aiDAPTIV+ GUI

Pro Suite User guide

Version 1.1

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Contents

1. ENVIRONMENT PREPARATION

To ensure optimal performance and compatibility, the following system requirements must be met:

- Supported Operating System: Ubuntu 22.04.4 LTS
- Supported NVIDIA Driver Version: 535

2. OVERVIEW

MiPhi aiDAPTIV GUI is an advanced, user-friendly platform designed to streamline the AI development lifecycle. It provides an intuitive graphical interface for managing datasets, models, fine-tuning processes, and inference workflows.

2.1 FEATURE OVERVIEW

The MiPhi aiDAPTIV GUI includes the following core functionalities:

- Login
- System Dashboard
- Datasets
- Models
- Fine-tuning
- Monitor
- Inference
- Logs

3. MIPHI LOGIN PAGE

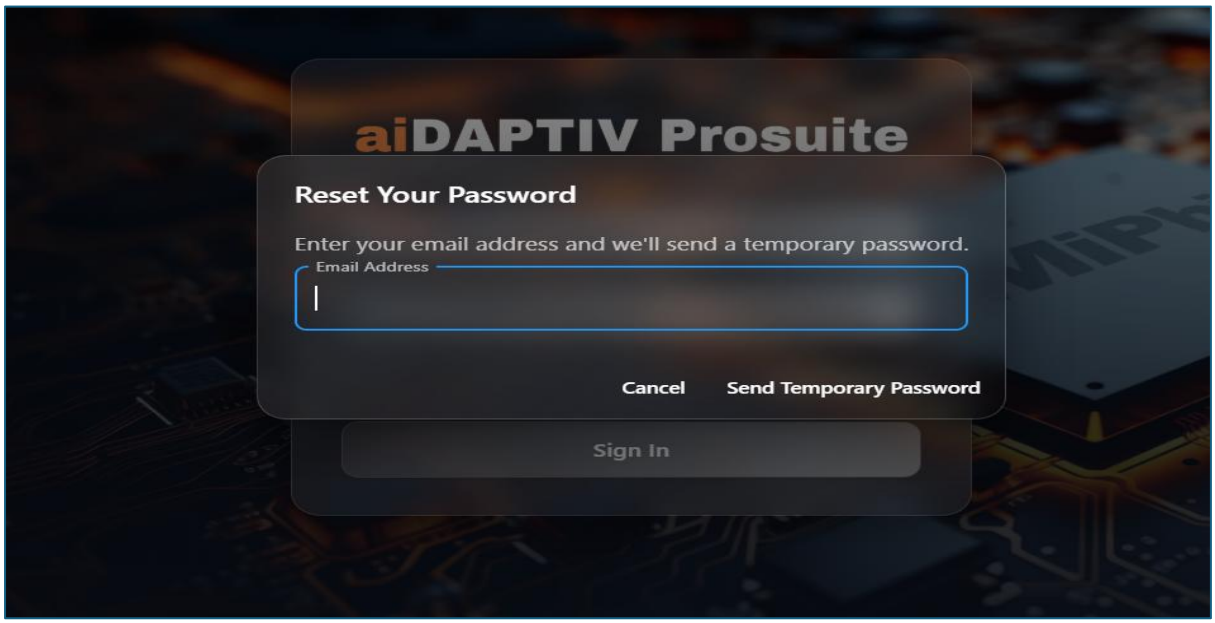
The **MiPhi Login** is the secure gateway to your MiPhi environment. All user accounts—including role-based credentials—are provisioned and managed by a default admin user. Once the admin has created your username and initial password, simply enter those credentials here to access the system. This centralized control ensures that only authorized personnel can log in, while still allowing the admin to delegate additional user-creation or management tasks as needed.

3.1 Sign In to MiPhi

- Enter the Email and Password provided by your admin account to authenticate.
- Use the "👁" icon in the password field to toggle visibility and avoid typos.
- If you've forgotten your credentials, click Forgot Password? to request a reset via the admin.

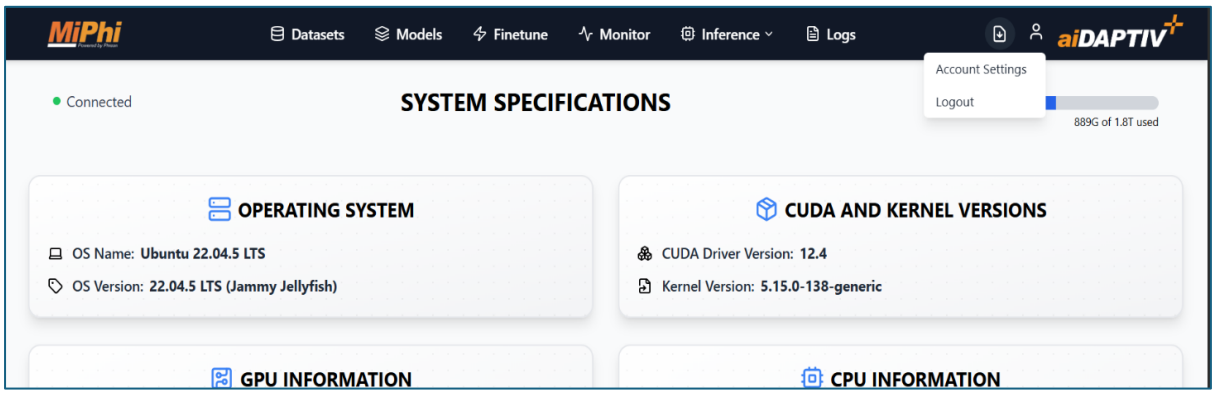
3.2 Reset Your Password

- Enter the Email Address associated with your MiPhi account to request a temporary login credential.
- Click Send Temporary Password to have a one-time password sent to your inbox.
- Use that temporary password to sign in, then update your credentials to something more secure once you're logged in.



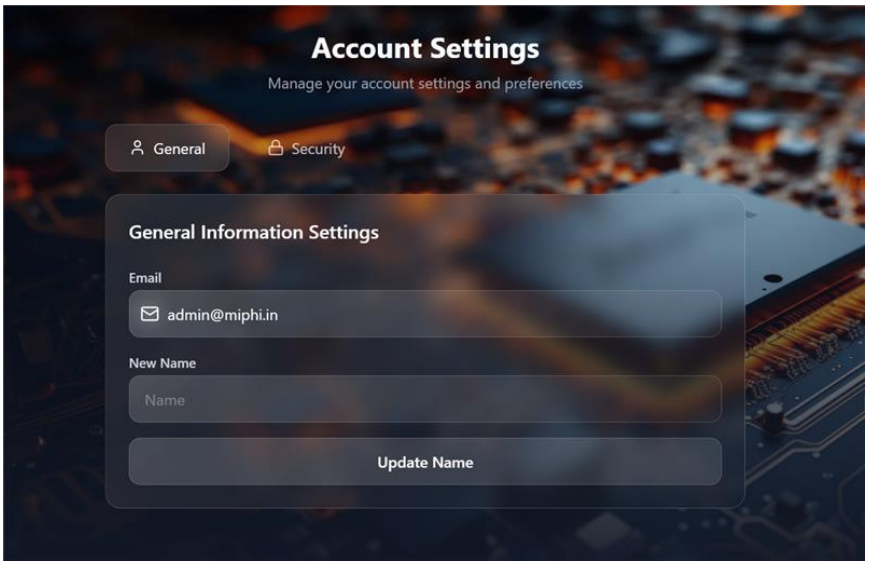
3.3 User Menu & Account Settings

- Click the user-icon in the top-right to open the dropdown.
- Select Account Settings to manage your profile or Logout to end your session.
- The Account Settings page has two tabs—General and Security—for profile and password management.



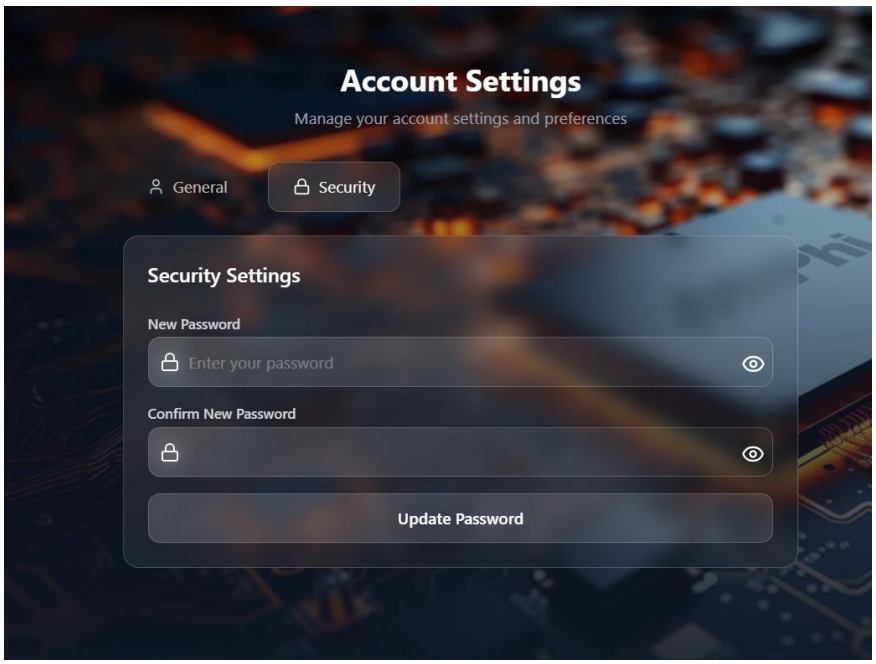
3.3.1 General Settings

- Email (read-only): Displays your registered address.
- New Name field: Enter a new display name.
- Update Name button: Apply and save your name change instantly.



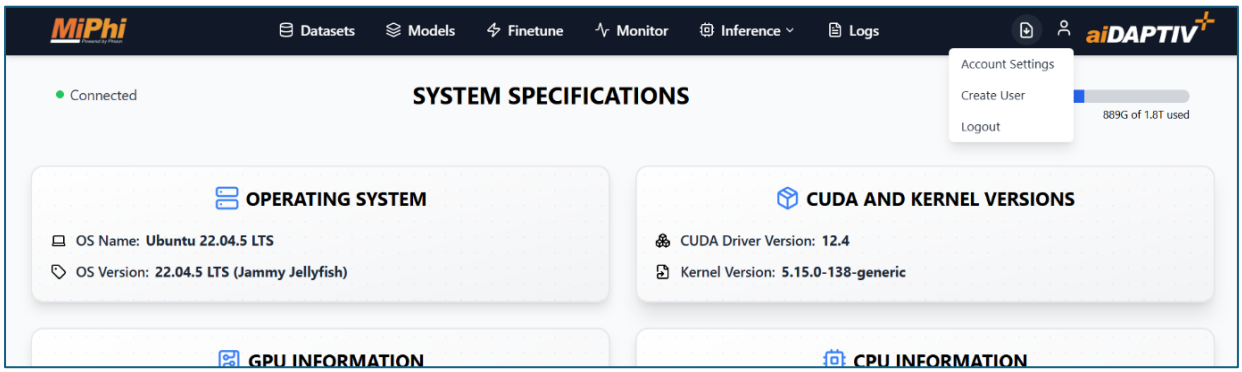
3.3.2 Security Settings

- Switch to the Security tab under Account Settings.
- Enter your New Password, then repeat it in Confirm New Password.
- Use the “ ” icon to toggle visibility and avoid typos.
- Click Update Password to save your changes.



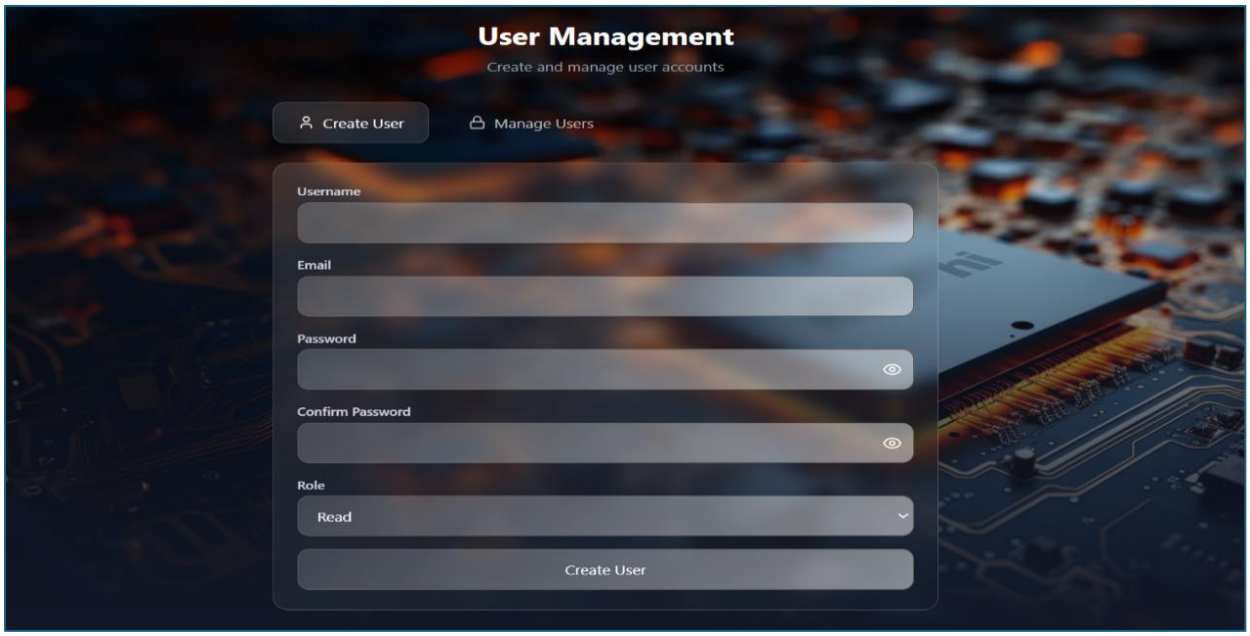
3.4 User Management (Admin Only)

- Accessible via the user-icon menu as Create User and Manage Users.
- Empowers the admin to provision new accounts or review and delete existing ones.
- Ensures fine-grained control over who can log in and what role they receive.



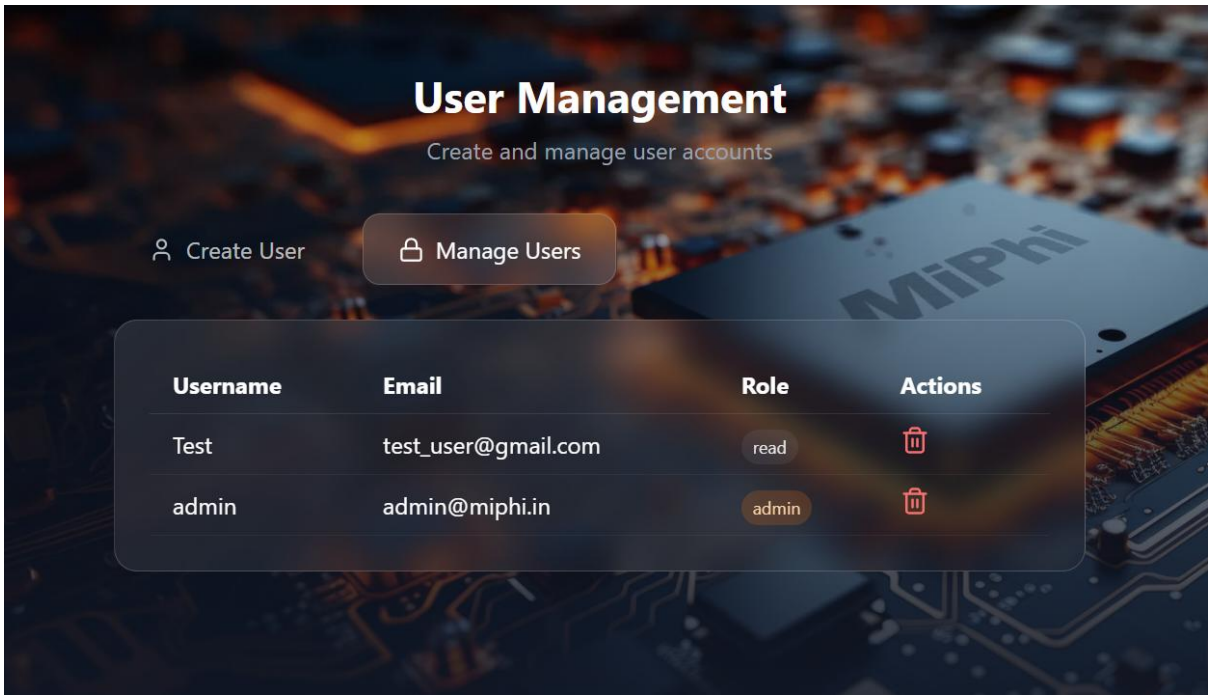
3.4.1 Create User

- Username, Email, Password and Confirm Password fields collect the new account details.
- The Role dropdown assigns permissions (e.g. “read” , “write” , “admin”).
- Click Create User to provision the account and send the credentials to the user.



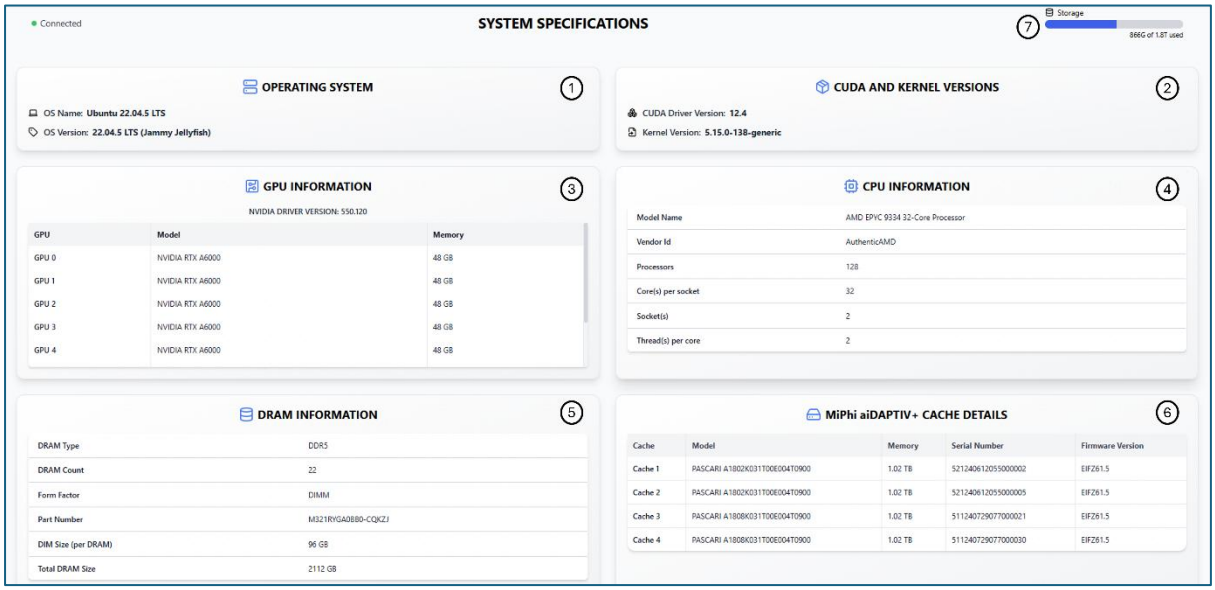
3.4.2 Manage Users

- Displays a table of all current users with Username, Email, and Role.
- The 🗑️ Delete icon removes an account permanently (with confirmation).
- Use this view to audit active users and revoke access instantly.



4. MIPHI SYSTEM DASHBOARD

The **MiPhi System Dashboard** delivers a unified and detailed view of the system's hardware and software specifications. Designed for users to facilitates real-time monitoring and management of compute nodes within high-performance environments. This dashboard dynamically reflects the current server configuration, ensuring accurate and up-to-date information for performance analysis, troubleshooting, and capacity planning.



4.1 Operating System Overview

- **Linux Distribution:** Shows the full name of the Linux OS currently running. ***Example***: *Ubuntu 22.04.5 LTS*
- **Release Version & Codename:** Indicates the release version and associated codename for easy identification.
  Example: *22.04.5 LTS (Jammy Jellyfish)*

4.2 CUDA & Kernel Information

- **CUDA Driver Version:** Displays the installed CUDA driver version used for GPU-accelerated applications.
  Example: *CUDA Driver Version: 12.4*
- **Linux Kernel Version:** Shows the current kernel version running on the system. ***Example***: *Kernel Version: 5.15.0-138-generic*

4.3 GPU Information

- **Installed GPUs:** Lists each GPU model available in the system.
  Example: *NVIDIA RTX A6000*
- **Memory per GPU:** Shows how much memory each GPU has.
  Example: *48 GB per unit*
- **NVIDIA Driver Version:** Indicates the active driver version used by all GPUs.
  Example: *Driver Version: 550.120*

4.4 CPU Details

- **Processor Model & Architecture:** Displays the CPU vendor, model, and core architecture.
  Example*: AMD EPYC 9334 32-Core Processor (AuthenticAMD)*
- **Core & Thread Configuration:** Shows how many cores and threads are present and how they're distributed across sockets.
  Example: *128 threads, 32 cores/socket × 2 sockets*
- **Per-Core Threading:** Provides thread-level visibility useful for tuning performance or virtualization.

4.5 DRAM (Memory) Specifications

- **Memory Type & Total Capacity:** Indicates the type (e.g., DDR5) and total installed memory.
  Example*: DDR5, Total DRAM Size: 2112 GB*
- **Number of DIMMs:** Displays how many memory modules are installed.
  Example: *22 modules*
- **Module Details:** Lists form factors, part numbers, and sizes.
  Example: *M321RYGA0B80-CQKZJ – 96 GB each*

4.6 MiPhi aiDAPTIV+ Cache Information

- **Cache Unit Identification:** Identifies each aiDAPTIV+ Cache unit by name (Cache 1 – Cache 4).

- **Model & Specifications:** Provides device model numbers, capacity, and firmware version.

  Example: *PASCARI A1802K031T00E004T09000 – 1.02 TB – Firmware: EIFZ61.5*

- **Serial Numbers:** Enables tracking and service reference.

4.7 Storage Utilization Summary

- **Boot Drive Status:** Graphically and numerically shows how much storage is used vs. available.

  Example: *866 GB of 1.8 TB used*

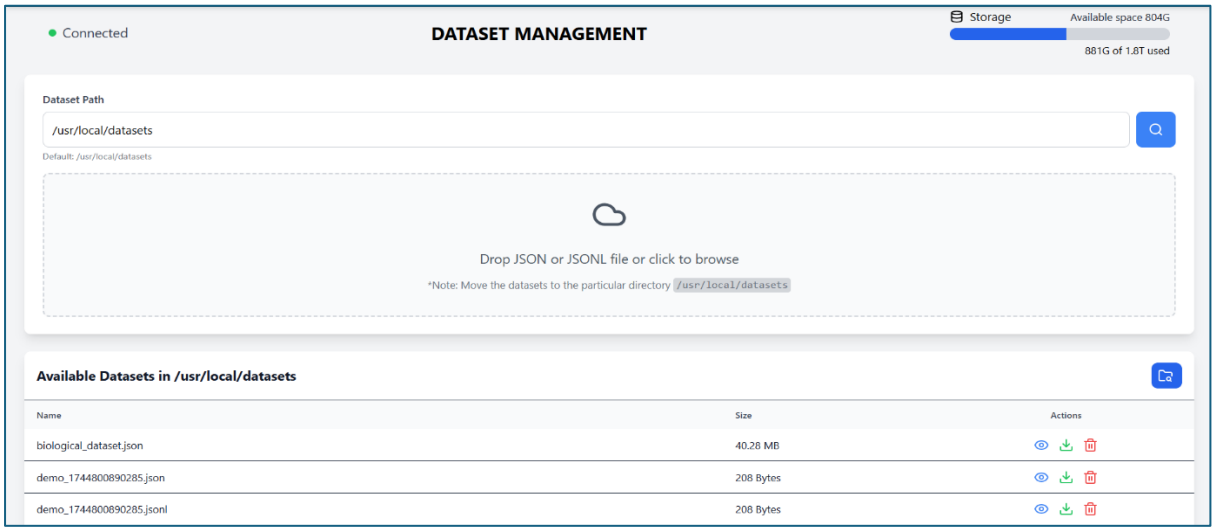
- **Visual Indicators:** Color-coded bar (e.g., blue/red) represents usage health.

  🔵 **Blue**: Usage is **below 90%** – healthy range

  🔴 **Red**: Usage is **90% or above** – critical threshold; action recommended

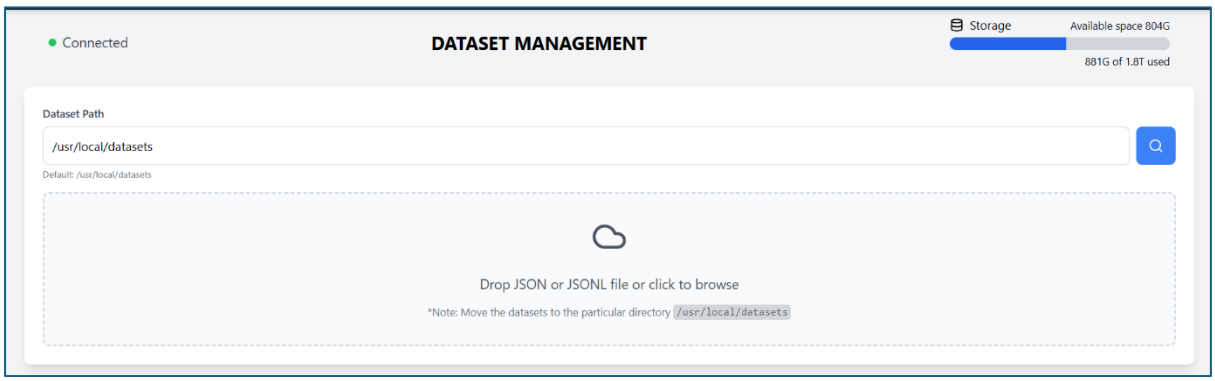
5. MIPHI DATASETS PAGE

The **MiPhi Datasets** delivers a streamlined interface for managing your local JSON and JSONL files. Designed around two core areas—a drag-and-drop (or click-to-browse) upload zone and a live directory listing of available datasets—it makes it easy to onboard new data and keep track of existing files. The upload area enforces your chosen dataset path, while the dataset list dynamically reflects every file in that folder, complete with size information and quick-access actions for previewing, downloading, or deleting.



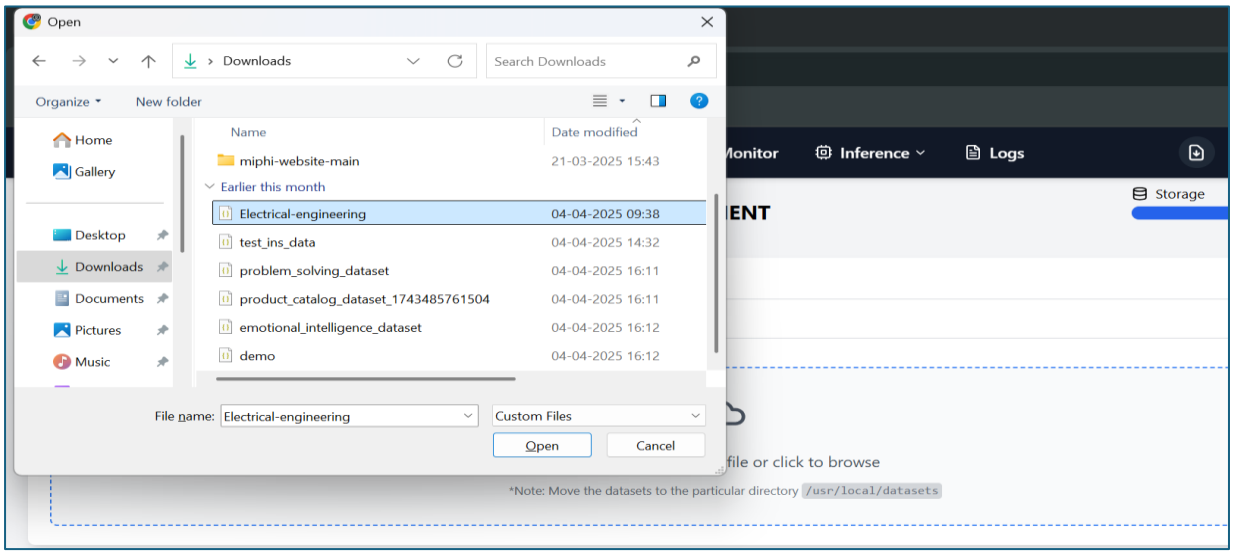
5.1 Upload Area

- This section allows you to upload datasets in JSON or JSONL format.
- You can either drag and drop a JSON/JSONL file or click to browse and select one.
- The default dataset storage path is /usr/local/datasets, but you can change it as needed.
- In the top-right corner, you'll see storage usage, showing how much space is occupied and how much remains available.



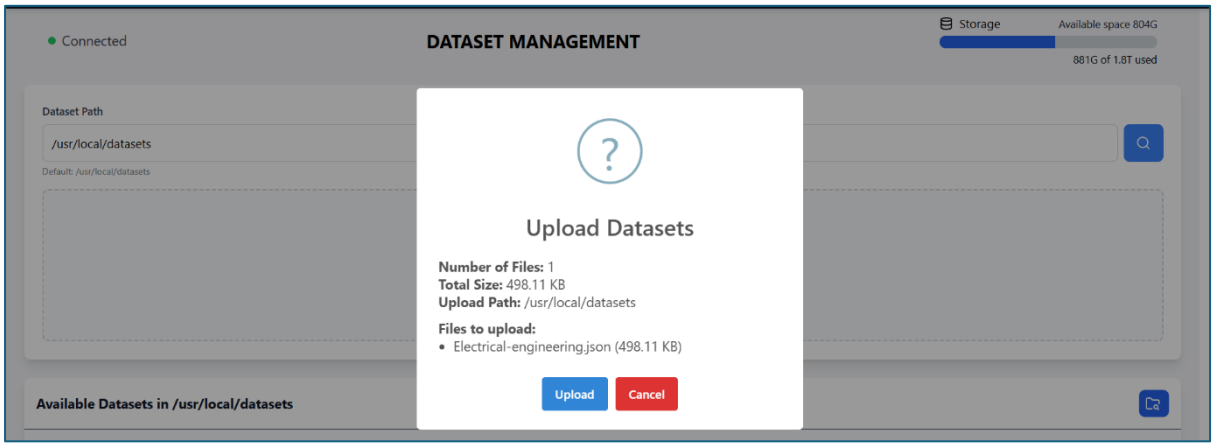
5.1.1 Select and Upload Your Dataset

- Click the Drop JSON/JSONL file or click to browse area to open your system's file picker.
- In the dialog (e.g. browsing Downloads), select your desired .json or .jsonl dataset and hit Open.
- Once chosen, the file name appears in the upload zone and the dataset is copied into /usr/local/datasets for immediate use.



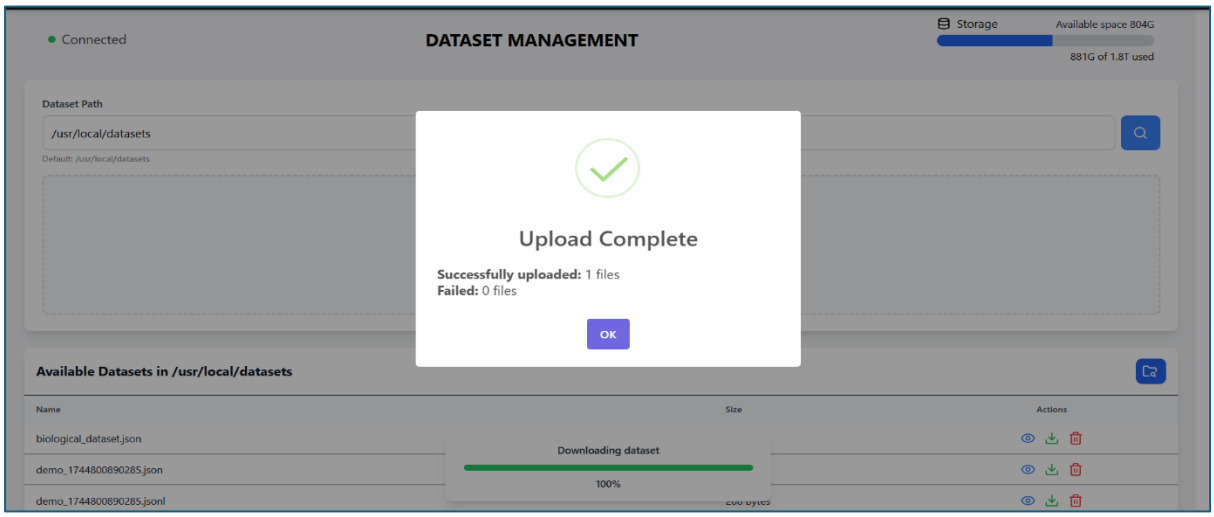
5.1.2 Review & Upload Dataset

- As soon as you pick one or more JSON/JSONL files, a "Upload Datasets" confirmation dialog appears.
- It summarizes your selection: Number of Files, Total Size, and the target Upload Path, followed by a list of the exact filenames and their sizes.
- Click Upload to copy the files into /usr/local/datasets (or Cancel to return and adjust your selection).



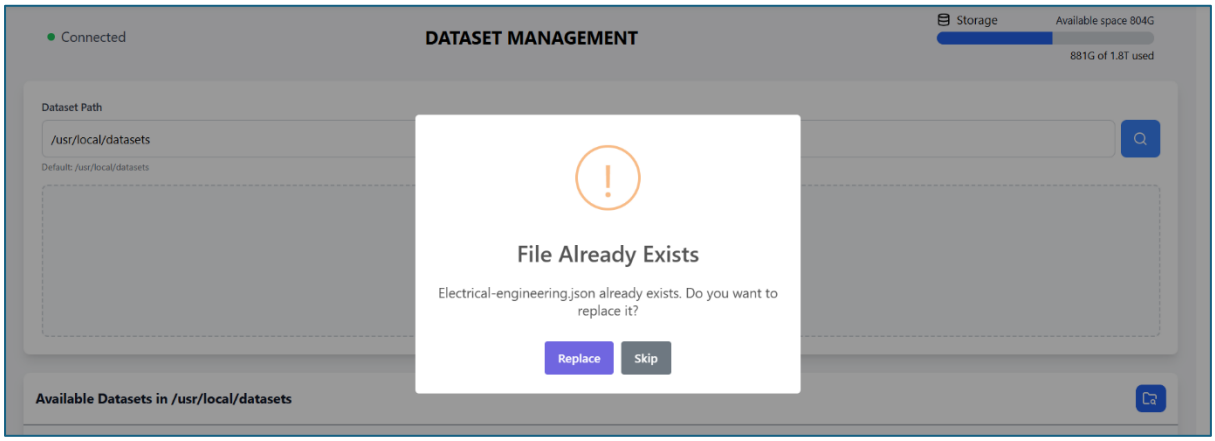
5.1.3 Upload Complete

- The dialog confirms your upload results, showing how many files were successfully uploaded and if any failed.
- Your new datasets have been added to /usr/local/datasets and will appear in the “Available Datasets” list once you click OK.
- Click OK to dismiss and refresh the page, updating storage usage and file listings.



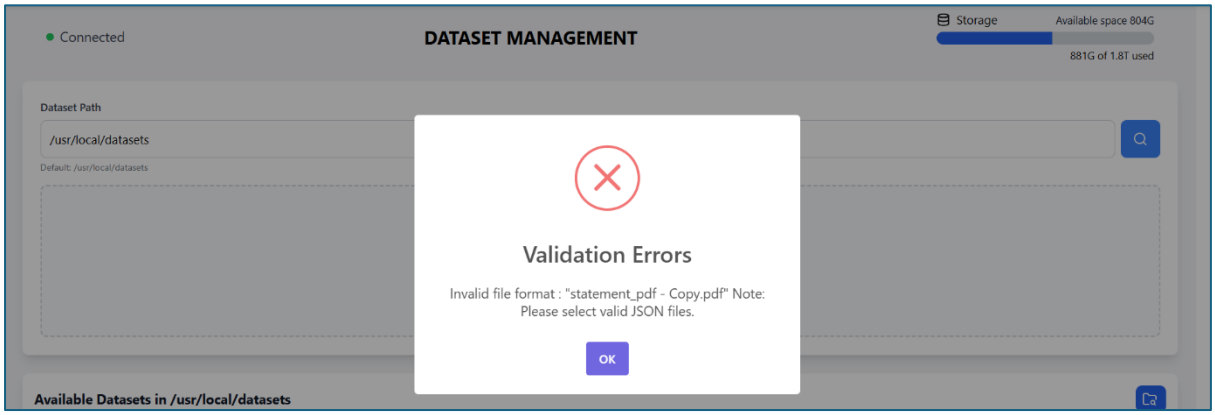
5.1.4 File Already Exists

- The system has detected that Electrical-engineering.json is already present in /usr/local/datasets.
- Click Replace to overwrite the existing file with this new version.
- Click Skip to cancel uploading that file and keep the current copy intact.



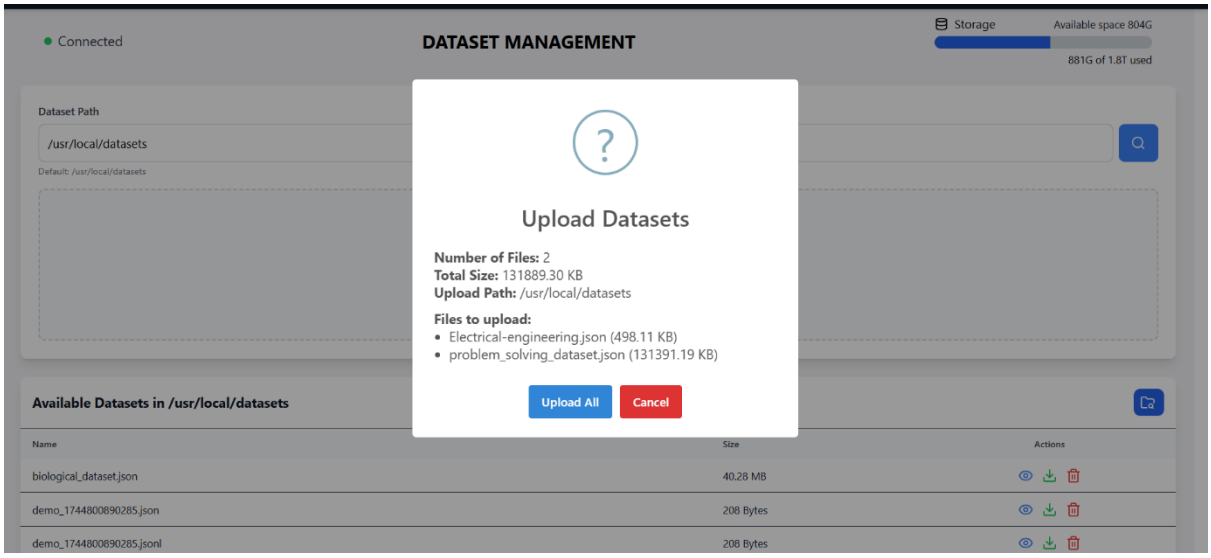
5.1.5 Validation Errors

- The file "statement_pdf - Copy.pdf" is not a valid JSON/JSONL dataset and was rejected.
- Only files with a .json or .jsonl extension and proper JSON structure can be uploaded.
- Click OK, then select a correctly formatted JSON/JSONL file to proceed.



5.1.6 Upload Multiple Datasets

- Click the upload area and, in your file picker, use Ctrl/Cmd + Click or Shift + Click to select several .json or .jsonl files at once.
- All chosen files will be listed in the confirmation dialog along with their individual sizes.
- Hit Upload All to import every dataset in one go, or Cancel to adjust your selection.

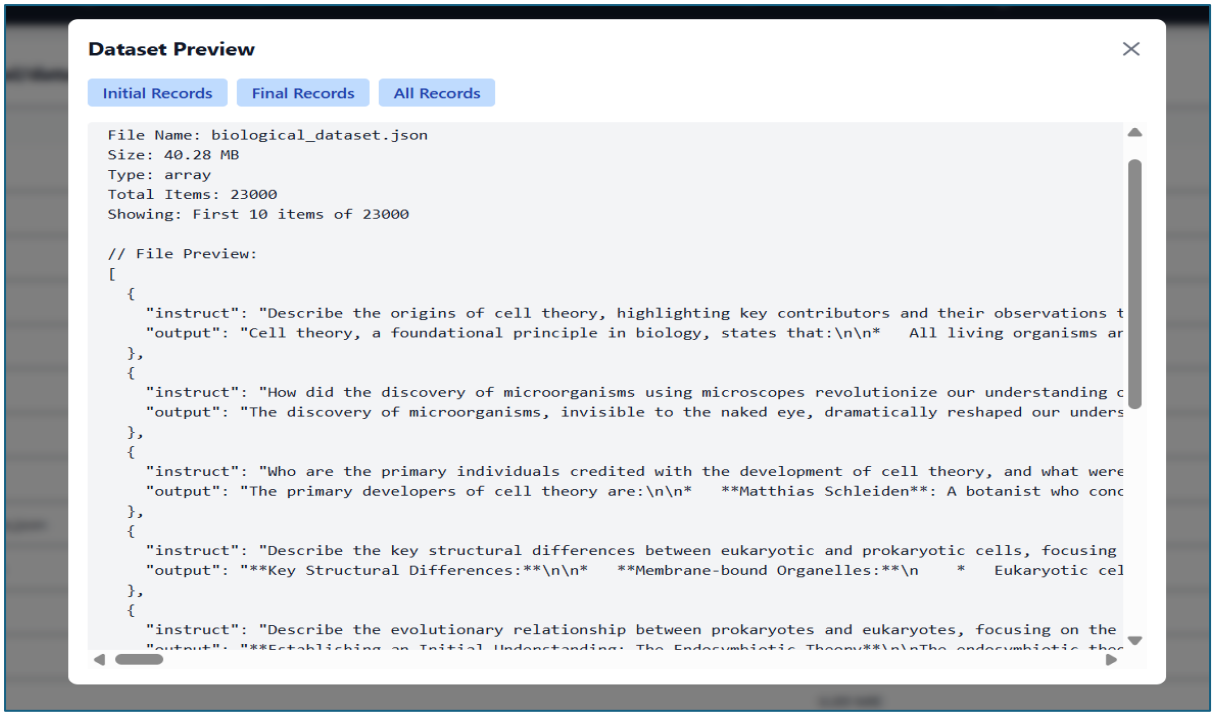


5.2 List of Available Datasets

- Displays every .json and .jsonl file in your selected dataset directory, alongside its size.
- Offers three action icons per row:
    - 👁️ Preview — view a snippet of the file in a modal
    - ⬇️ Download — save a local copy via your browser
    - 🗑️ Delete — permanently remove the file (with confirmation)
- Automatically updates after any upload or deletion, ensuring you always see the current contents.
- Use the Search icon in the top-right to filter files by name or extension

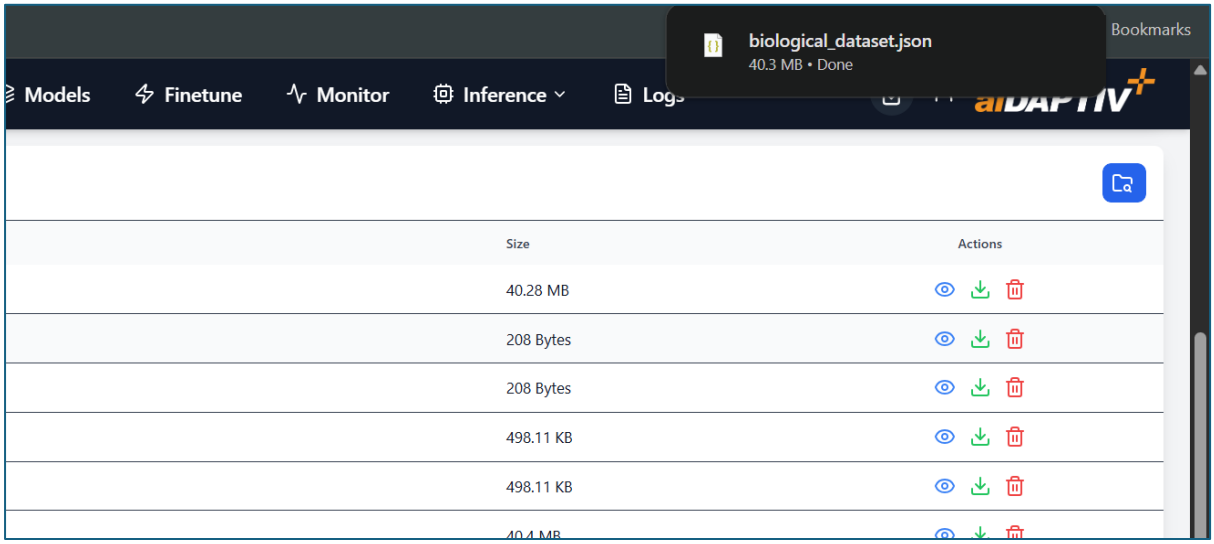
5.2.1 Previewing a Dataset

- Tab controls at the top let you switch between Initial Records, Final Records, or All Records for quick navigation.
- A summary section displays File Name, Size, Type, Total Items, and the current slice (e.g., “Showing: First 10 items of 23000”).
- Below that, a scrollable JSON preview shows the actual array or object entries, allowing in-browser inspection of dataset contents.



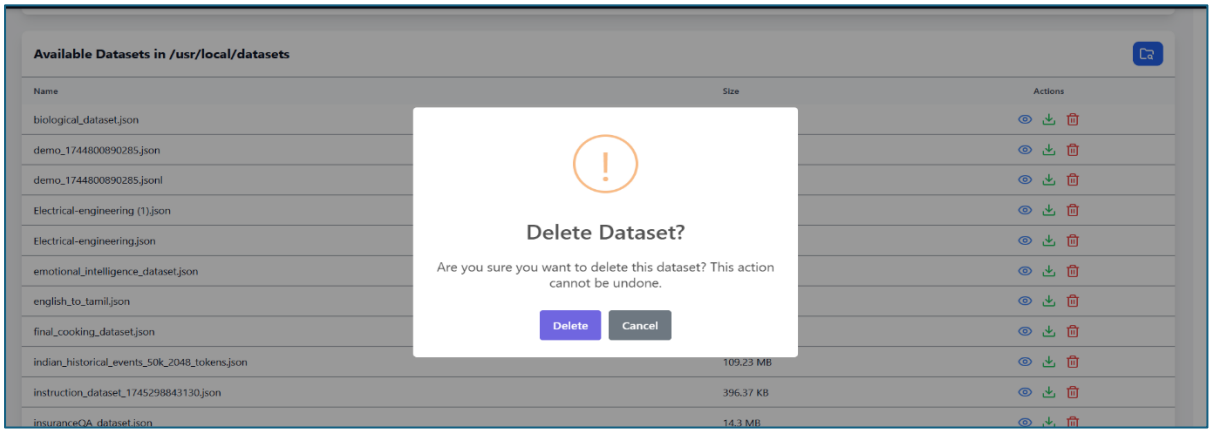
5.2.2 Downloading a Dataset

- A browser notification confirms that biological_dataset.json (40.3 MB) has finished downloading.
- The file is saved to your local Downloads folder (or your configured default download location).
- Click the notification (or open your Downloads folder) to access and open the dataset immediately.



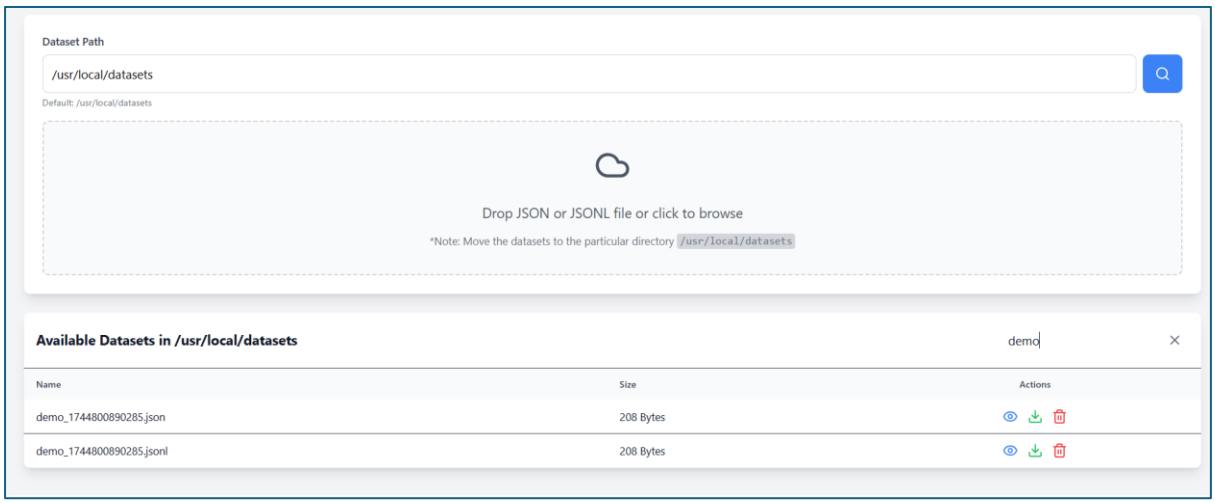
5.2.3 Deleting a Dataset

- You're about to permanently remove the selected file from /usr/local/datasets; this action cannot be undone.
- Click Delete to confirm and remove the dataset immediately.
- Click Cancel to abort and keep the file safely stored.



5.2.4 Searching a Dataset

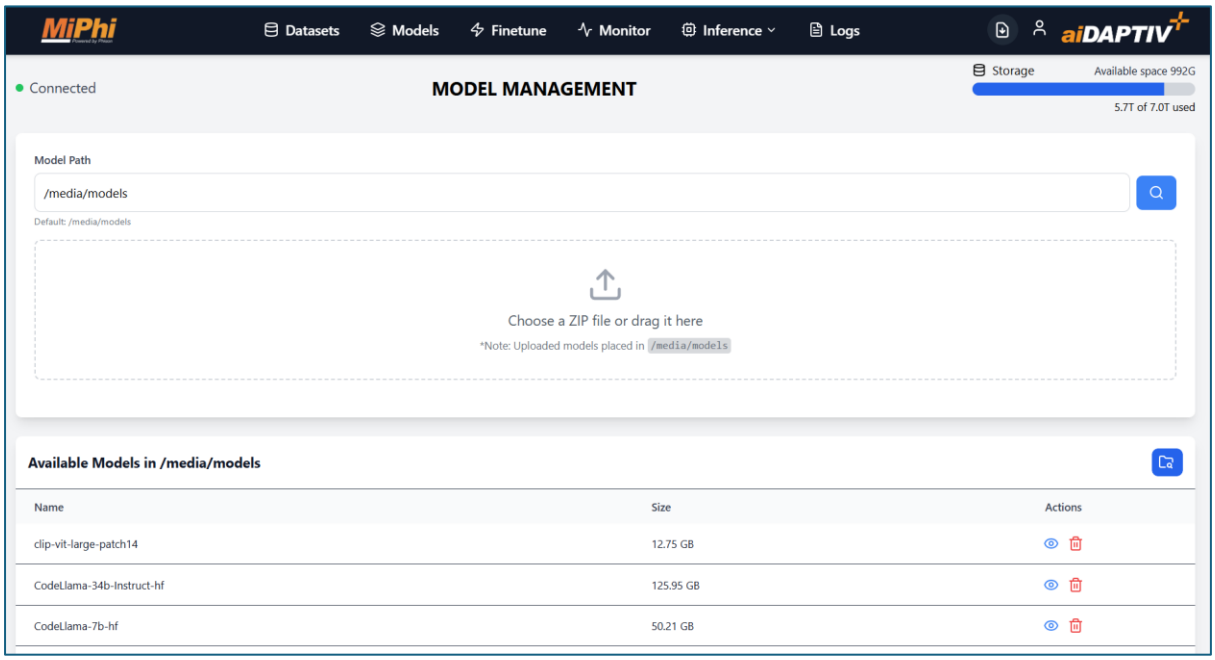
- Use the search box in the top-right of the list to filter files by name or extension—typing "demo" instantly shows only matching entries.
- Results update in real time as you type; hit the × icon to clear your query and restore the full list.
- Supports partial and full filename matches (e.g. entering ".jsonl" will display only JSONL files).



6. MIPHI MODELS PAGE

The **MiPhi Models** is designed to help users manage Large Language Models (LLMs) efficiently through an interactive and organized interface. This page supports operations like loading models from a specific directory, uploading new models, viewing configuration files, and deleting unwanted models.

Model management page consists of two main sections upload area and list area.

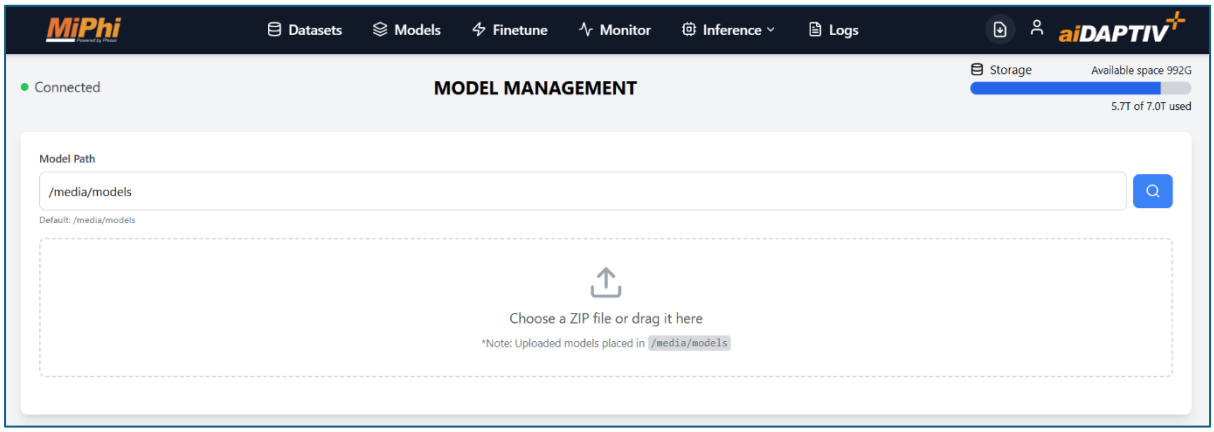


6.1 Upload Area

- This section allows you to upload model in **ZIP format only**.
- You can either drag and drop a ZIP file or click to browse and select a file.
- The **default model's storage path** is /media/models, but you can change it as needed.
- If a model with the same name already exists: The system prompts: **"Replace existing model?"**
- Options: Replace | Skip.
- This avoids accidental overwriting and ensures version control.

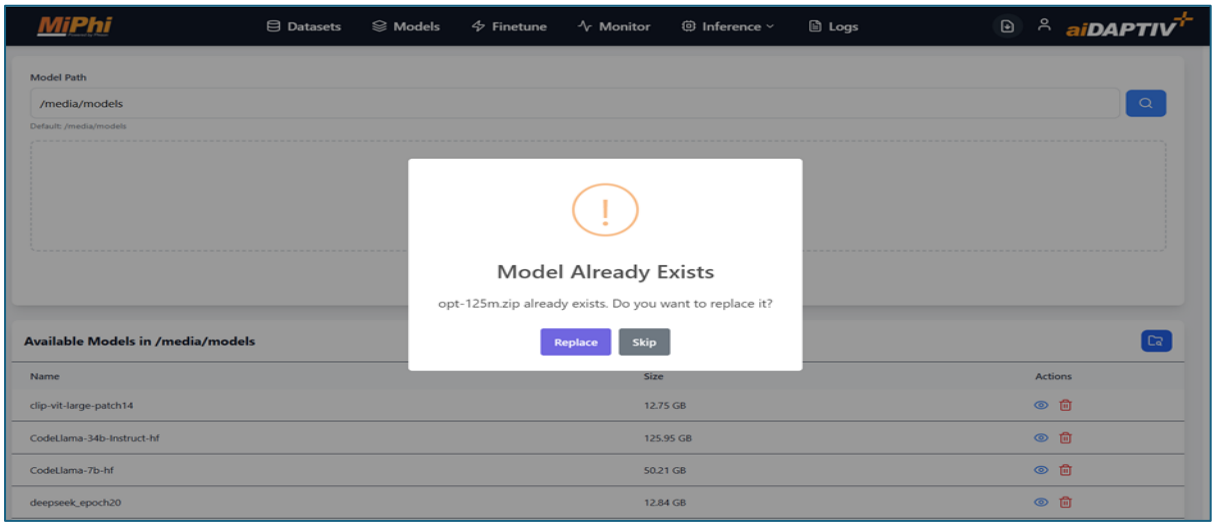
6.1.1 Select and Upload Your Model

- Click the Choose a ZIP file or drag it here file to browse area to open your system's file picker.
- In the dialog (e.g. browsing **Downloads**), select your desired model zip file and hit **Open**.
- Once chosen, the file name appears in the upload zone and the dataset is copied into /media/models for immediate use.



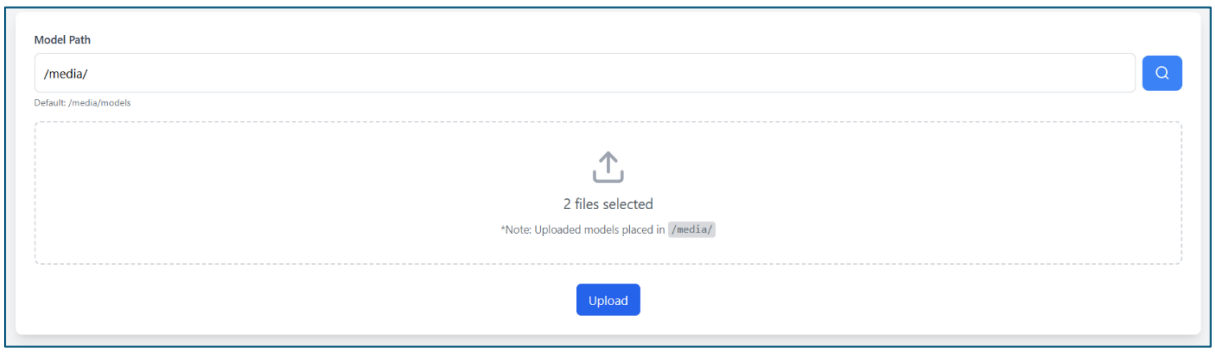
6.1.2 File Already Exists

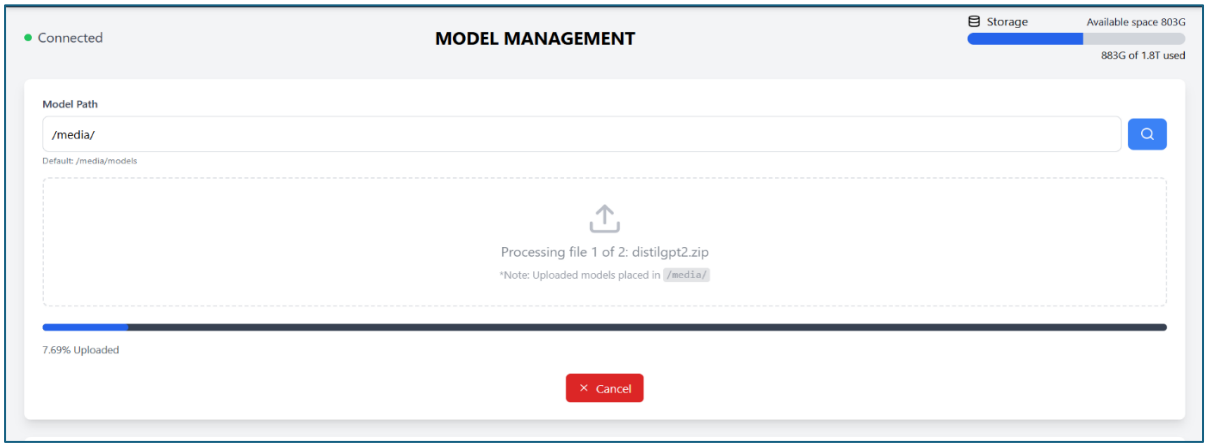
- The system has detected that **opt-125m Model** is already present in /media/models.
- Click **Replace** to overwrite the existing file with this new version.
- Click **Skip** to cancel uploading that file and keep the current copy intact.



6.1.3 Upload Multiple Models

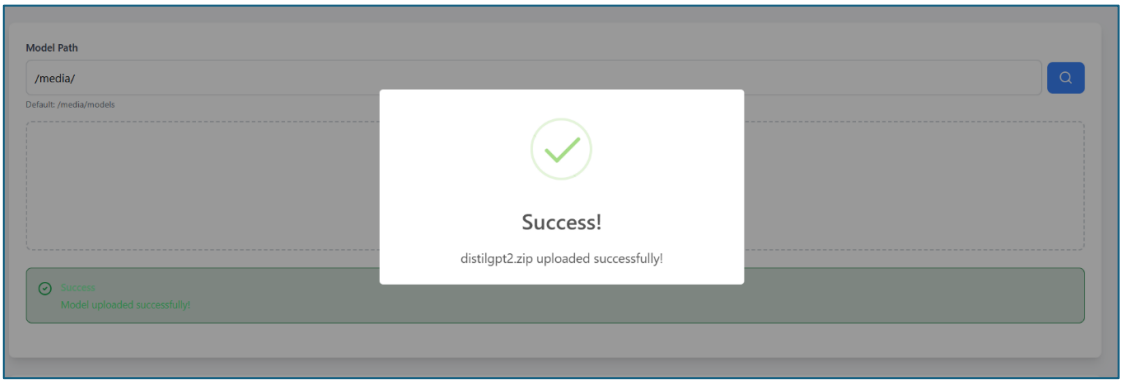
- Click the upload area and, in your file picker, use Ctrl/Cmd + Click or Shift + Click to select several ZIP files at once.
- All chosen files will be listed in the confirmation dialog along with their individual sizes.
- Hit **Upload** to upload the models one after the other.





6.1.4 Upload Complete

- The dialog confirms your upload results, showing how many files were successfully uploaded and if any failed.
- Your new models have been added to /media/models and will appear in the “Available Models” list once you click OK.
- Click OK to dismiss and refresh the page, updating storage usage and file listings.



6.2 List of Available Models

- Displays all the uploaded models.
- Each dataset entry shows its **name and size**.
- You have the following actions available:

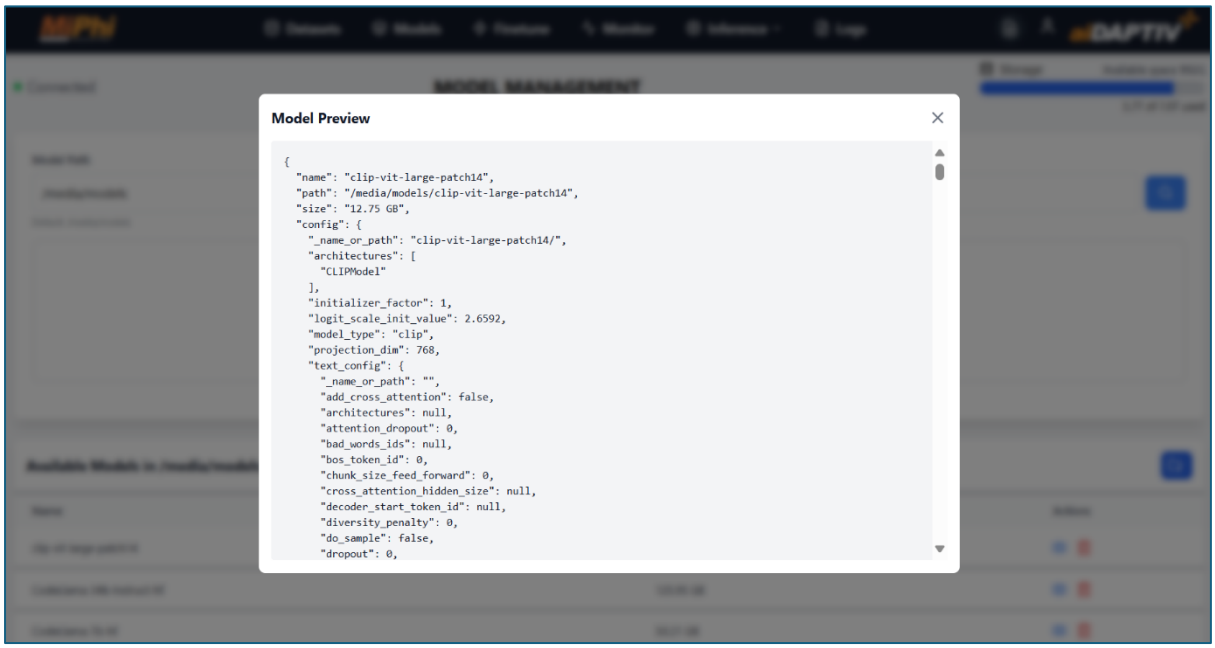
  View– To check the model contents.

  Delete – To remove the model from storage.

- A **search bar** is provided to quickly find specific models.

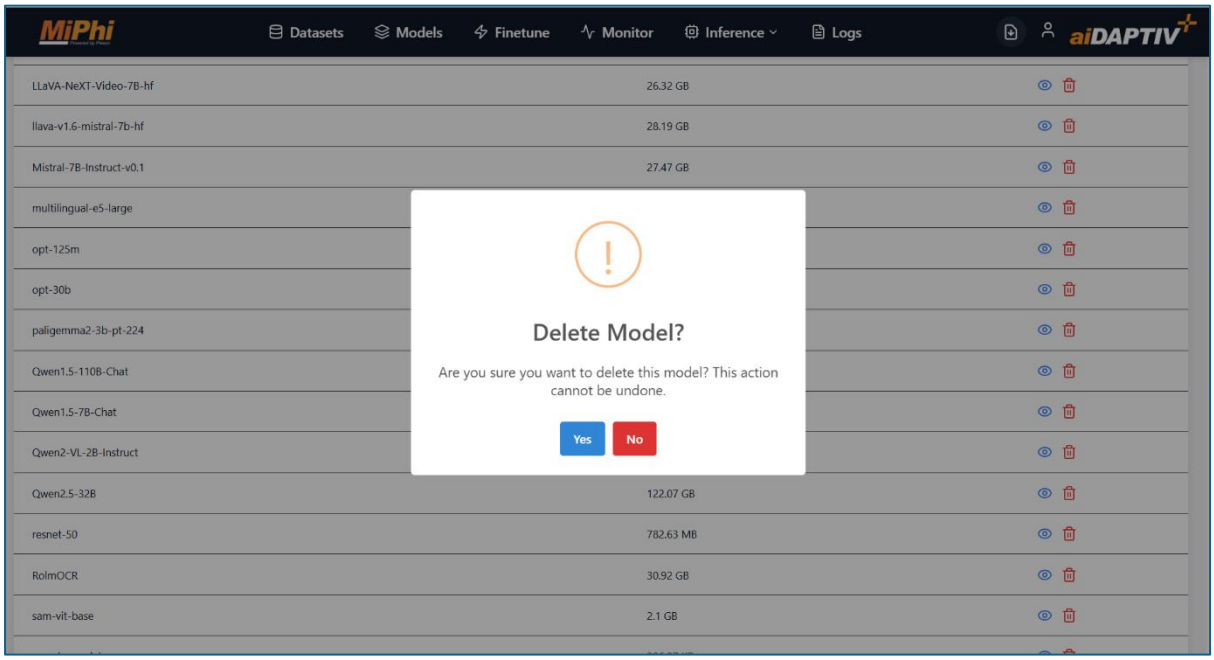
6.2.1 Model Preview

- The configuration details of the model are presented through a scrollable JSON view.
- This allows users to easily inspect the contents of the config.json file for better understanding and verification.



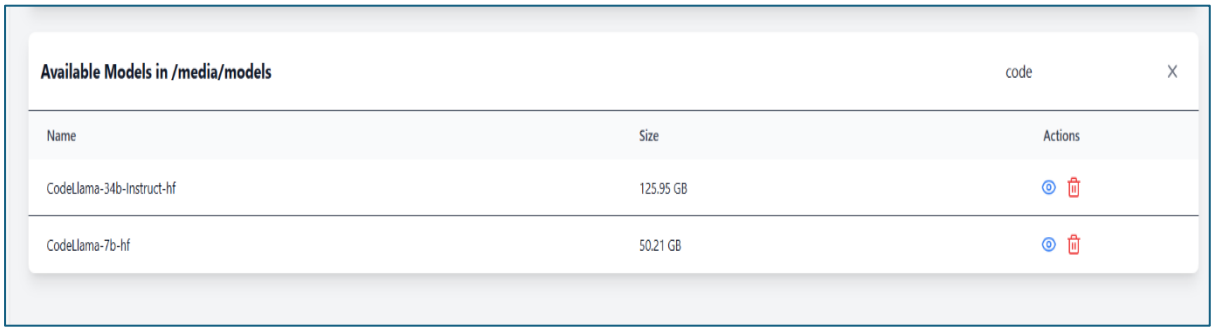
6.2.2 Deleting a Model

- You're about to permanently remove the selected file from /media/models; this action cannot be undone.
- Click **Delete** to confirm and remove the model immediately.
- Click **Cancel** to abort and keep the file safely stored.



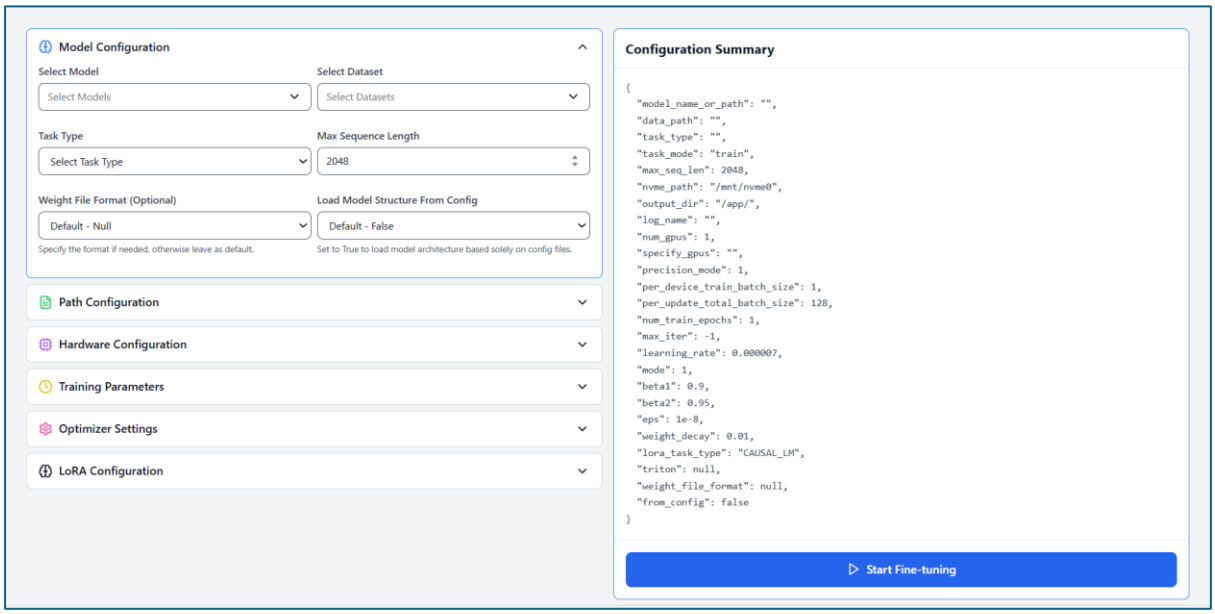
6.3.3 Searching a Model

- Use the search box in the top-right of the list to filter files by name or extension—typing "code" instantly shows only matching entries.
- Results update in real time as you type; hit the × icon to clear your query and restore the full list.
- Supports partial and full filename matches (e.g. entering "code" will display only files having the word "code")



7. MIPHI FINE-TUNING PAGE

The fine-tuning page have two main sections: on left side section assign parameters and on right side section for viewing a configuration summary and then you can start fine-tuning.



7.1 Model Configuration Section

This section allows users to set up the parameters for fine-tuning the model. It typically includes:

7.1.1 Select Model

- This dropdown lists available models based on the path specified in the Models page.
- When clicked, it displays all models stored in the configured path.
- Users can select the desired model for their task, such as text generation, classification, Fill mask and Speech recognition.

7.1.2 Select Dataset

- This dropdown lists datasets available in the path defined in the Dataset page.
- When clicked, it shows all datasets present in that directory.
- Users can choose the dataset relevant to their selected model and training objectives.
- The system dynamically fetches models and datasets from the **predefined paths**, ensuring users always see the latest available options.

- The **search feature** allows users to quickly find the required model or dataset without scrolling through the entire list.

7.1.3 Task type

In Task type, you can choose different types of tasks based on the model's purpose. Here are some common ones:

Task Types for Fine-Tuning:

- **Text Generation**: The model generates new text based on a given input (e.g., GPT models). Fine-tuning can be done to specialize the model for specific types of text, like poetry or code.
- **Image Classification**: In this task where the model classifies images into predefined categories. Fine-tuning involves adapting a pre-trained model to a specific set of image classes.
- **Fill Mask**: This is a task where the model predicts missing words in a sentence (e.g., BERT models).
- **Automatic Speech Recognition (ASR)**: This involves converting spoken language into text.

7.1.4 Max sequence length

The **max sequence length** refers to the maximum number of tokens (words, sub words, or characters) that a model can process in a single input sequence.

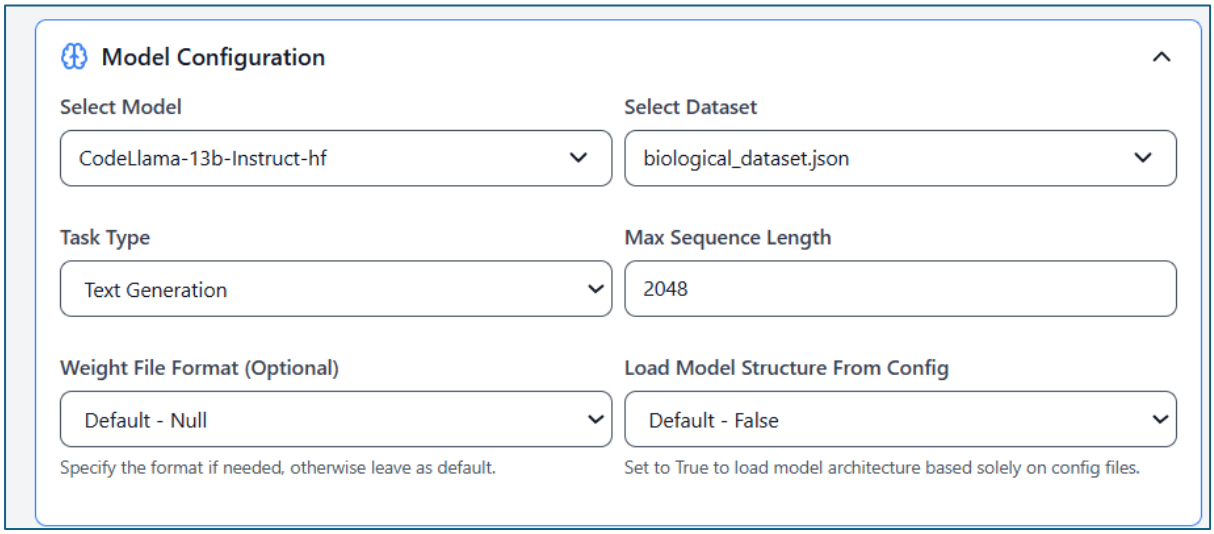
- **128 tokens** – Best for short texts like tweets, sentiment analysis, and simple classification tasks.
- **256 tokens** – Suitable for small paragraphs, short emails, and FAQ-based classification.
- **512 tokens** – Standard for most NLP tasks like document classification, named entity recognition (NER), and summarization.
- **1024 tokens** – Ideal for longer inputs such as news articles, research abstracts, and complex question-answering.
- **2048 tokens** – Used for multi-paragraph text generation, document analysis, and long-form conversations.

7.1.5 Weight File Format

This parameter specifies the format of the model's weight file, such as .bin, .pt, or .safetensors, depending on the type of model being used or required.

7.1.6 Load Model Structure From Config:

When enabled, this parameter ensures that the model's architecture is loaded entirely from the config.json file.



7.2 Path Configuration Section

The Path Configuration Section is crucial for defining where various files and logs will be stored during the fine-tuning process. It typically includes:

7.2.1 aiDAPTIV+ Cache Mount Point

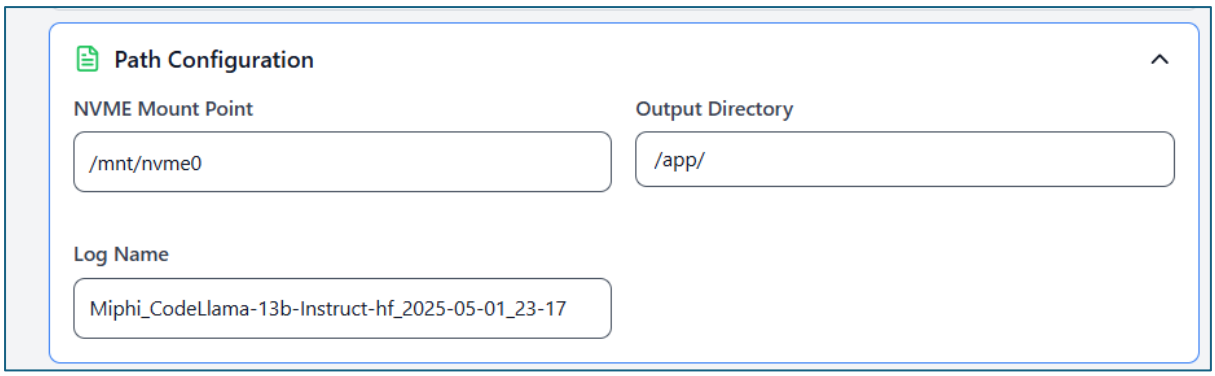
It serves as a high-speed storage location for caching and accessing large amounts of data efficiently. It plays a crucial role in storing and loading model parameters, datasets during training and fine-tuning.

7.2.2 Output_dir

Directory where the fine-tuned model will be saved. (But you can change it as needed.)

7.2.3 Log_name

The log name is the filename used to track the training process. It will be automatically assigned based on the selected model.



7.3 Hardware Configuration Section

This section typically includes options to select GPUs and set the precision mode.

7.3.1 Select GPUs

This option allows you to choose which GPUs will be used for the training process. It also displays the memory usage of each GPU, helping you manage resource allocation efficiently. The available GPU selection may vary based on server availability.

7.3.2 Precision Mode

The Precision Mode setting determines how numerical values are processed during model training. It impacts **accuracy, memory usage, and computational speed**.

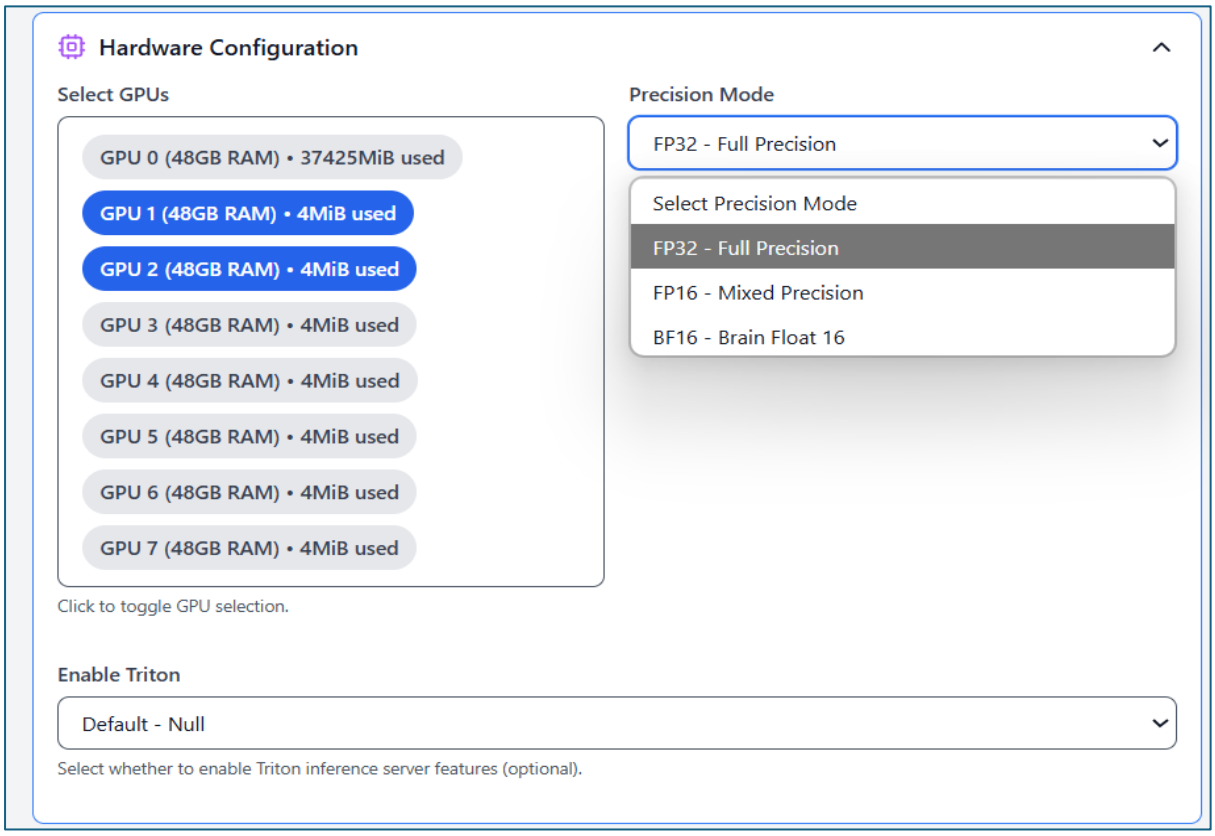
- **FP32 (Single Precision)**: Standard 32-bit floating point, offering high accuracy but slower computation.
- **FP16 (Half Precision)**: 16-bit floating point, faster than FP32 but with reduced precision.
- **BF16 (Bfloat16)**: 16-bit floating point with a wider exponent range than FP16, balancing speed and accuracy.

You can select from the following precision options

Precision Mode	Memory Usage	Speed	Accuracy	Best Use Case
FP32	High	Normal	High	High-precision models, sensitive computations
FP16	Low	Fast	Moderate	Deep learning, speed-optimized training
BF16	Moderate	Fast	High	Fine-tuning large models, balanced efficiency

7.3.3 Enable Triton

Select whether to enable Triton Inference Server features (optional). Triton is useful for optimized model serving, supporting features like dynamic batching, concurrent model execution, and multi-framework support, which can significantly improve inference performance during fine-tuning and deployment.



7.4 Training Parameters Section

The **Training Parameters** section defines key settings that control the training process, including how data is processed in batches, the total number of training steps, and how long the model trains.

7.4.1 Train Batch Size

- The number of training samples processed per GPU in one forward and backward pass.
- Affects memory usage and training speed. Larger batch sizes improve training stability but require more GPU memory.

7.4.2 Total Batch Size

- The total number of samples used for one update of model weights
- Helps control gradient updates when training across multiple GPUs or accumulating gradients over multiple steps to fit larger batch sizes in memory.

Example: If you are running on 4 GPUs with Total batch size =4 and want to update the model every 80 batches, then you should set the total_batch_size to 80.

The machine will run 80/(4 GPUs×4 Batch Size per GPU) =5 iterations and update the model once.

Note: If not divisible, round up to the next whole number.

7.4.3 Epoch

- The number of times the model processes the entire dataset during training.
- Controls how long the model learns from the data. Too few epochs might lead to underfitting, while too many can cause overfitting.

Example: If your dataset has **100,000 samples** and you set batch size = 1000, then:

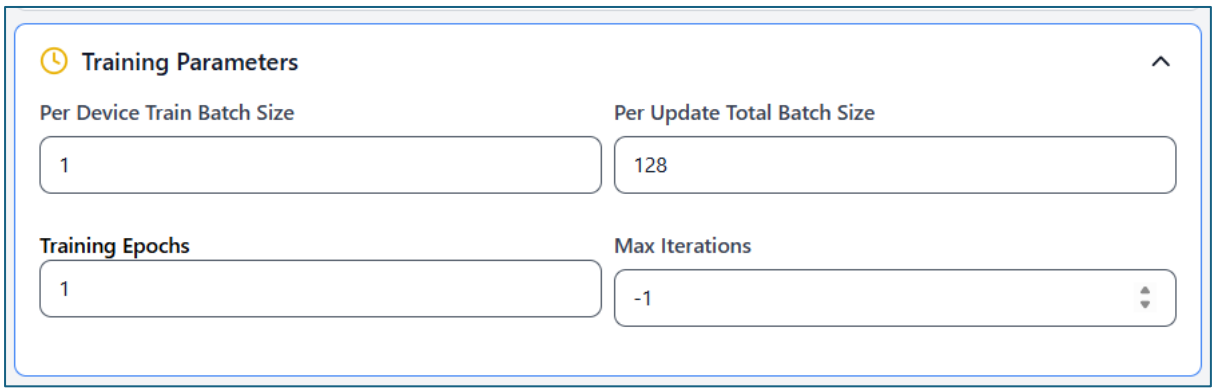
- **1 epoch** = **100 iterations**
- If training for **5 epochs**, the model will perform **500 iterations**.

7.4.4 Max Iteration

- The maximum number of training steps (iterations) to perform during training
- Controls when to stop training, independent of epochs.

Example:

- If batch size = 32 and dataset has **320,000 samples**, then **1 epoch** = **10,000 iterations**.
- If max_iterations = 20,000, the training will stop after **2 epochs**, even if more epochs are set.



7.5 Optimizer Settings Section

The **Optimizer Settings** section defines how the model updates its parameters during the fine-tuning process.

7.5.1 Learning rate

- It is the step size at which the model's weights are updated during training. It controls how much the model learns from the gradients at each step.
- A well-chosen learning rate ensures effective training—too high can cause instability, and too low can result in slow convergence.

7.5.2 LR Scheduler Mode

- Determines how the learning rate changes over time during training.
- Adjusting the learning rate during training helps prevent overfitting and improves convergence.
- mode: choose a learning rate mode (default: 1).
- mode == -1: LinearLR (optimizer, start_factor=1, total_iters=1)
- mode == 0: LinearLR (optimizer, start_factor=0.5, total_iters=20) mode == 1: CosineAnnealingLR (optimizer, T_max=150)

- mode == 2: ExponentialLR (optimizer, gamma=0.99)
- mode == 3: MultiplicativeLR (optimizer, lr_lambda=lambda epoch: 0.95)
- mode == 4: StepLR (optimizer, step size=30, gamma=0.1)
- mode == 5: MultiStepLR (optimizer, milestones= [30,80], gamma=0.1)

7.5.3 Beta1

Adam Optimizer Hyperparameter(default:0.9)

- The exponential decay rate for the first moment estimate (momentum term) in the Adam optimizer.
- Controls how much past gradients influence the current update, helping smooth training.
- Range: Typically, between 0.8 and 0.99

7.5.4 Beta2

Adam Optimizer Hyperparameter(default:0.95)

- The exponential decay rate for the second moment estimate (variance) in the Adam optimizer.
- Helps stabilize the optimization process by adjusting for variance in gradients.
- Range: Typically, between 0.95 and 0.9999

7.5.5 Epsilon

hyper-parameter for adam optimizer (default:1e-8).

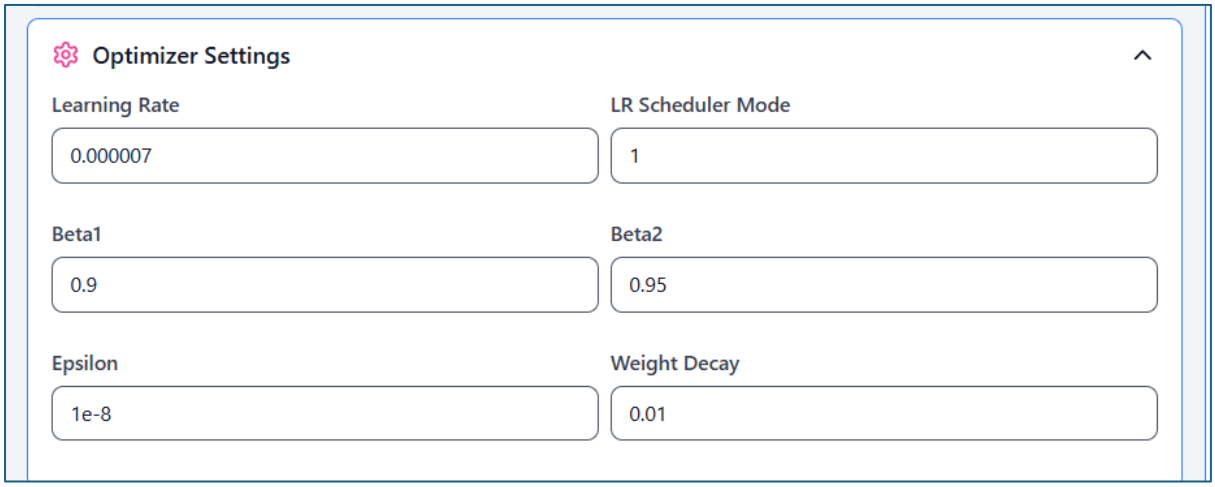
- A small constant added to prevent division by zero in the Adam optimizer.
- Helps maintain numerical stability when computing updates.
- Range: 1e-8 to 1e-6 (Lower values are generally stable.)

7.5.6 Weight decay

Set weight decay coefficient (default:0.01)

- A regularization parameter that applies L2 penalty to model weights to prevent overfitting.

- Helps reduce the complexity of the model by discouraging large weights.



7.6 LoRA Configuration Section

7.6.1 Enable LoRa

trigger lora training procedure (default: disabled).

7.6.2 LoRa rank

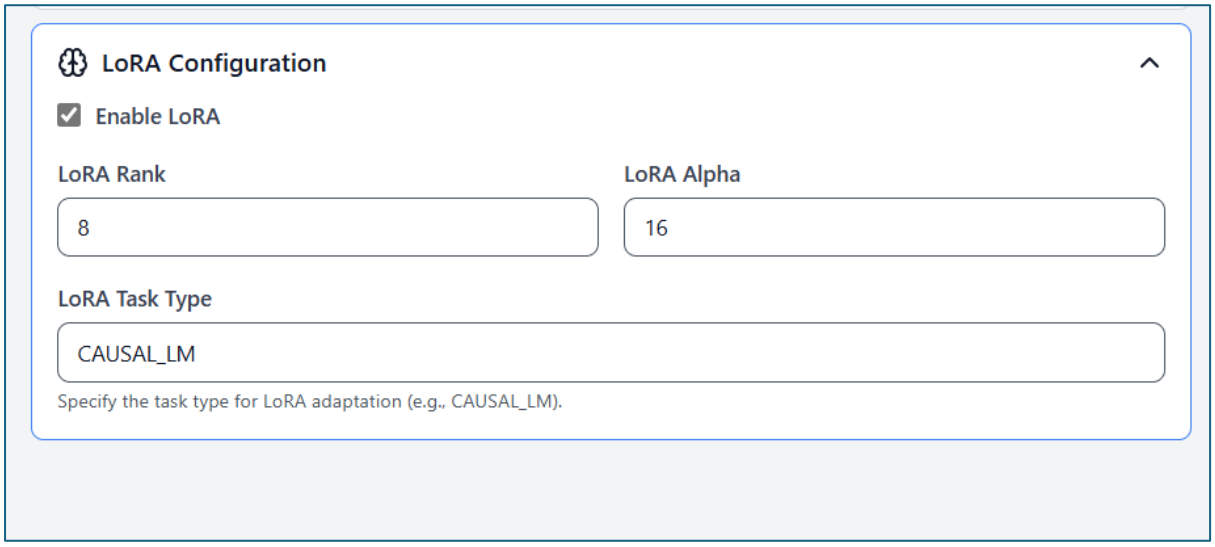
dimension of the low-rank matrices for lora (default: 8).

7.6.3 LoRa alpha

LoRA Alpha adjusts how much influence the LoRA layers have on the model's final predictions. (default: 16).

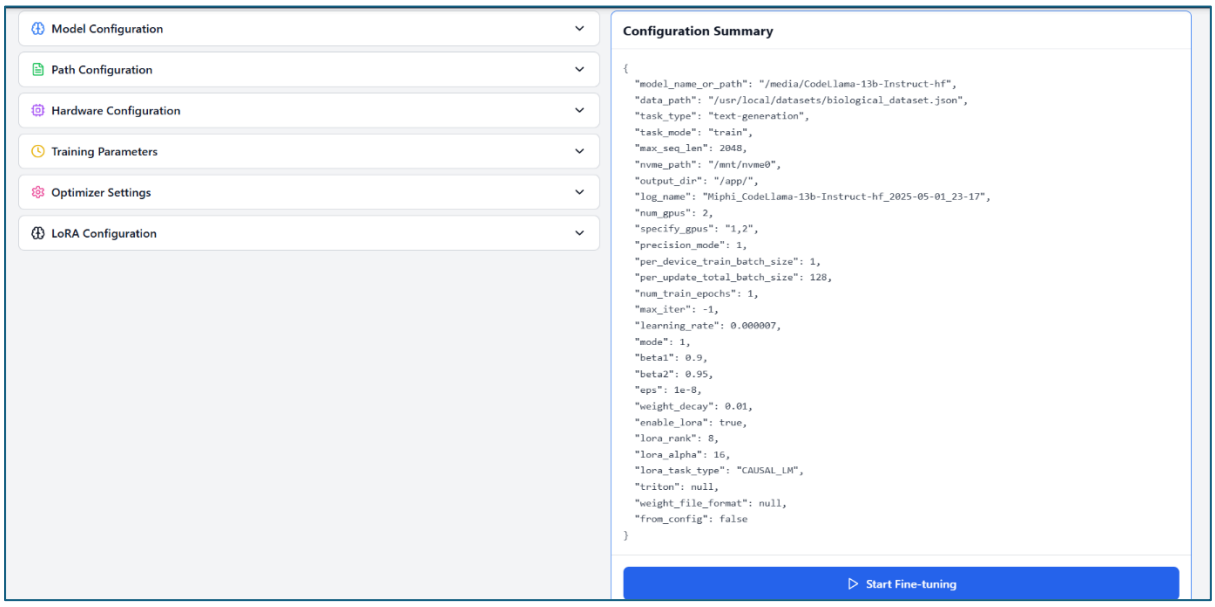
7.6.4 LoRa Task Type

The task type for LoRa adaptation is CAUSAL_LM by default.



7.7 Configuration Summary

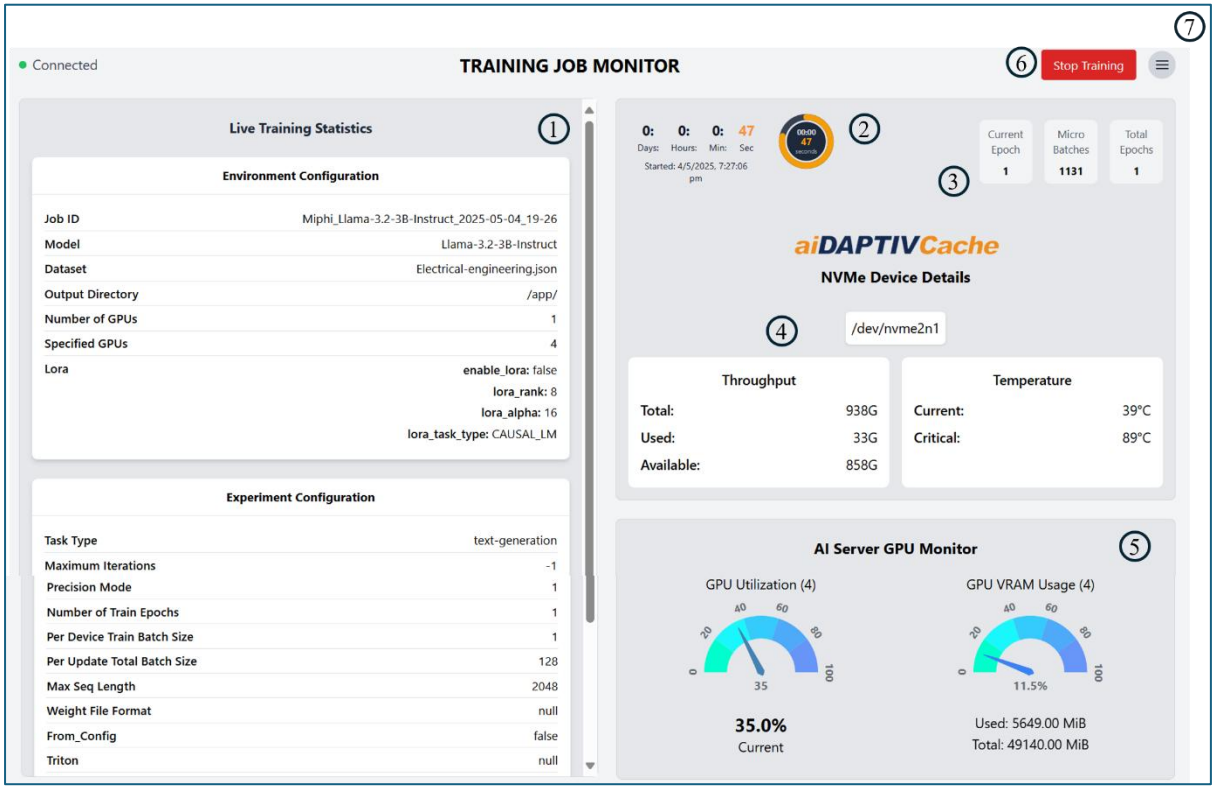
- After setting all parameters, they will automatically update in the **Configuration Summary**, where you can review all the values you have provided.
- Once everything is confirmed, click the **Start Fine-Tuning** button to begin the process.
- The system will then redirect you to the **Monitor** page, where you can track the training progress in real time



Note: Before starting fine-tuning, ensure that all parameters are correctly updated to avoid errors

8. MiPhi Monitor Page

The **MiPhi Monitor** offers a real-time overview of the training process, providing key insights into both system performance and training metrics. It displays training configurations, including NVMe cache details, device usage, elapsed time, current epoch, total epochs, and microbatches. The page tracks GPU utilization, VRAM, CPU, and RAM usage, ensuring efficient resource monitoring. Users can access and download training logs for analysis, view a loss vs. timestamp graph, and examine detailed GPU statistics. The training process can be stopped at any time, and the sidebar allows quick access to the latest five training jobs for efficient session tracking.



8.1 Training Statistics

The **Training Statistics** section provides configuration details for training jobs and dynamically updates based on the training status. It is divided into two parts:

- **Environment Configuration**: Displays metadata such as Job ID, model name, dataset, output directory, GPU settings, and LoRA parameters.
- **Experiment Configuration**: Shows training-specific parameters including task type, number of epochs, batch sizes, sequence length, optimizer settings, learning rate scheduler, and precision mode.

Behavior:

- If **no training** has been run yet, the section shows **"No process running."**
- If a training job is **in progress**, this section displays **live statistics** of the current job.
- Once a job is **completed**, the section shows details of the **latest completed job** along with its Job ID.

It helps to easily track and reference the most recent training configurations and progress.

8.2 Elapsed Time

The **Elapsed Time** section provides a real-time display of the duration since the current training job began. Time is presented in a structured format—**days, hours, minutes, and seconds**—accompanied by a visual circular progress indicator for enhanced clarity. Additionally, the exact start timestamp of the training session is shown below the timer for precise reference.

This section becomes visible **only when a training process is actively running**, allowing to monitor the session duration as it progresses. When no training is in progress, the section remains hidden.

8.3 Epoch and Micro-batch

This section displays real-time training metrics, including:

- **Current Epoch**: The epoch currently in progress.
- **Total Epochs**: The total number of training epochs defined.
- **Microbatches**: The cumulative number of microbatches processed within the current epoch.

This panel is visible **only while a training session is active**, providing clear visibility into training progress at both the epoch and batch level.

8.4 NVMe Device Details

This section provides detailed monitoring of the NVMe storage device actively used during training. It is designed to offer critical insights into both the storage capacity and thermal performance of the device in real time.

- **Device Path**: Displays the device path used of the active NVMe mount point (e.g., /dev/nvme2n1).

Throughput

- **Total** – The total capacity of the NVMe device.
- **Used** – The amount of storage currently occupied by training processes or other operations.
- **Available** – Remaining free space available on the device.

Temperature

- **Current** – Real-time operating temperature of the NVMe device.
- **Critical** – The maximum temperature threshold before the device may throttle or become unstable.

8.5 GPU Monitoring

The **GPU Monitoring** section displays real-time metrics of the GPU actively used for training. It includes:

- **GPU Utilization**: Shows the current processing load (%) on the training GPU.
- **GPU VRAM Usage**: Displays the used and total memory (MiB), along with the percentage of VRAM consumption.

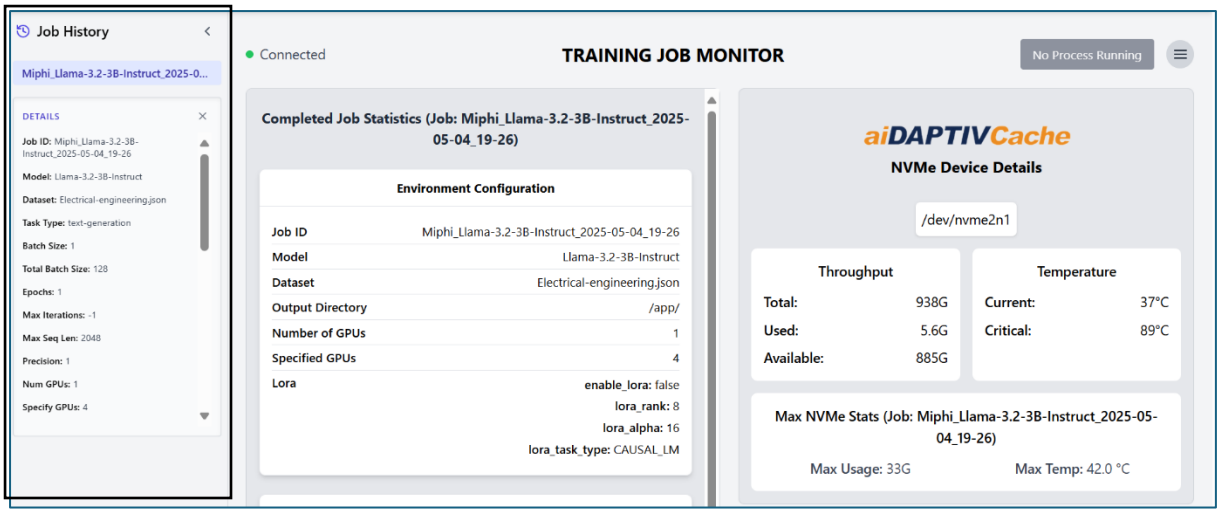
8.6 Stop Training

This section displays a **Stop Training** button when a training job is in progress. Clicking this button will immediately terminate the active training process.

- When **training is active**, the button is visible and functional.
- When **no training is running**, the section displays **"No process running."**

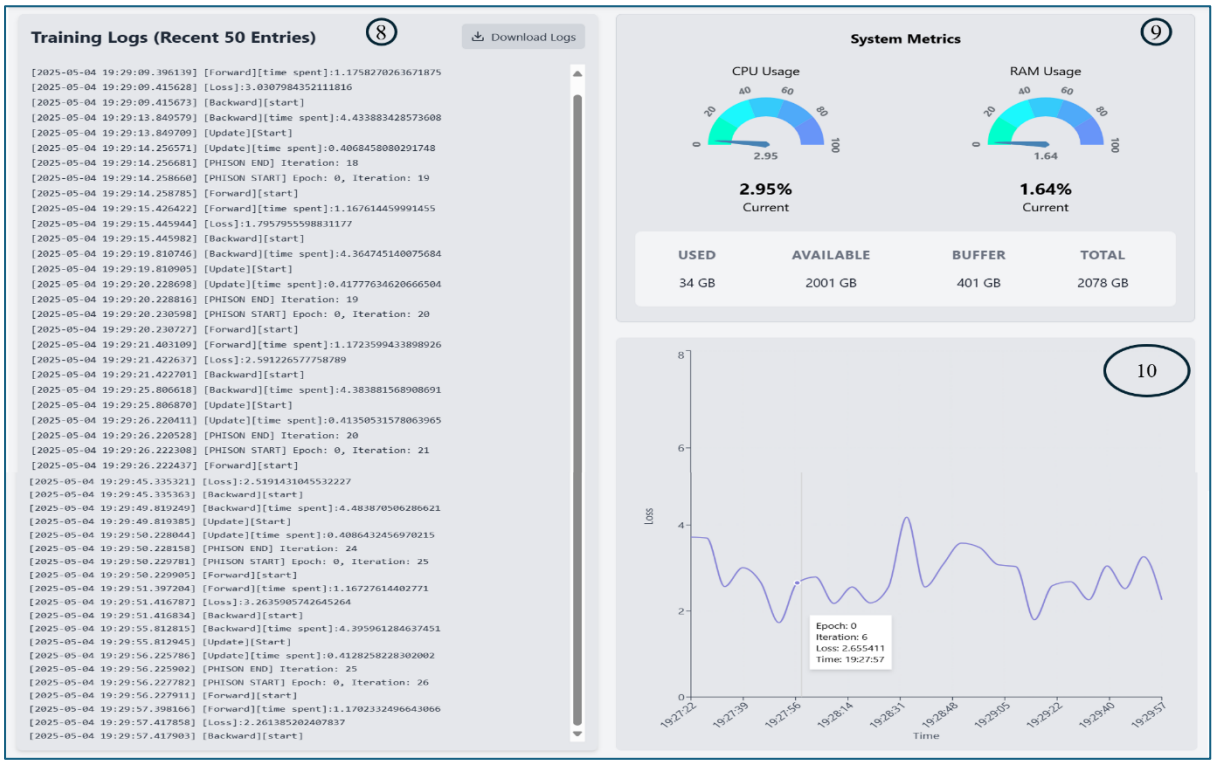
8.7 Job History

This section provides access to the **five most recent finetuned training jobs**. Clicking the toggle button expands a panel displaying detailed configuration and system usage stats for each job.



Details include:

- **Job Metadata**: Job ID, Model Name, Dataset, Task Type, Output Directory
- **Training Configuration**: Batch sizes, Epochs, Max Sequence Length, Optimizer, Learning Rate Scheduler, Precision, LoRA settings
- **System Utilization**: Max CPU/RAM usage, GPU Utilization %, VRAM (MiB), NVMe usage and temperature
- **Timestamps**: When training parameters and system stats were last saved



8.8 Training Logs

This section displays the **latest 50 log entries** from the current training session in real time.

- When **training is active**, logs update live to show forward/backward passes, loss values, iteration details, and time spent.
- When **training is inactive**, it displays logs from the most recent completed session.

A **Download Logs** button is available to view the full log file for deeper inspection or record-keeping.

8.9 System Metrics

This section provides real-time insights into system resource usage:

- **CPU Usage**: Displays the current percentage of CPU utilization.
- **RAM Usage**: Shows the current memory consumption as a percentage.
- **Disk Summary**: Indicates used, available, buffer, and total disk capacity.

8.10 Training Graph

This section visualizes the **loss over time**.

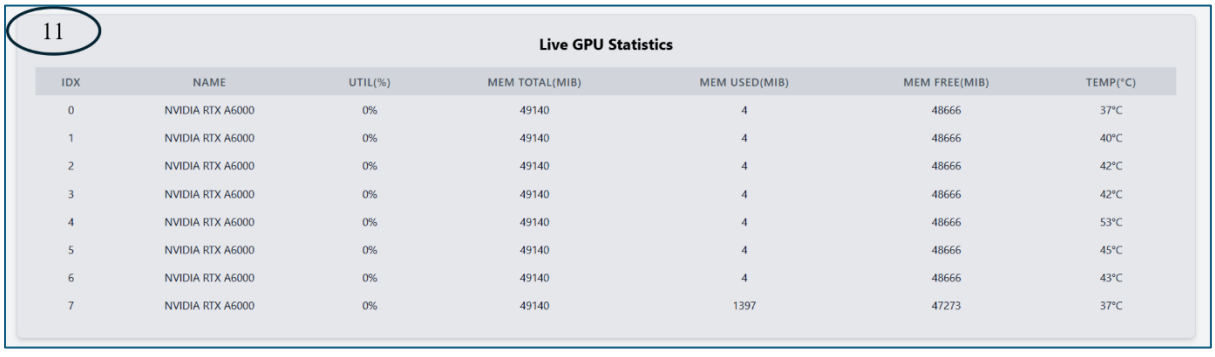
- **When training is active**, the graph updates in real-time, reflecting live loss values.
- **When training is inactive**, it displays the most recent complete loss graph from the last fine-tuning session.

8.11 Live GPU Statistics

This section provides **real-time monitoring** of all available GPUs, displaying:

- **Utilization (%)**
- **Total, used, and free memory (MiB)**
- **Temperature (°C)**

If a GPU's temperature exceeds **85°C**, it is highlighted with a **red background** to indicate potential overheating.

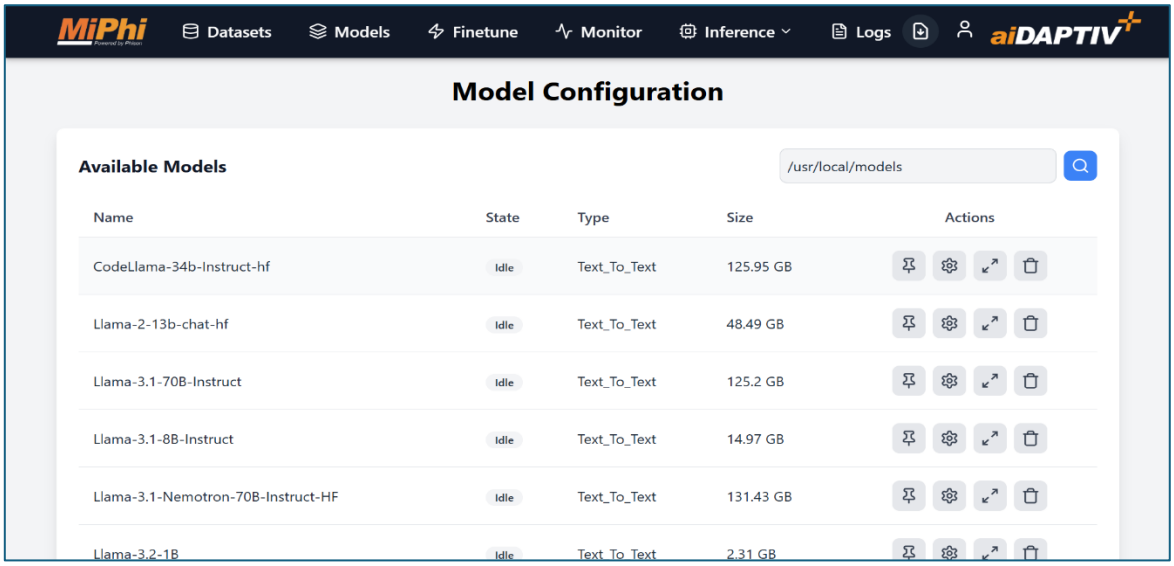


IDX	NAME	UTIL(%)	MEM TOTAL(MIB)	MEM USED(MIB)	MEM FREE(MIB)	TEMP(°C)
0	NVIDIA RTX A6000	0%	49140	4	48666	37°C
1	NVIDIA RTX A6000	0%	49140	4	48666	40°C
2	NVIDIA RTX A6000	0%	49140	4	48666	42°C
3	NVIDIA RTX A6000	0%	49140	4	48666	42°C
4	NVIDIA RTX A6000	0%	49140	4	48666	53°C
5	NVIDIA RTX A6000	0%	49140	4	48666	45°C
6	NVIDIA RTX A6000	0%	49140	4	48666	43°C
7	NVIDIA RTX A6000	0%	49140	1397	47273	37°C

9. MIPHI INFERENCE PAGE

9.1 Selecting a Model for Inference

- After opening the URL in your browser, you will be directed to the model configuration page.
- On this page, all available text-to-text generation models are listed based on the model path provided during container creation.



- Here you can give the directory path where the models are located.

9.1.1 Components of Model Table

Column	Description
Name	The name of the model (e.g., Llama-3.1-8B-Instruct, Gemma-2-9B-It)
State	Status of the model (Idle or Running)
Type	Model task type (e.g., Text_To_Text)
Size	Size of the model in gigabytes (GB)
Actions	Buttons for model operations

9.1.2 Model Actions

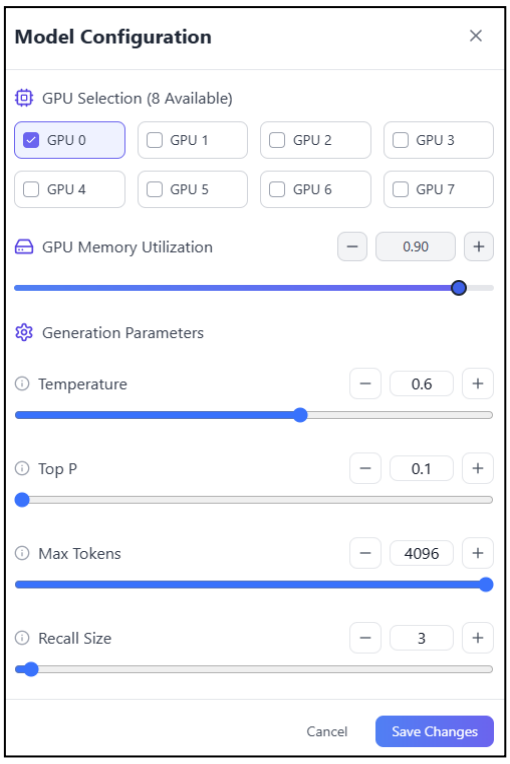
For each model, the following actions are available (represented by icons in the Actions column):

- **Pin Model** : Load and pin a model for use
- **Settings** : Configure model settings
- **Expand** : View detailed model information for Quantization of the Model
- **Delete** : Remove the model from the system

9.1.3 Model Configuration

- Click the settings button to adjust model parameter inference.

- Now the model configuration box will appear. Select the required values to load model and click ‘Save Changes’.



Adjusting Model Parameters

You can modify the model's behavior by adjusting the following parameters:

- GPU Selection: Select the specific GPUs for loading a model (default: [0])
- GPU Memory Utilization: Select the value of GPU VRAM that can be utilized for loading model (default: 0.90)

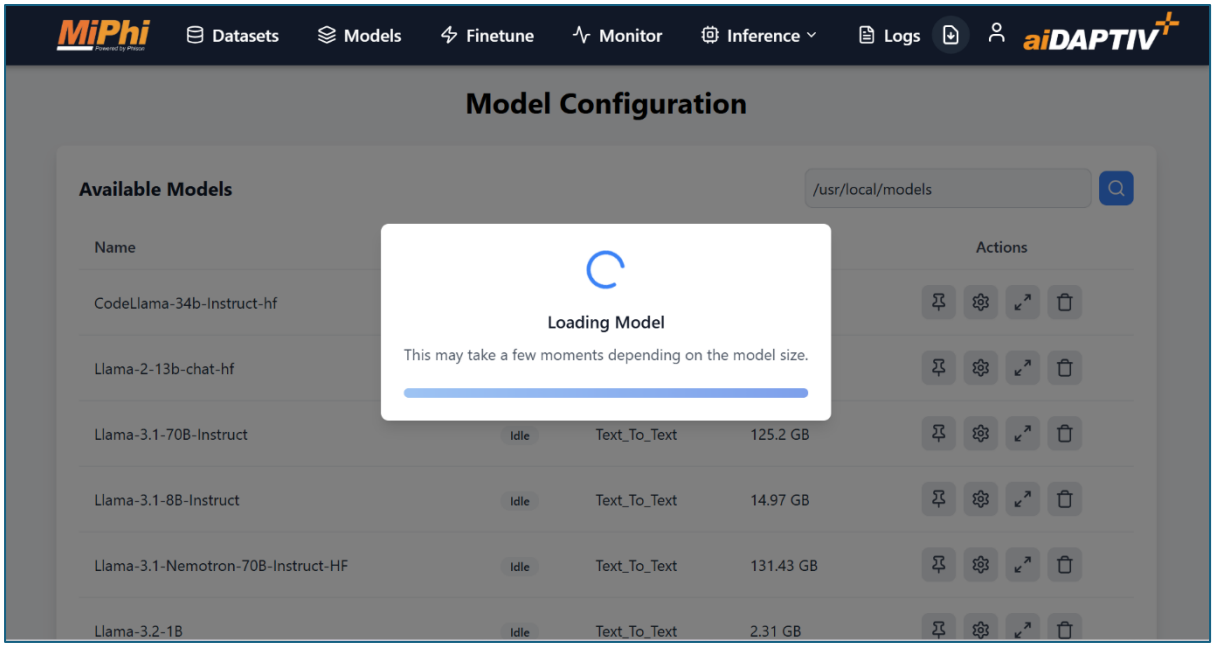
Generation Parameters

- **Temperature:** Controls randomness/creativity of responses (default: 0.6)
  - Range: 0.0 to 1.0
  - Lower values (closer to 0) make responses more deterministic and focused
  - Higher values (closer to 1) make responses more creative and diverse
- **Top P:** Controls nucleus sampling threshold (default: 0.1)
  - Range: 0.1 to 1.0
  - Works alongside temperature to influence response variety
- **Max tokens:** Controls the maximum length of generated responses (default: 4096)
  - Use slider or +/- buttons to adjust
  - Higher values produce longer responses but take more time
- **Recall Size:** The value for reading chunks in file (default: 3) while using RAG.
  - Use slider or +/- buttons to adjust

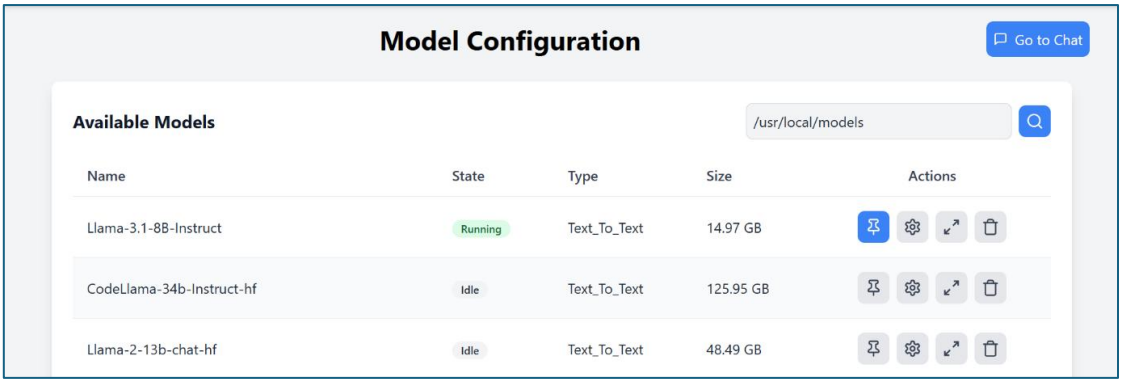
9.1.4 Pin the Model

- Click the pin button to load the model and prepare it for inference.

- The model may take a few moments to load.

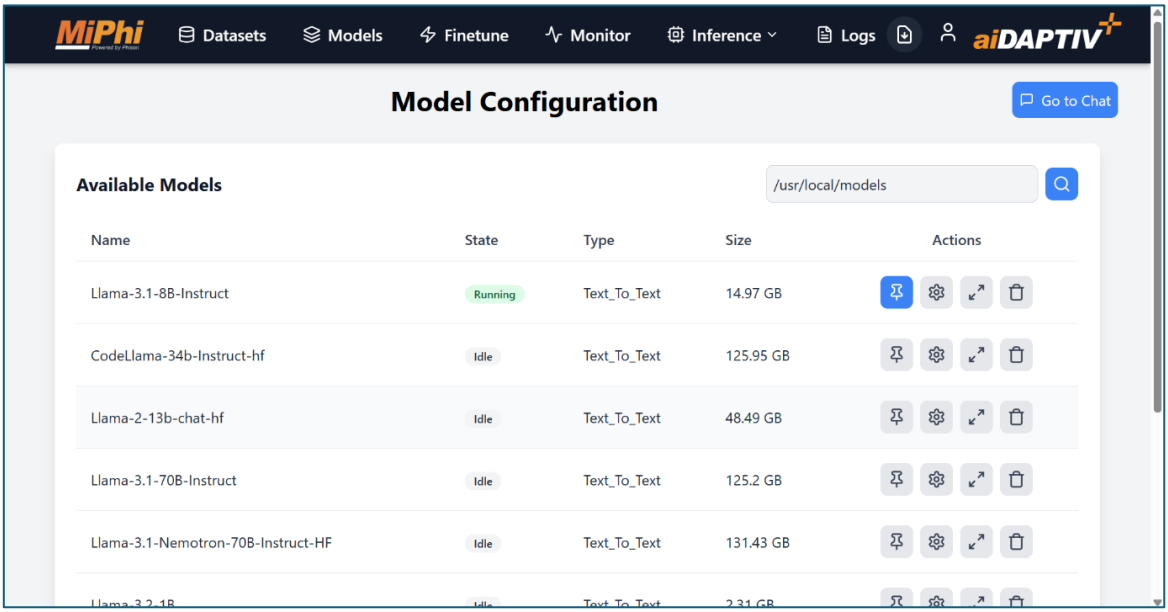


- The selected model will be pinned and appear on the top of the model table. The model is ready for inference.

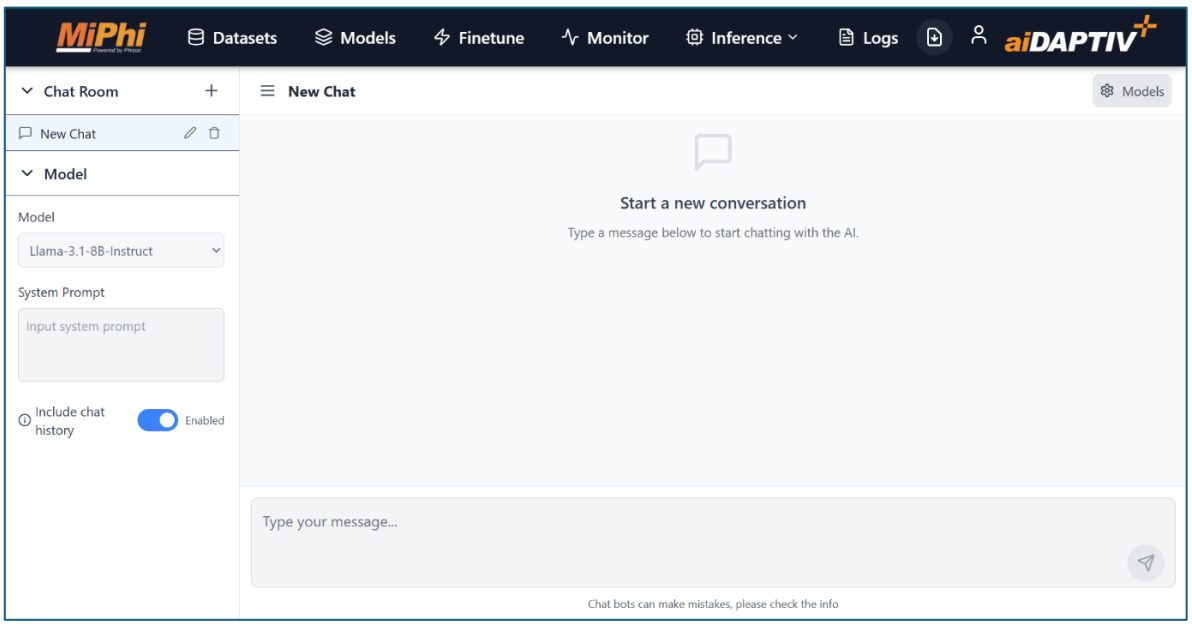


9.1.5 Navigate to Chat Bot

- Click 'Go to Chat' or visit the Chat-Room page to start interacting with the model.

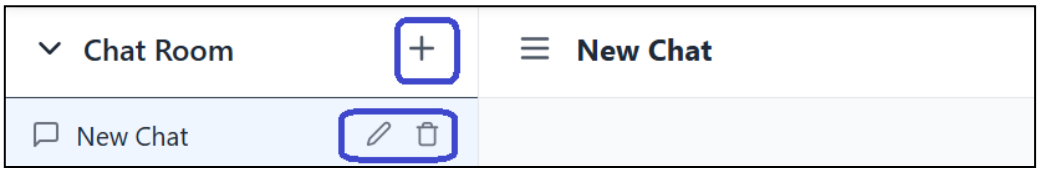


- The chatroom page for inference will appear as below image:



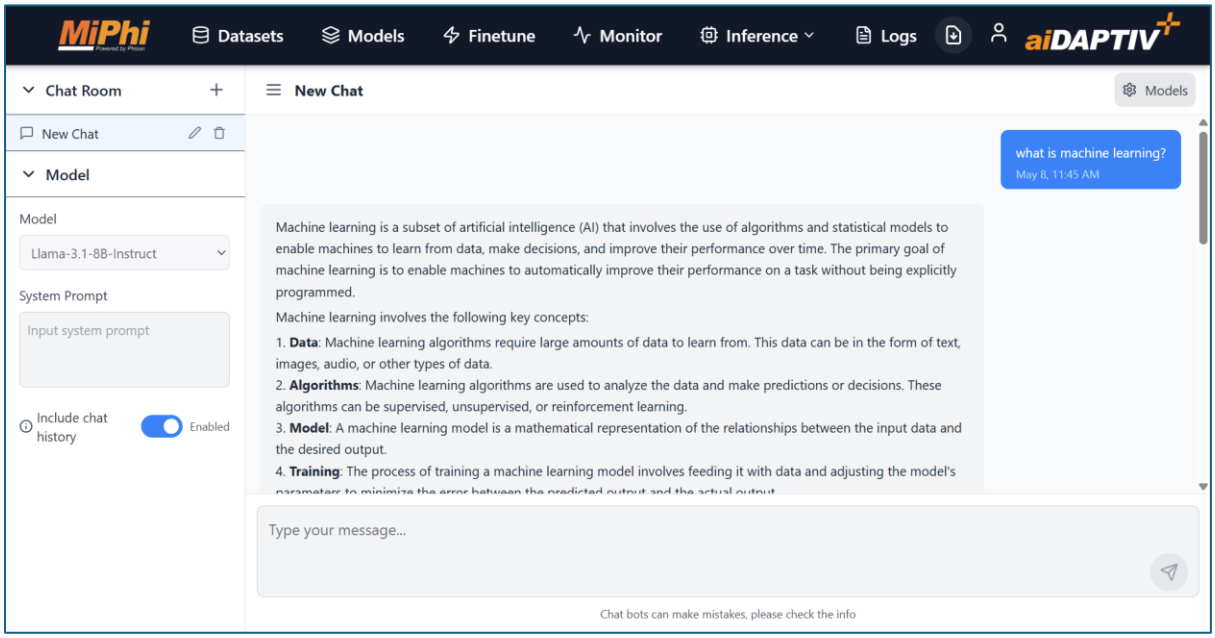
9.1.6 Create New Chat

- You can create separate chat sessions for multiple queries based on requirement for the loaded model by clicking the '+' icon in the Chat Room.
- You can also rename the chat session title or delete the chat session as needed.



9.1.7 Start Your Conversation

All set! You can now start interacting with the model by asking questions or sharing ideas.

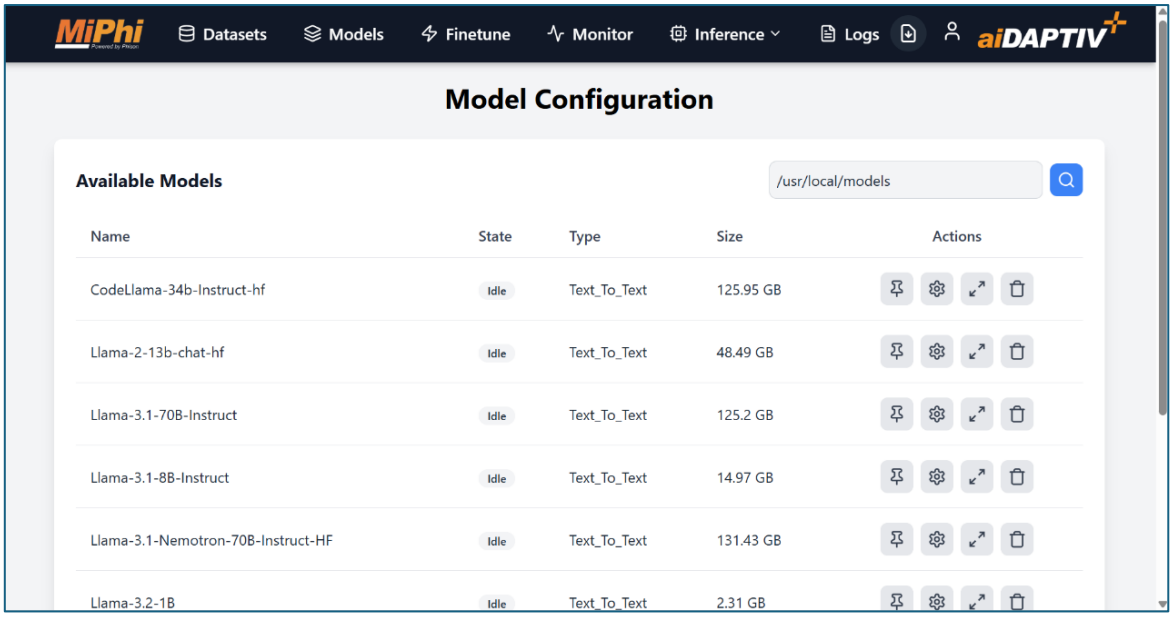


9.2 Model Quantization from GUI

Model quantization is a technique used to reduce the precision of the numbers used to represent a model's parameters, such as weights and activations, from higher precision formats like FP32 (32-bit floating point) to lower precision formats like INT8 (8-bit integer) or even INT4.

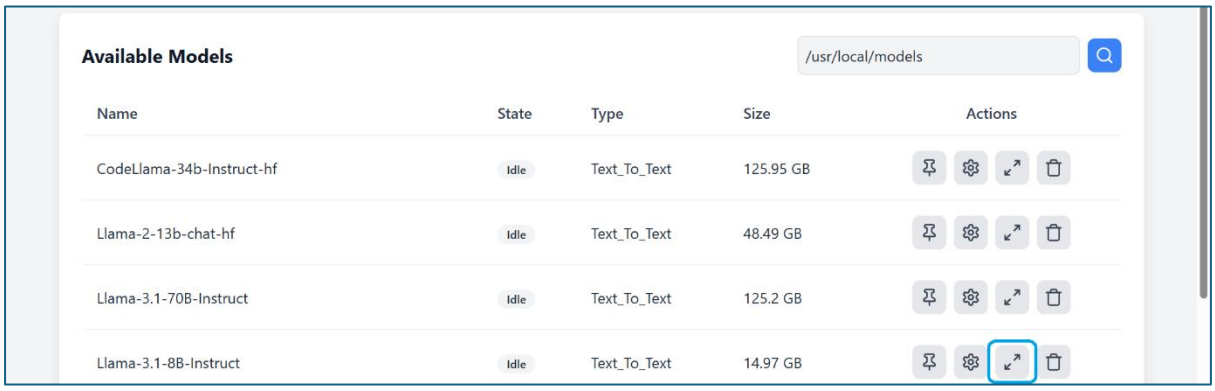
9.2.1 Selecting a model for quantization

- On the Model Configuration page, all available text-to-text generation models are listed based on the model path provided during container creation.

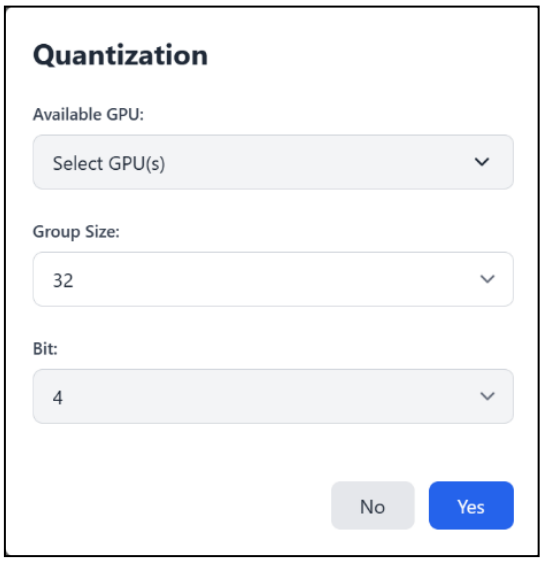


9.2.2 Adjusting Model Parameters for Quantization

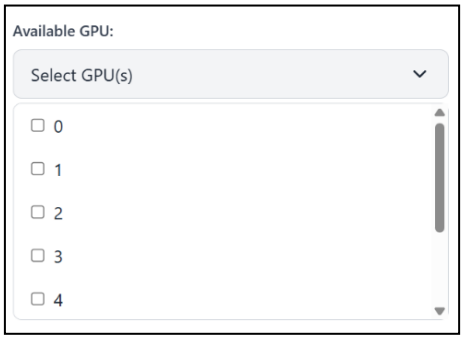
- Click the settings button to adjust model parameters.



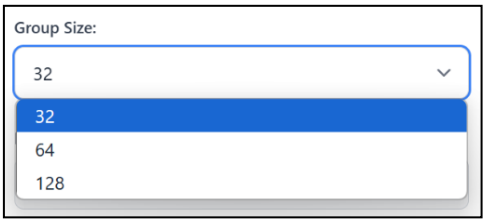
- Now the quantization option box will appear.



- **Adjusting Model Parameters:** You can modify the model's behavior by adjusting the following parameters:
- **Available GPU:** Select specific GPUs from the available list of GPUs you want to use for quantization from the drop-box. You can select one or multiple GPUs.



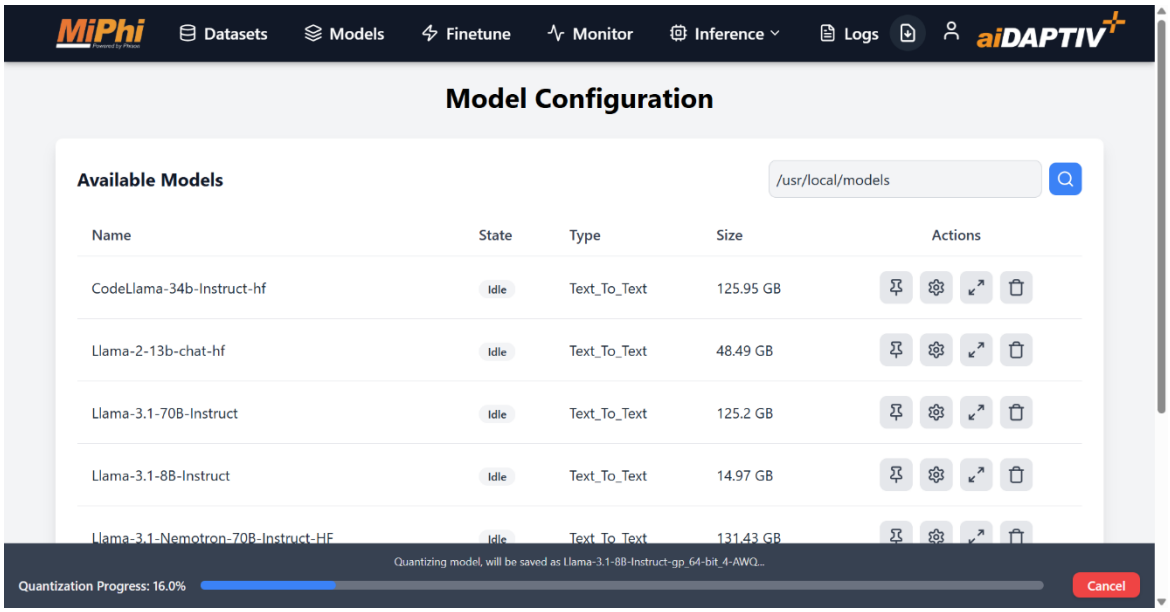
- **Group Size:** It refers to the number of elements that are quantized together as a unit. Select the desired group size for quantization. (default: 32)



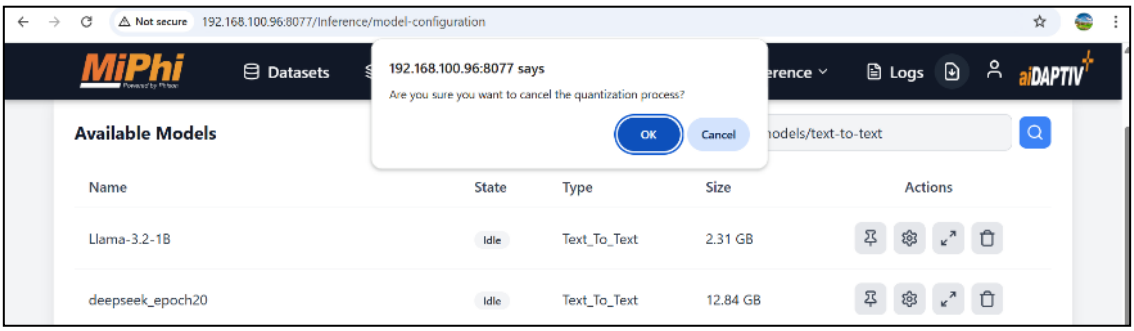
- **Bit:** The bit value to quantize the model in lower precision data. (default: 4)
- After selecting all the options click “Yes” to start model quantization.

9.2.3 Monitor Quantization Progress

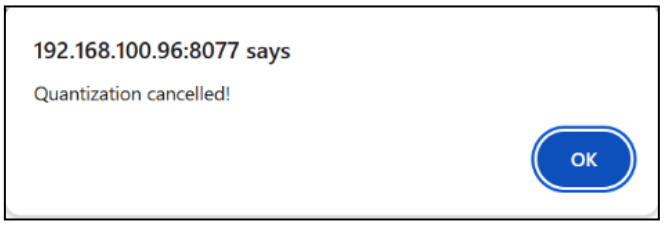
- You will get the below window when the model quantization starts. In the bottom a black progress bar appears**.**



- The progress bar has the following components:
    - Quantization Progress: Left side is the real time progress percentage of model quantization
    - Quantized model path: Central is the quantizing message along with the name of quantized model
    - Cancellation: Right side is having one “Cancel” button to stop quantization. It will show one warning message after clicking “Cancel” to confirm whether you want to stop quantization.



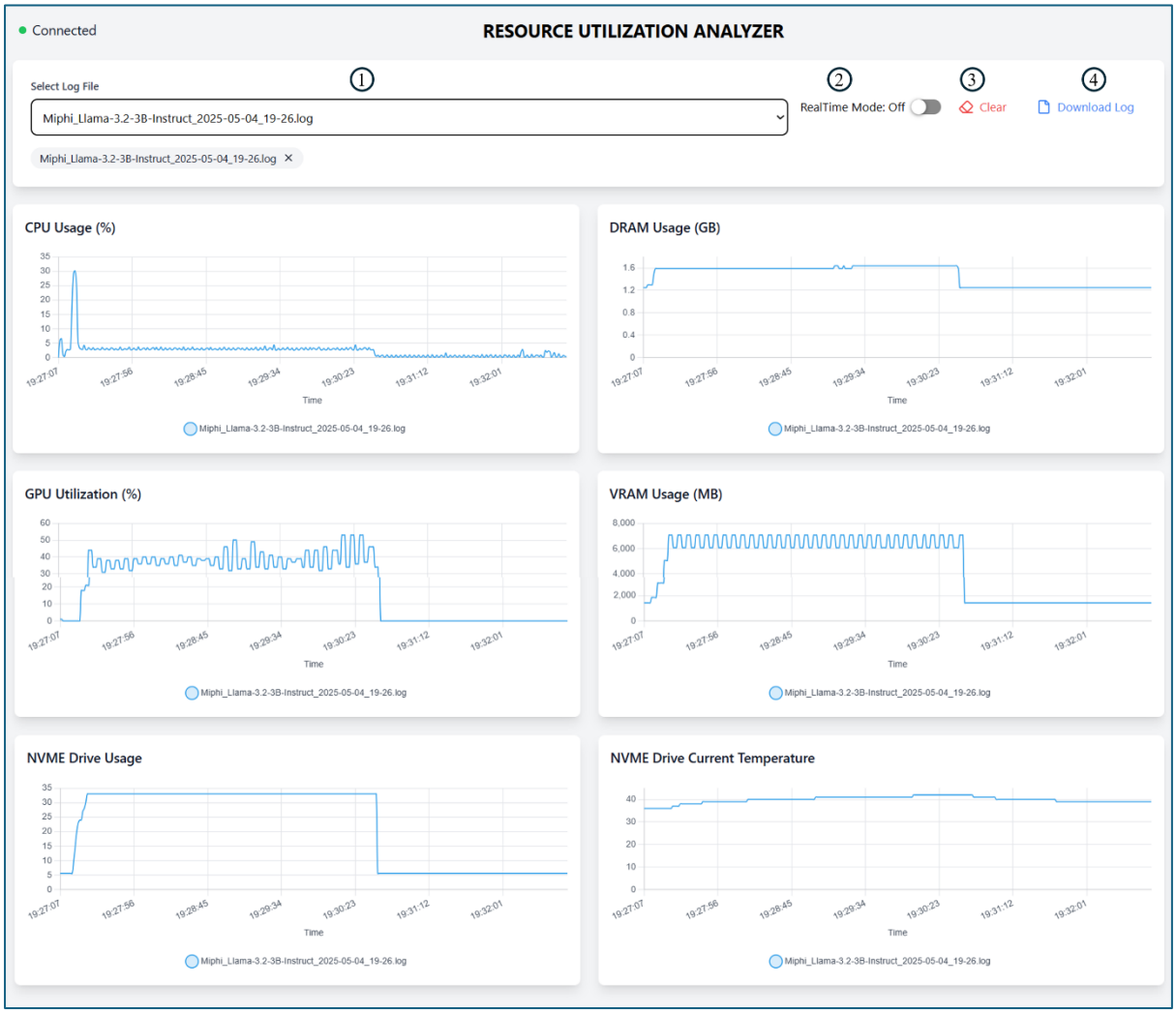
After clicking “OK”, it will cancel quantization and confirmation message will appear.



- When the quantization is completed successfully, the quantized model will appear in the model configuration page of the same directory. The quantized model name is followed by the group size and bit value.

10. MIPHI LOGS OVERVIEW

The **MiPhi Logs** offers a centralized view for monitoring and comparing training performance. Users can select up to six log files to visualize key metrics such as CPU/RAM usage, GPU utilization and VRAM, NVMe usage and temperature, loss vs iteration, iteration time breakdown (forward, backward, update), and overall training efficiency. It includes a comparative summary across all epochs, real-time analysis toggle for active training sessions, and options to download logs or clear selected files—enabling efficient tracking, diagnosis, and comparison of fine-tuning jobs.

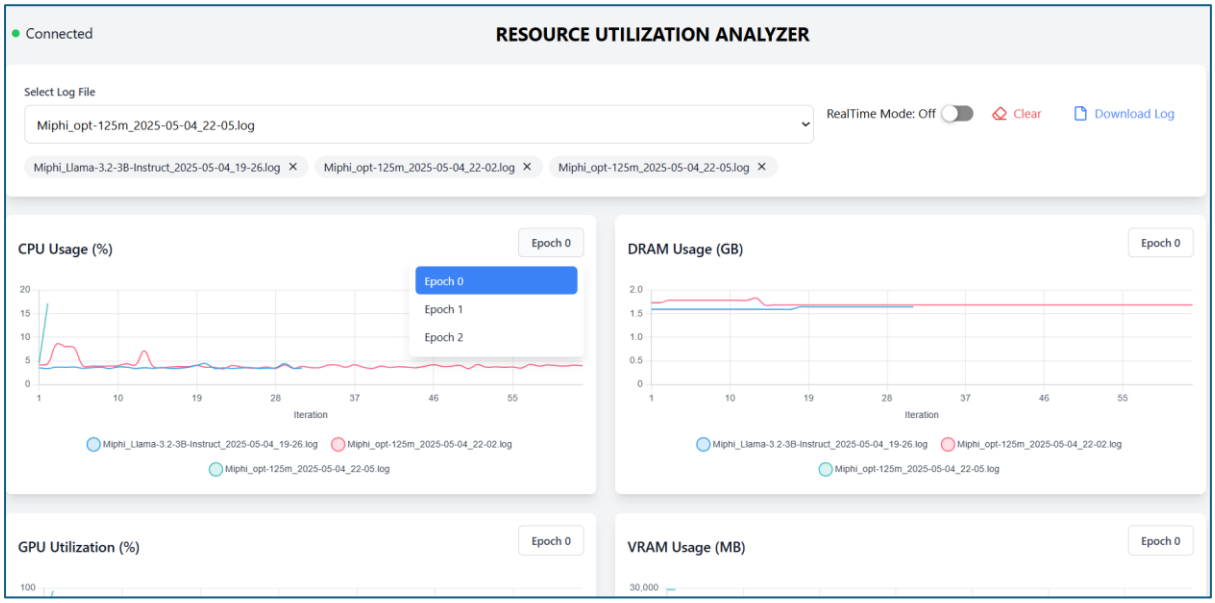


10.1 Log File Selection

This section allows users to select and compare up to six log files simultaneously. Upon selection, the dashboard displays system metrics (CPU usage, RAM usage, GPU utilization, VRAM usage, NVMe usage, and temperature) and training metrics (loss, forward time, backward time, update time, total iteration time, and training efficiency).

- For system metrics, the x-axis represents **time** when viewing a single epoch and **iterations** when comparing across multiple files.
- For training metrics, the x-axis is always **iterations**.

Users can also filter metrics by epoch for focused analysis.



10.2 Real-Time Analysis

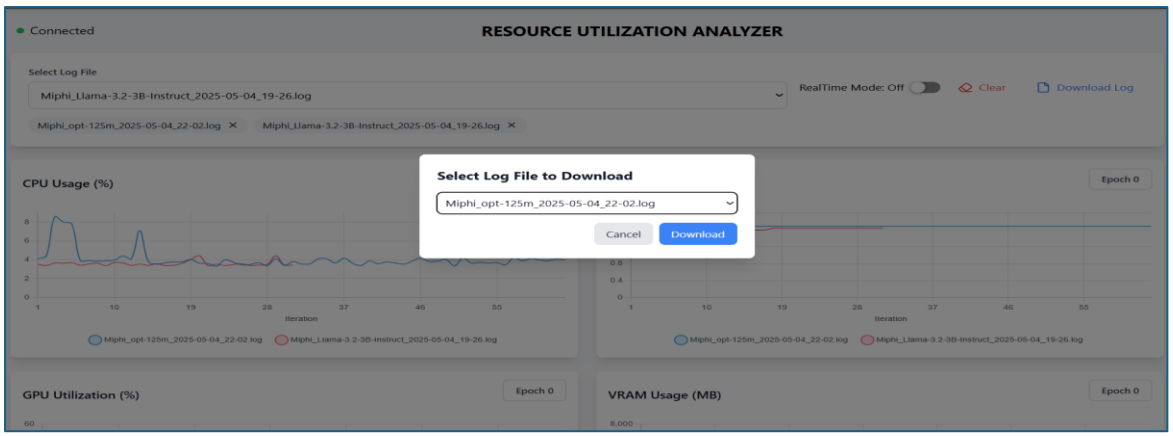
The **Real-Time Analysis** toggle allows users to monitor live system and training metrics during an active fine-tuning process. When enabled, it dynamically fetches and updates graphs in real time, providing up-to-date insights into performance, resource usage, and training behavior. This feature is only active when the selected training process is currently running.

10.3 Clear Selection

The **Clear** button allows users to quickly remove all selected log files from the comparison view. This feature helps reset the interface, enabling users to start a new selection without manually deselecting each file.

10.4 Download Logs

The **Download Logs** button allows users to export detailed log files for further analysis or archival. When a single file is selected, clicking the button downloads a ZIP archive named after the corresponding **Job ID**. This archive includes system metrics logs, dmesg logs, fine-tuning logs, execution logs for each page, and API logs.



If multiple log files are selected, the interface prompts the user to choose a specific file for download. This ensures precise access to the desired logs without downloading unnecessary data.