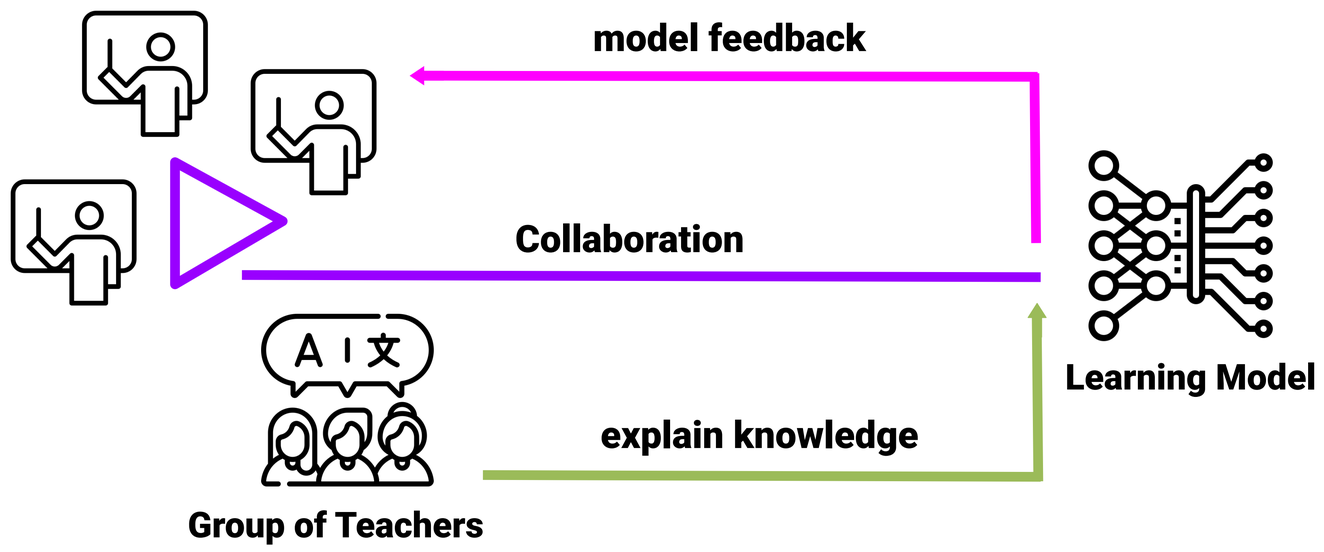
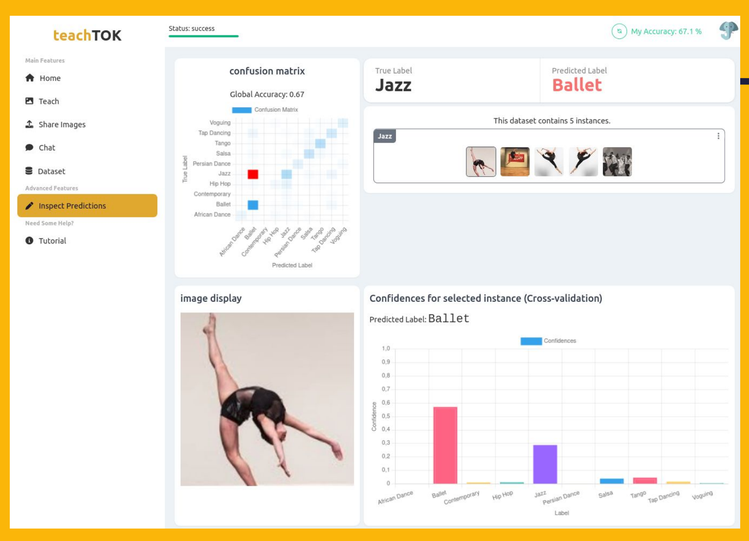
Studying Collaborative Machine Teaching in Image Classification

OBJECTIVES

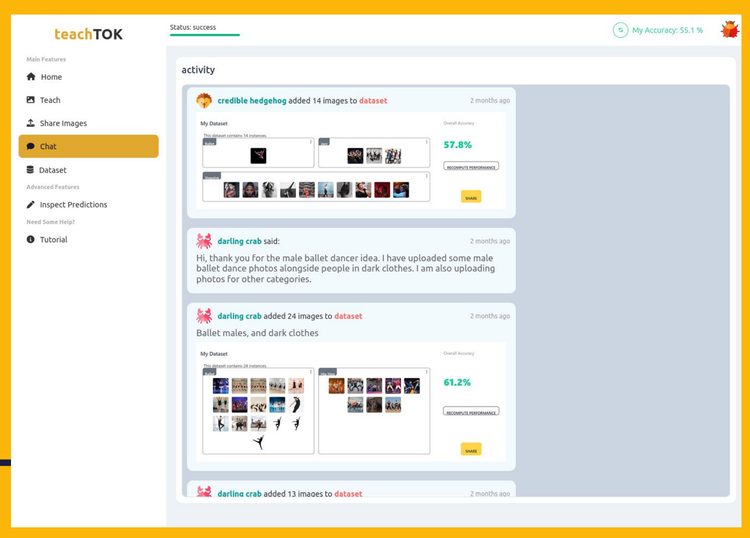
- **Empowering communities of practice to build their own models.**
- **Integrate domain knowledge.**
- **Increase transparency, Avoid biases, Build more robust models.**



SYSTEM



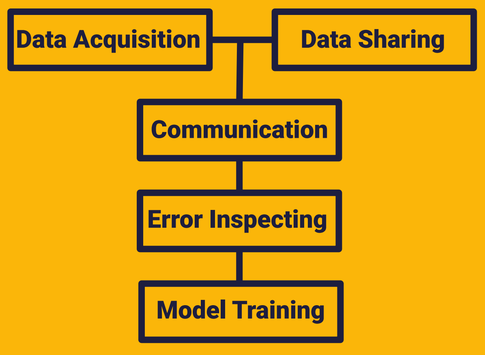
TeachTOK - Inspect Error



TeachTOK - Chat tab

TeachTOK,
Collaborative Machine Teaching prototype of *Marcelle Toolkit*

Marcelle **is a modular open source toolkit for programming interactive machine learning applications.** https://marcelle.dev/



First Exploratory study

METHODOLOGY

Mixed Methods

- **Quantitative Methods**
  - Usage data (Images, labels, messages, trained models, extracted features)
- **Qualitative Methods**
  - Focus Group
  - Thematic Analysis *(Braun, Clarke, 2006)*

MAIN RESULTS

1. **Team Organization and Communication**
   - **Different strategies for distributing the workload.**
   - **Limitations on discussions and Communication Tool.**

2. **Reflection on the Collaborative Teaching Task**
   - **Collaboration can inform participants of potential teaching criterias.**
     - **Accuracy**
     - **Diversity**
   - **Collaboration can help on uncovering and mitigating biases.**

PERSPECTIVES

Design Implications

- Improve Visualizations.
- Facilitate Discussion and Communication.
- Ensure alignment between User and Model Perspective on Diversity.

Extend research on:

- **Bias identification and mitigation.**
- **Extracting new interaction techniques to foster Collaboration.**
- **Sharing domain expertise and knowledge to the model.**

Behnoosh Mohammadzadeh, *behnoosh.mohammadzadeh@lisn.upsaclay.fr*
Jules Françoise, *jules.francoise@lisn.upsaclay.fr*
Michèle Gouiffès, *michele.gouiffes@lisn.upsaclay.fr*
Baptiste Caramiaux, *baptiste.caramiaux@sorbonne-universite.fr*