Datasaur

From 10 Minutes to 20 Seconds — University of Michigan Leverages Datasaur to Automatically Label Nuanced Behavioral Data

April 2025 | Case Study

10m → 20s
labeling time per document

.93
recall

01 Overview

Researchers at the University of Michigan are examining how parental technology use influences interactions with their children during playtime. The study focuses on identifying "mind-minded" comments: instances where parents reflect on their child's thoughts, feelings, perceptions, or desires. The study is funded by the National Institute of Health.

With over 1,000 five-to-ten-minute video recordings and corresponding transcripts, the team required an efficient and accurate method to label complex linguistic patterns.

Datasaur's platform enabled the researchers to automate their labeling workflow, significantly reducing the time required for annotation while maintaining high accuracy. This automation allowed the team to concentrate on analyzing behavioral insights related to technological disruptions in family dynamics, a phenomenon they refer to as "techno-ference."

02 Challenges

- Manual labeling of transcripts was time-consuming, taking approximately 5 to 10 minutes per document.
- The team needed to identify nuanced categories within parent speech, such as cognition, emotion, desire, and perception.
- A user-friendly solution was necessary to accommodate researchers with varying levels of technical expertise.
- Consistency in labeling was difficult to achieve utilizing external annotators.

03 Solution

To address these challenges, the research team utilized Datasaur's Dinamic feature, which integrates with Hugging Face AutoTrain. This integration allowed them to train and deploy a custom natural language processing model directly within the Datasaur platform.

The process began with manually labeling a subset of the data to create a high-quality training set. After enabling the Dinamic feature, the team input their credentials and configured the necessary settings to initiate model training.

Once trained, the model was deployed within Datasaur to assist in labeling the remaining dataset. This approach facilitated rapid and consistent annotation of complex linguistic categories, significantly reducing the manual effort required.

Key feature utilized

Dinamic with Hugging Face AutoTrain
Enabled in-platform training and deployment of a custom NLP model tailored to the project's specific needs.

Custom Label Sets
Allowed precise categorization of nuanced psychological constructs within parent speech.

User-Friendly Interface
Facilitated effective management and execution of the labeling process for researchers with varying technical backgrounds (the lead QA personnel had no technical background and were able to QA efficiently).

04 Results

Efficiency Gains

Labeling time per document decreased from 5–10 minutes to approximately 20–30 seconds. This led up to a 35x reduction in time spent toward labeling their videos' transcriptions: potentially spending 170 hours, they achieved a total labeling time of around 5 hours.

Model Performance

F1 score	Precision	Recall
0.916	**0.899**	**0.934**

These metrics indicate a high-performing model. An F1 score above 0.9 is considered excellent, reflecting a strong balance between precision and recall. Such performance suggests that the model effectively identifies relevant instances while minimizing false positives and negatives, which is crucial in behavioral research where nuanced distinctions are essential.

The team also noted that the model's accuracy surpassed anything they could expect from external manual labelers, highlighting the effectiveness of the automated approach.

05 Why Datasaur

> "For a busy clinical researcher with no machine learning background, the extra care Datasaur provided gave us the confidence to move forward. It was beyond just providing tools, the Datasaur team provided us mentoring, educating us through the process with best practices.
>
> — Jenny Radesky, Developmental Behavioral Clinician

> “You don’t need to be a technical coder to automate labeling in Datasaur—you just need a basic understanding of NLP concepts.
>
> — Lindon Camaj, Researcher

> “The automation outperformed any results we could’ve achieved with external labelers.
>
> — Lindon Camaj, Researcher

06 Looking Ahead

With the labeling process streamlined, the research team plans to correlate app usage with mind-minded speech patterns. They are intending to use these findings to suggest app improvements in order to decrease disruption in parent-child interactions.

About Datasaur

Datasaur is a private LLM provider and data labeling platform designed for companies to build their AI ecosystem with ease and efficiency. It assists organizations and universities in setting up custom LLMs and annotating data more efficiently and accurately through automation, quality control, and human-in-the-loop workflows. For more information, visit www.datasaur.ai.

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