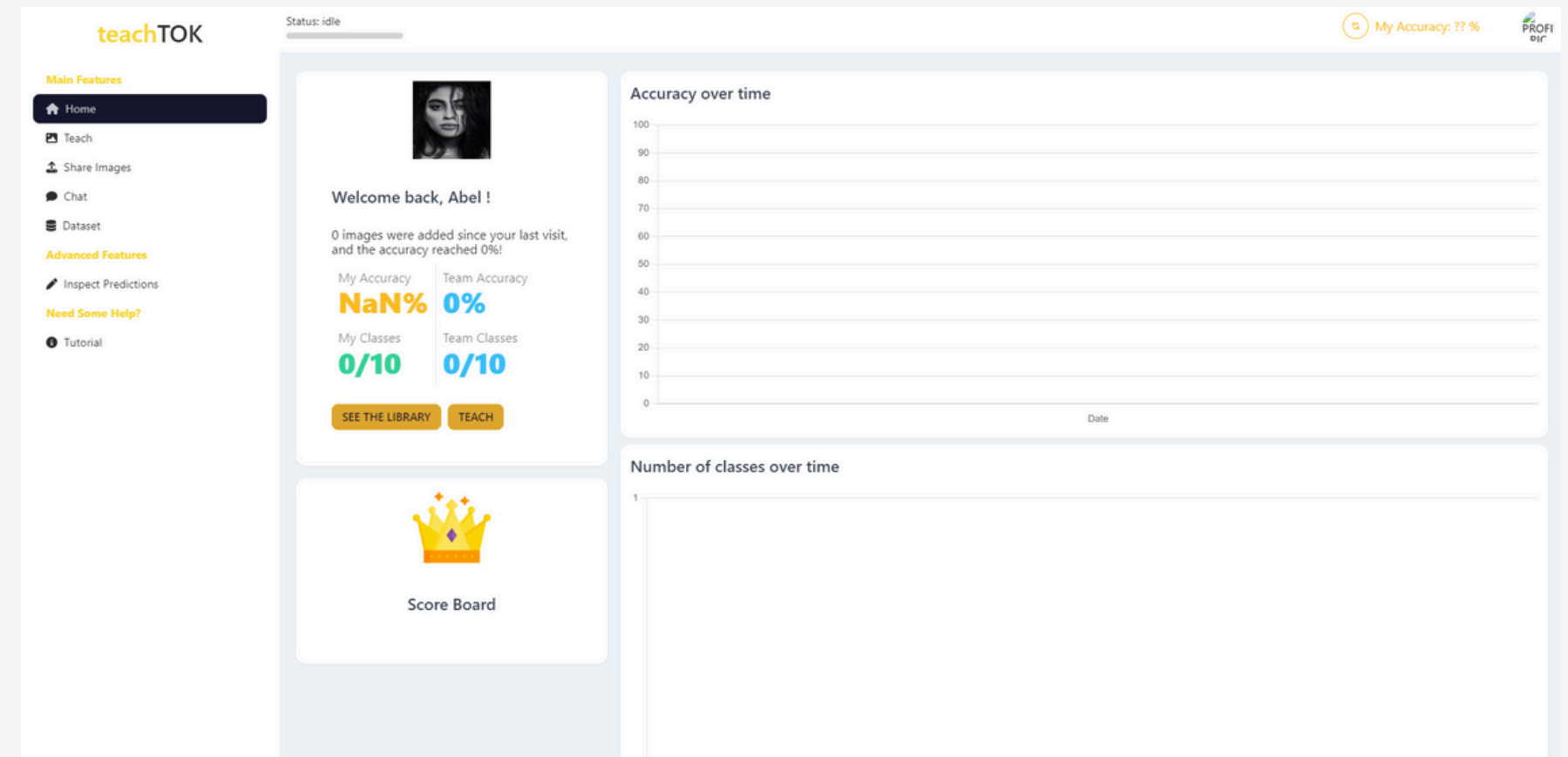
Benefits ? Drawbacks ? How to do so ?

Collaborative Interactive
Machine Learning



02

teachTOK



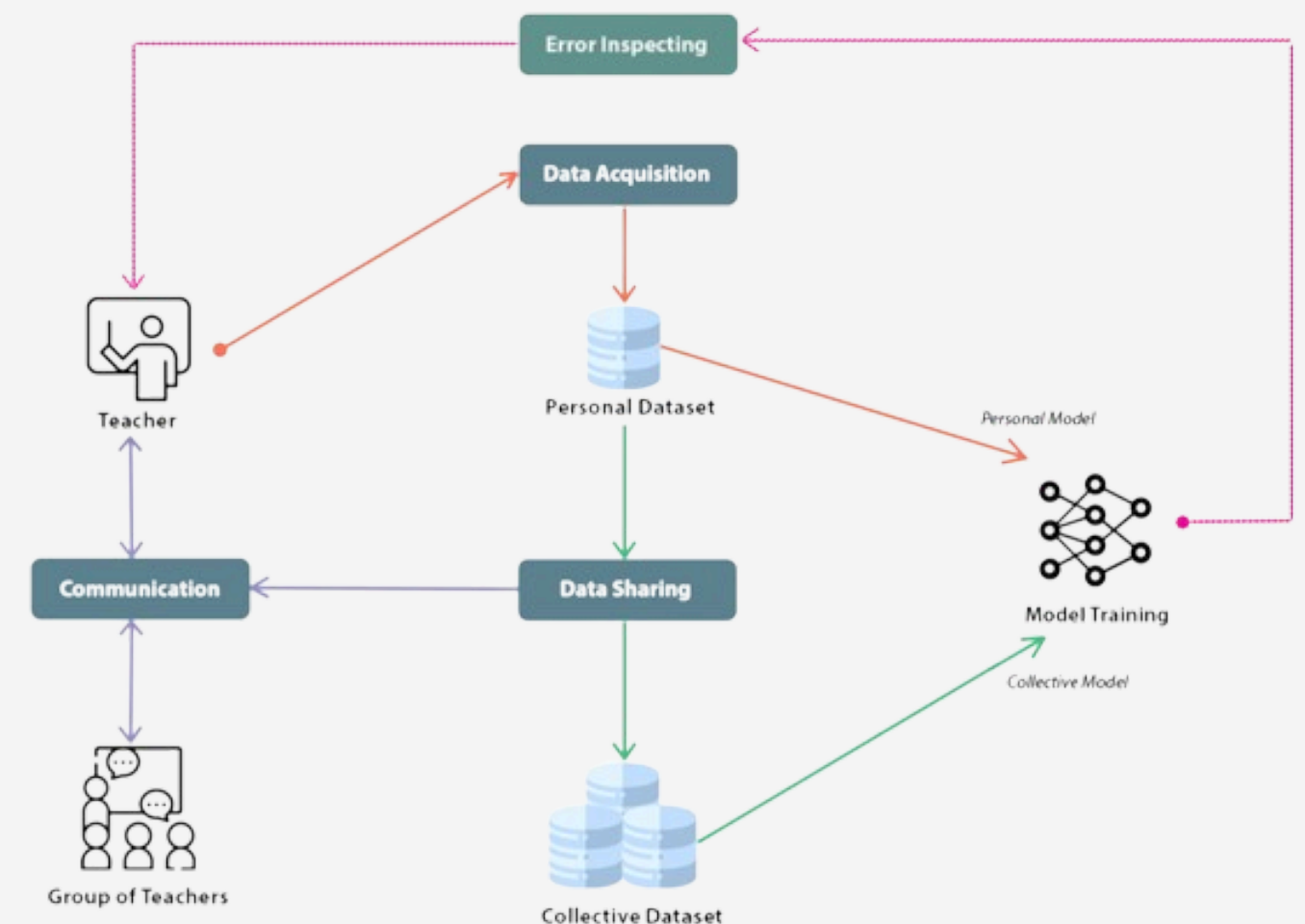
Assisting a group of novices working together to teach an image classifier.

Facilitates communication among users.

Empower communities to collaboratively deliberate through process.

TeachTOK is a web application developed using Marcelle.

Marcelle enables end-users to teach the model during the ML process.




Teach TOK Status: success My Accuracy:90%

Main Features: Home, Teach, Share my Data, Chat, Dataset, Inspect Predictions, Tutorial

image upload

Drag and drop an image or Upload a file



Predictions (My Model)
Predicted Label: ballet

Confidence

Label	Confidence
ballet	0.95
contemporary	0.02
hip hop	0.01
zumba	0.02

Teach TOK Status: success My Accuracy:83.3%

Main Features: Home, Teach, Share my Data, Chat, Dataset, Inspect Predictions, Tutorial

My Dataset
This dataset contains 7 instances.

- zumba
- contemporary
- hip hop
- ballet

Overall Accuracy: **83.3%**

RECOMPUTE PERFORMANCE

SHARE

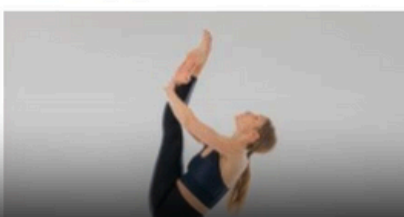
Teach TOK Status: success My Accuracy:80%

Main Features: Home, Teach, Share my Data, Chat, Dataset, Inspect Predictions, Tutorial

confusion matrix
Global Accuracy: 0.80

True Label \ Predicted Label	ballet	contemporary	hip hop	zumba
zumba	0	0	0	1
hip hop	0	1	1	0
contemporary	1	1	0	0
ballet	1	0	0	0

image display



Confidences for selected instance (Cross-validation)
Predicted Label: ballet


Label	Confidence
ballet	0.95
contemporary	0.02
hip hop	0.01
zumba	0.02

Teach TOK Status: success My Accuracy:80%

Main Features: Home, Teach, Share my Data, Chat, Dataset, Inspect Predictions, Tutorial

activity

2022-05-18T19:54:18.947Z



2022-05-18T20:06:03.695Z

Improved lion added 7 images to dataset

My Dataset: This dataset contains 7 instances. Overall Accuracy: **93.3%**

RECOMPUTE PERFORMANCE

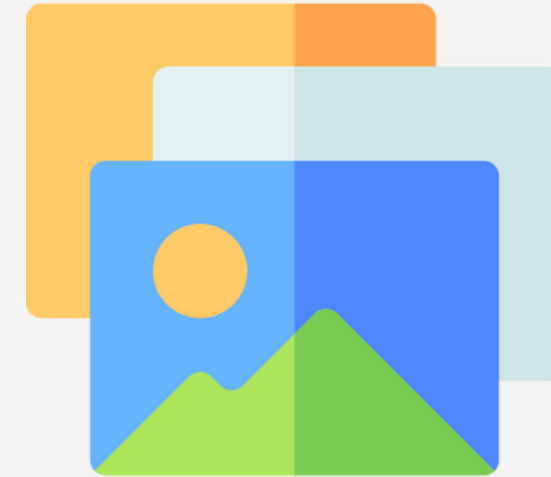
SHARE

2022-05-18T20:08:58.889Z

Improved lion said: 2022-05-18T20:08:58.889Z
hiiii

Reply... Send

02

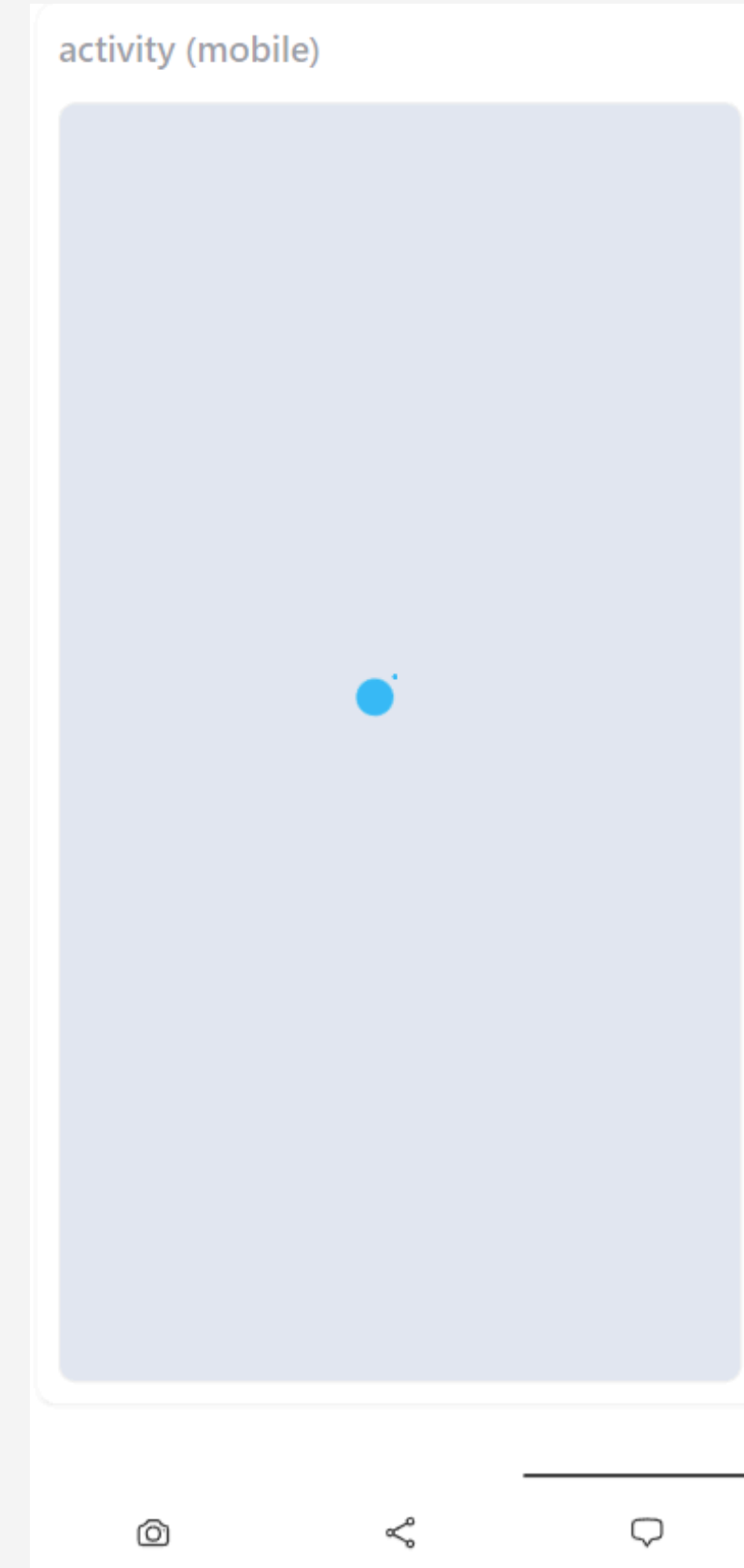
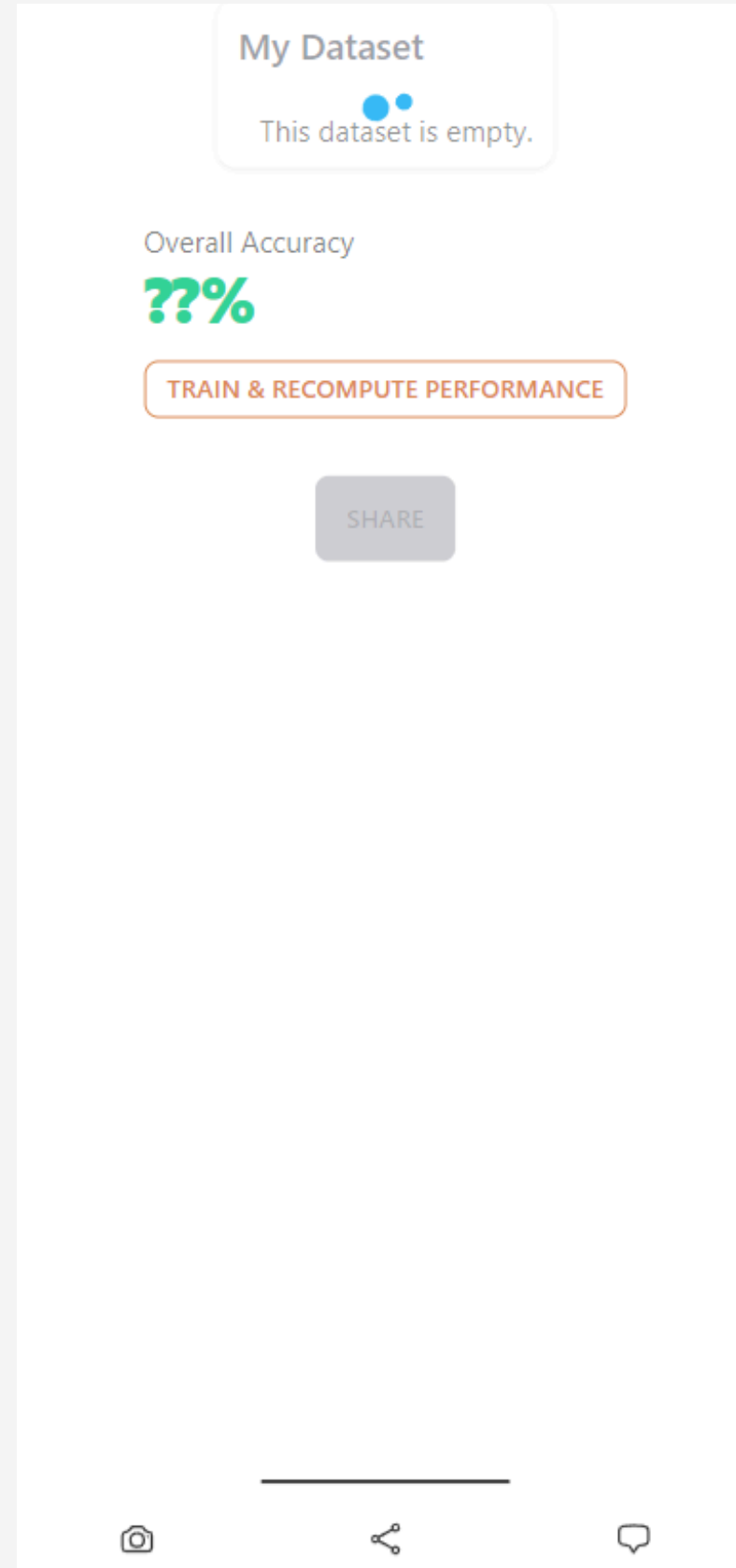
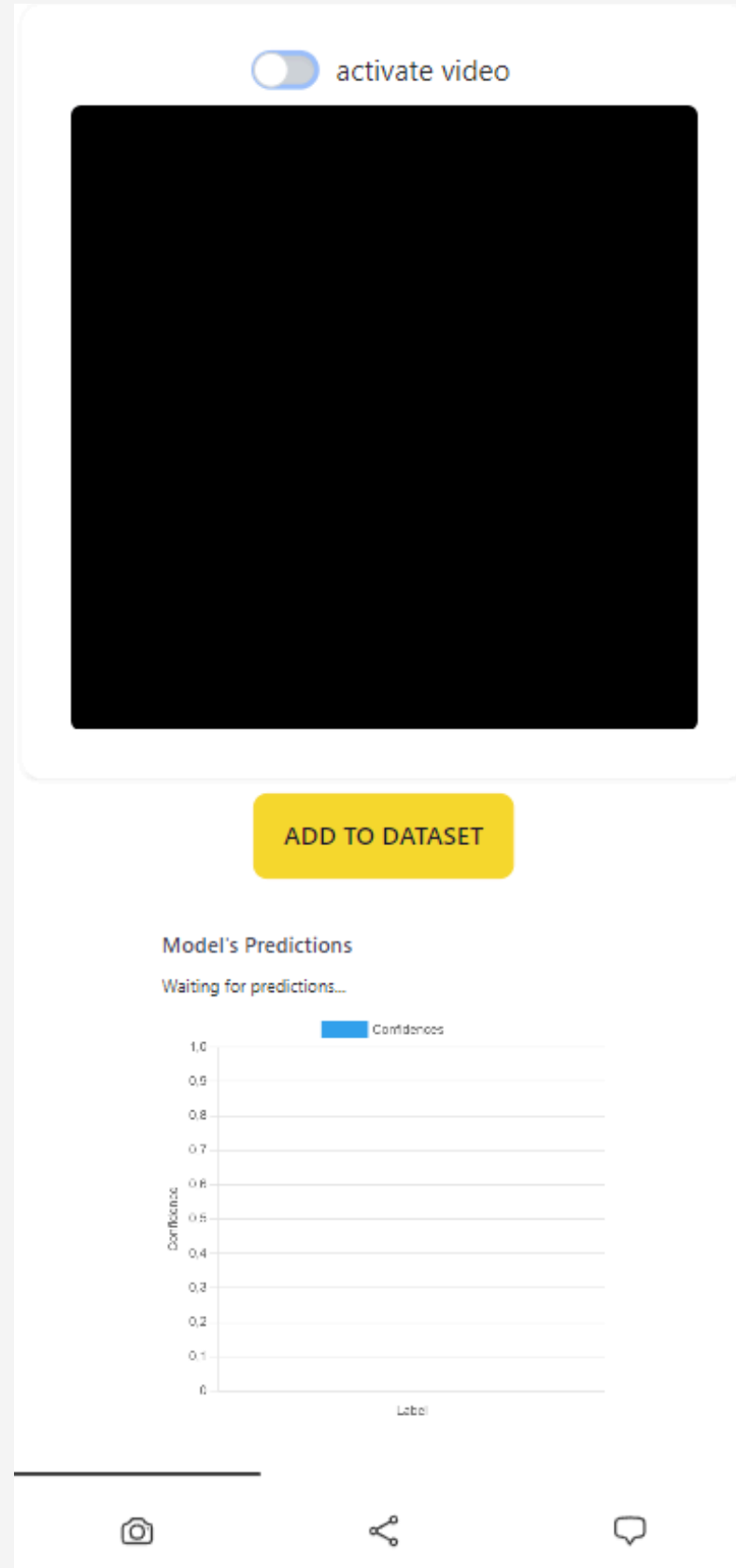


COLLABORATIVE INTERACTIVE MACHINE TEACHING

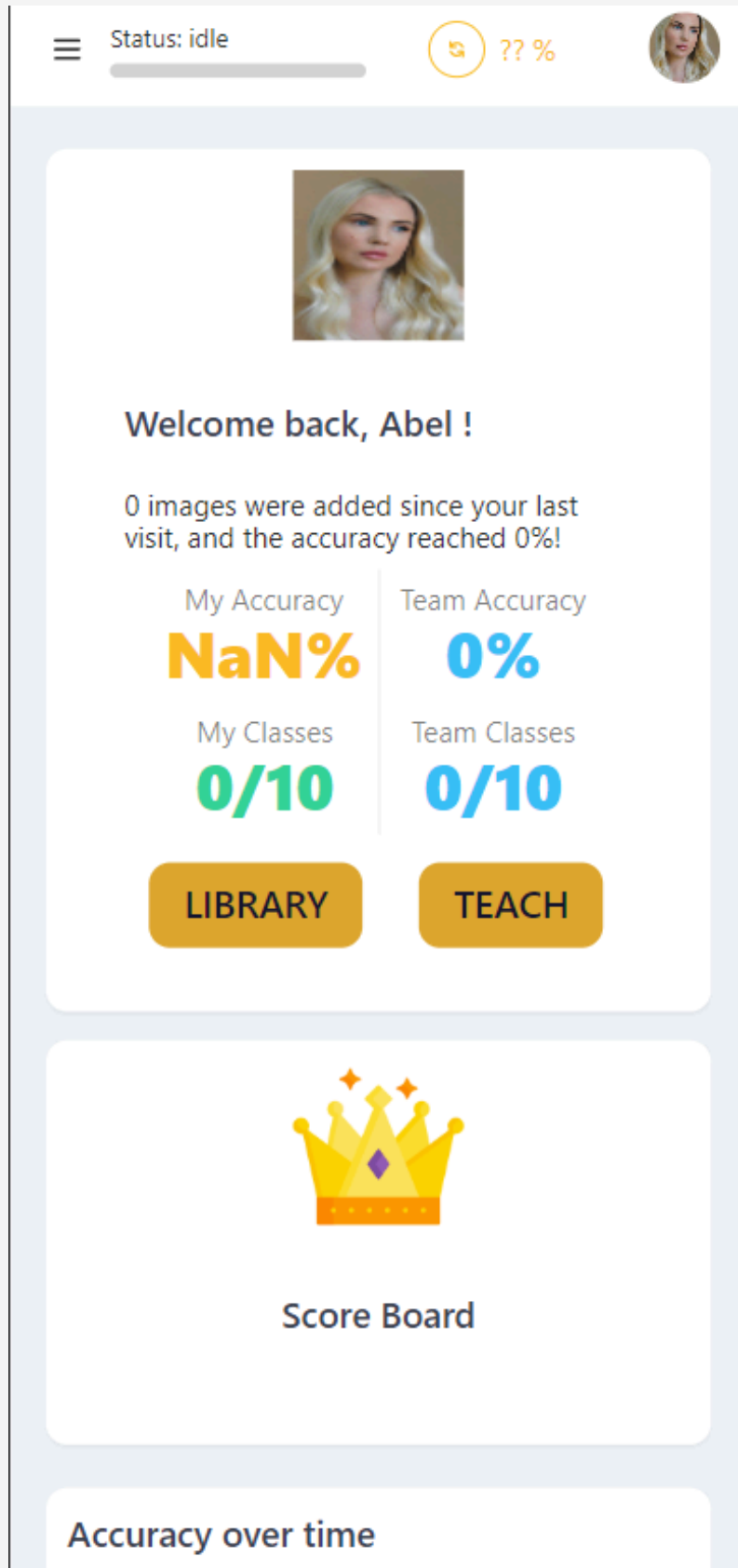
“Teach” to the model as a group
Discuss training data, performances
Multiples Opinion and backgrounds
Inspect Results, Bias, Errors

Group Coordination
Social Aspects Matter more
Unexperienced Users

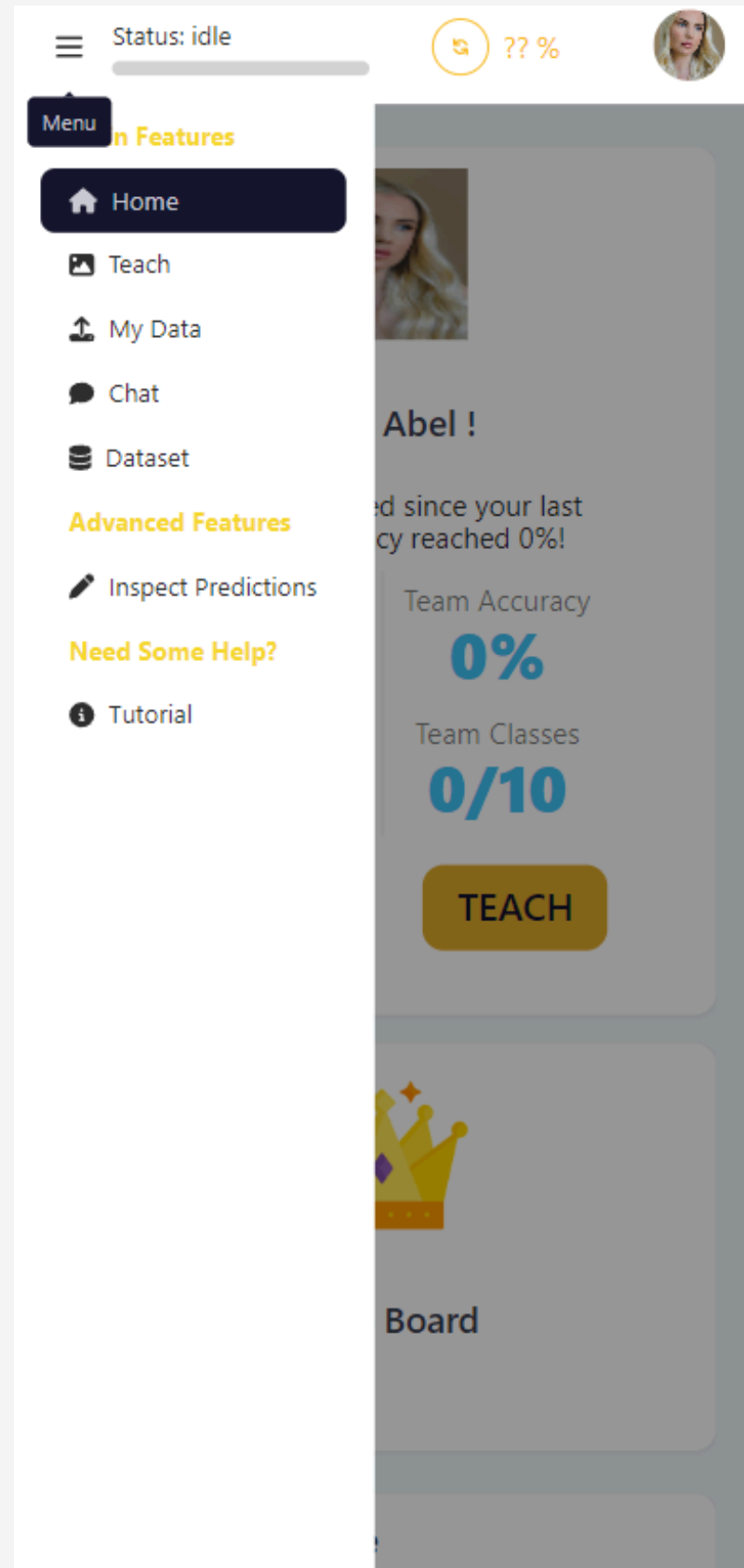
DEMO SIMPLIFICATION



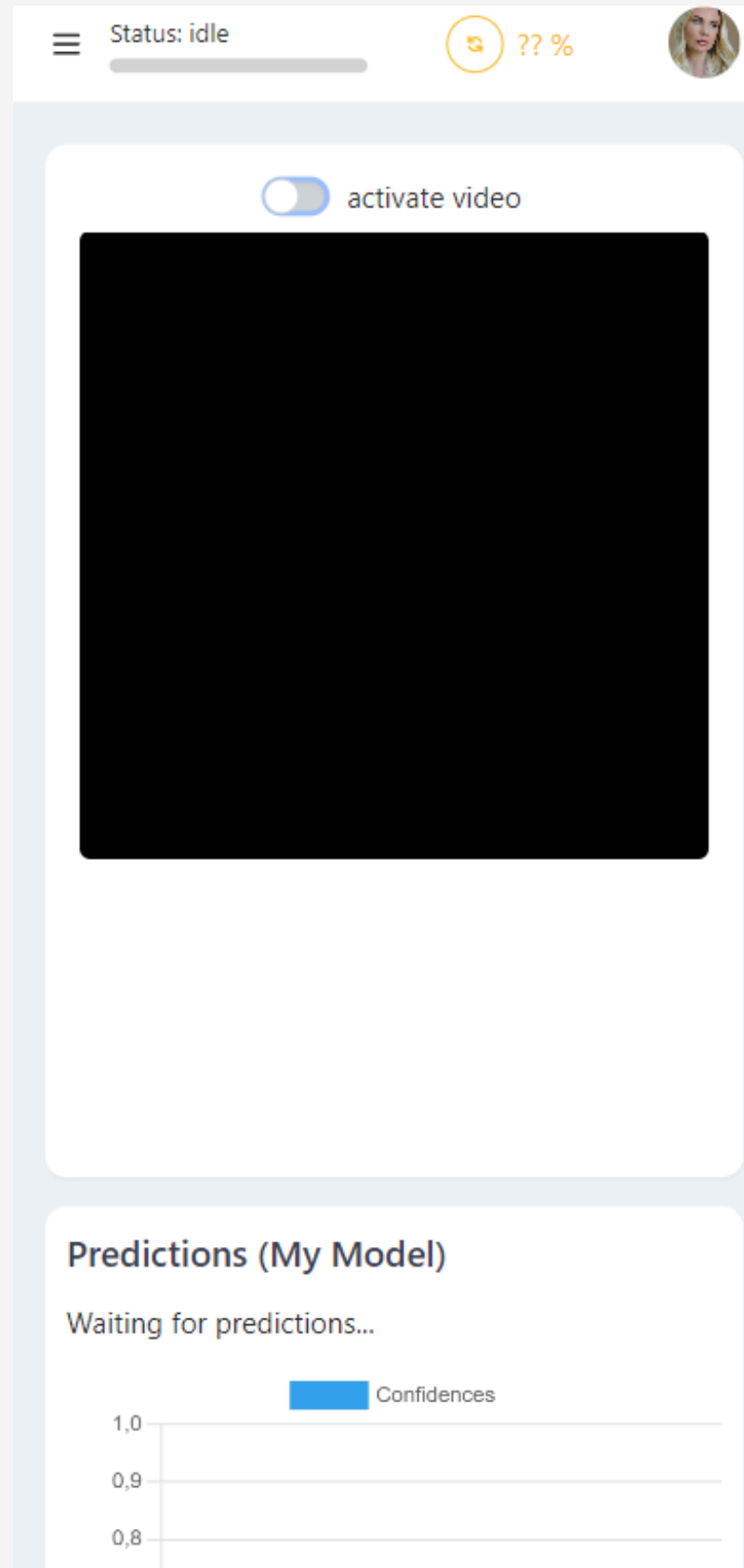
DEPLOYMENT ADAPTATION



Mobile app home screen for user Abel. The top bar shows 'Status: idle' and a battery icon. The main content area includes a profile picture, a welcome message 'Welcome back, Abel!', and a notification '0 images were added since your last visit, and the accuracy reached 0%!'. Below this are two columns of accuracy and class counts: 'My Accuracy NaN%' and 'Team Accuracy 0%', 'My Classes 0/10' and 'Team Classes 0/10'. There are 'LIBRARY' and 'TEACH' buttons. At the bottom, there is a 'Score Board' section with a crown icon and an 'Accuracy over time' section.

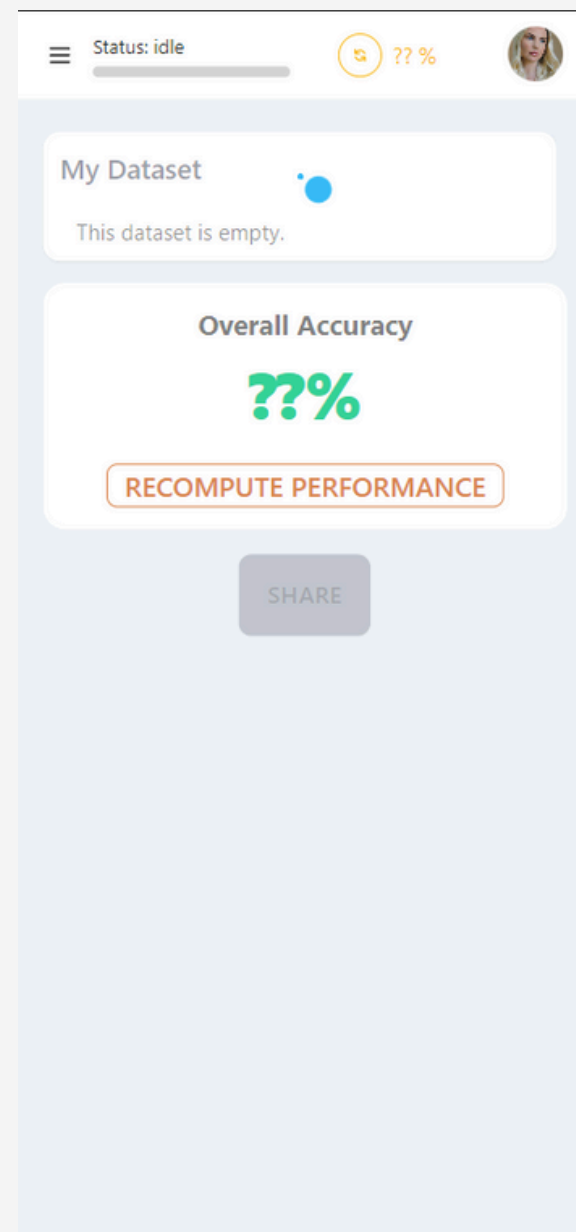


Mobile app home screen with a menu overlay. The menu includes 'Home', 'Teach', 'My Data', 'Chat', 'Dataset', 'Advanced Features', 'Inspect Predictions', 'Need Some Help?', and 'Tutorial'. The background content is dimmed, showing the same home screen as the previous block.

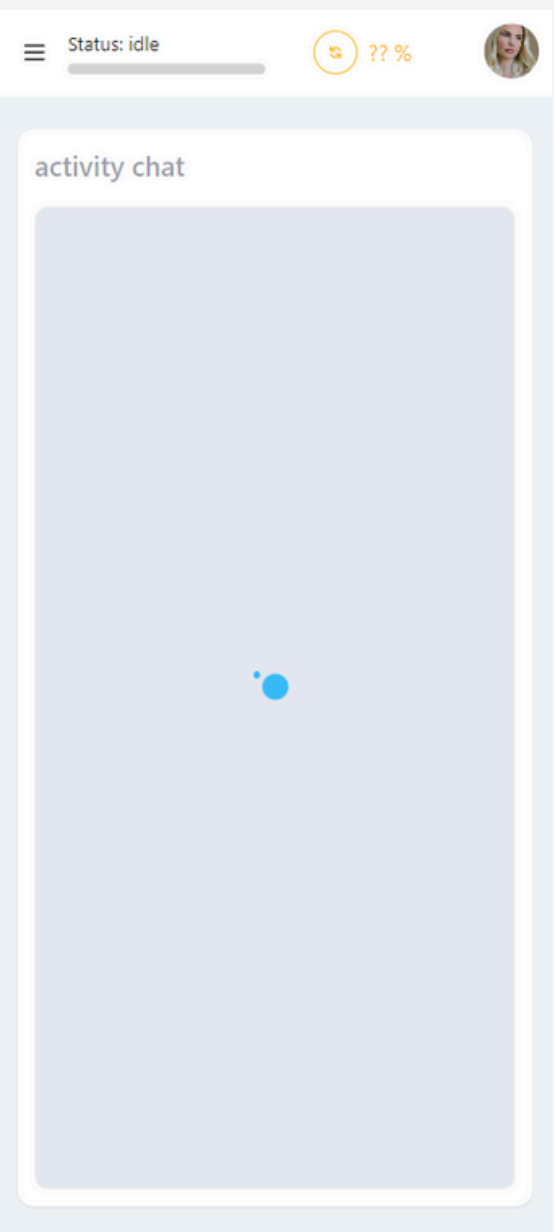


Mobile app interface for video. It features a toggle switch labeled 'activate video' and a large black video player area. Below the video player is a 'Predictions (My Model)' section with the text 'Waiting for predictions...' and a line graph showing 'Confidences' on a scale from 0.8 to 1.0.

All Collaborative Features



Mobile app screen for dataset and accuracy. It shows 'My Dataset' with a loading indicator and the text 'This dataset is empty.'. Below this is an 'Overall Accuracy' section with '??%' and a 'RECOMPUTE PERFORMANCE' button. A 'SHARE' button is also visible.

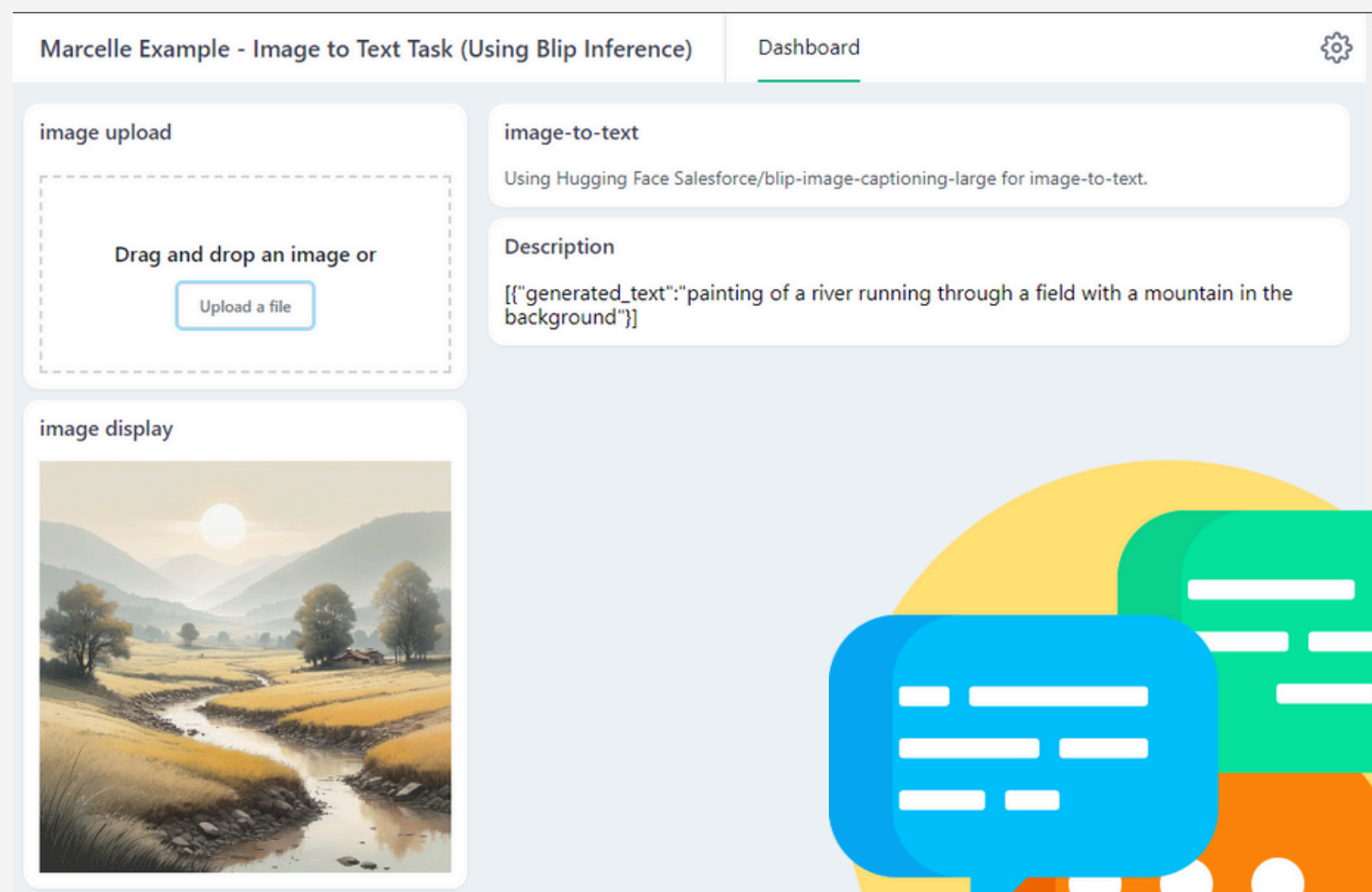


Mobile app screen for activity chat. It features a large blue chat area with a loading indicator at the top.

FUTURE WORK

At the end of my TER I was starting to work on the design and implementation of novel Marcelle Demo.

Participation in Behnoosh's workshop for Collaborative Model Auditing based researches.



CONCLUSION

This TER was a great opportunity to learn more about the world and process of research.

Participated to the IHM2024 conference which was a wonderful experience

Learned a lot about Web Development

Participated to experiments, workshops, brainstorming sessions ...

