LabelBuddy
An Open Source Music and Audio Language Annotation Tagging Tool Using AI Assistance

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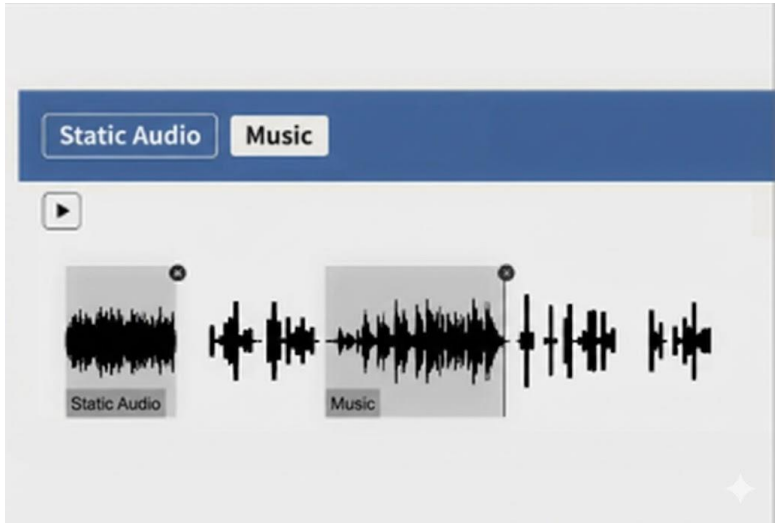
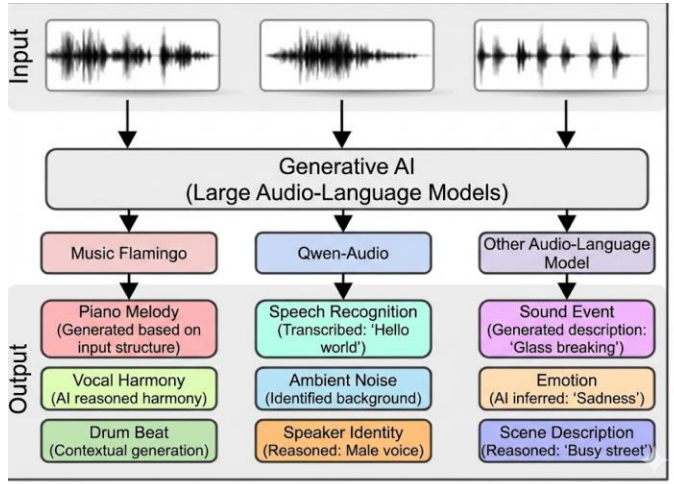
The Shift in MIR & The Problem

Static Tagging



Generative & Reasoning



- **Bottleneck**: Scarcity of open-source infrastructure for subjective nuances.
- Existing tools decouple data curation from subjective evaluation.

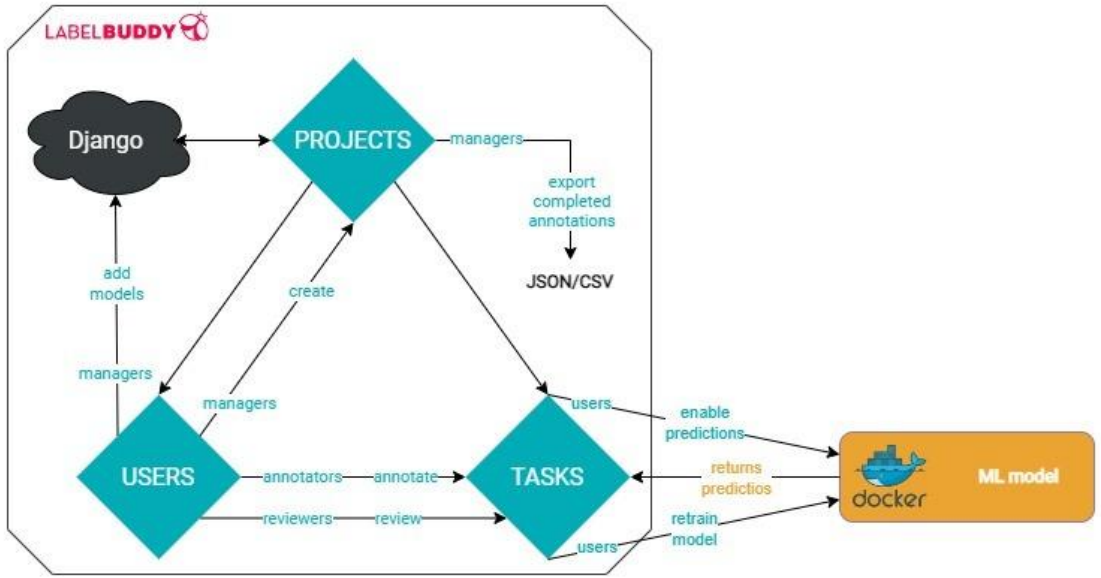
Introducing LabelBuddy

- Three Pillars
  - **Decoupled AI-Assistance**: Containerized inference (Docker).
  - **Collaborative Consensus**: Manager / Annotator / Reviewer roles.
  - **Hybrid Workflow**: Region tagging + Subjective preference.

Table 1: Comparison of LabelBuddy with existing tools.

Tool	Audio Specific	Decoupled AI-Assist	Open Source	Collaboratory Consensus
Audino	✓	-	✓	-
BAT	✓	-	✓	-
Aubio	✓	-	✓	-
Gecko	✓	-	✓	-
Prodigy	-	✓	-	-
Label Studio (CE)	-	✓	✓	-
LabelBuddy	✓	✓	✓	✓

System Architecture



- Django connected to Projects/Users/Tasks, communicating with Docker ML Model
- **Key Tech:** Django (Web Server) + Docker (Inference Engine).
- **Flow:** YAML Config -> Model Container -> JSON Output.

Figure 1: System Architecture Overview: The architecture decouples the Django web server from Docker-ized ML inference.

Workflow & Case Study

- **Example**: Input: Raw Audio + “Instrument Identification” -> AI Output: Piano, Guitar, Drums Segments -> Human Edit: Modification of Regions and verification.
- **Highlights**: AI-generated regions / Editable text / Reviewer Feedback.

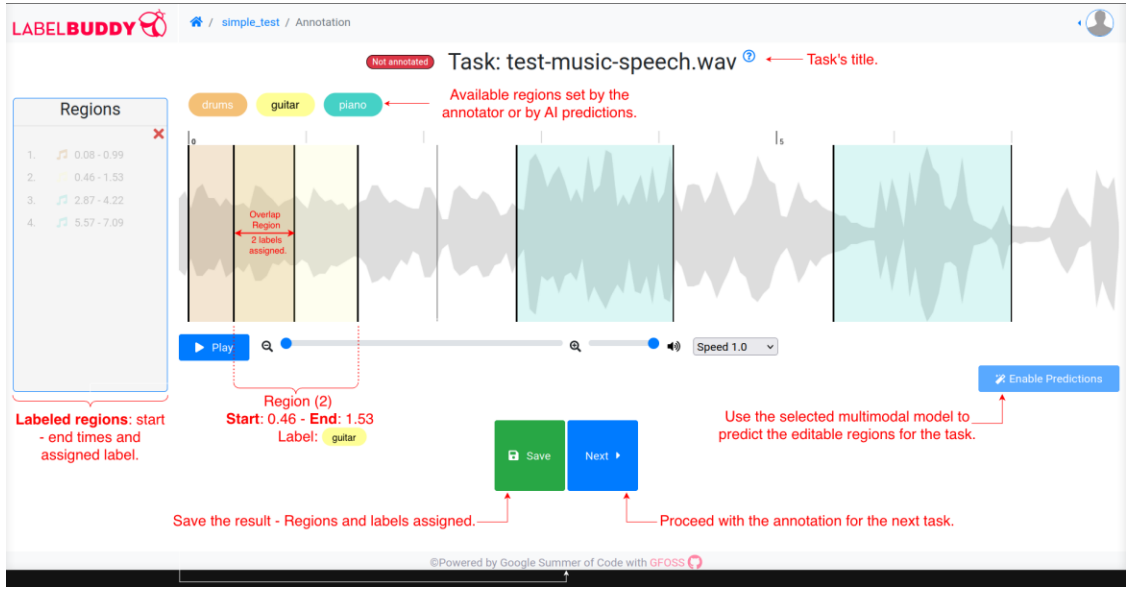


Figure 2: The annotation interface displaying AI-generated predictions as editable waveform regions.

Future Roadmap & Conclusion

- **Future Directions**
  - **Agentic Reasoning:** Conversational assistance (Chain-of-Thought).
  - **RLHF Workbench:** Pairwise Preference (Dataset A vs. Dataset B).
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GitHub Repo

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