



LAMBDA User Manual

Data Analysis AI Agent System

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1 About This Manual

This manual introduces the main features of LAMBDA and the recommended user workflow. Each feature section includes a screenshot placeholder so that screenshots can be added later to create a complete illustrated guide.

1.1 About LAMBDA

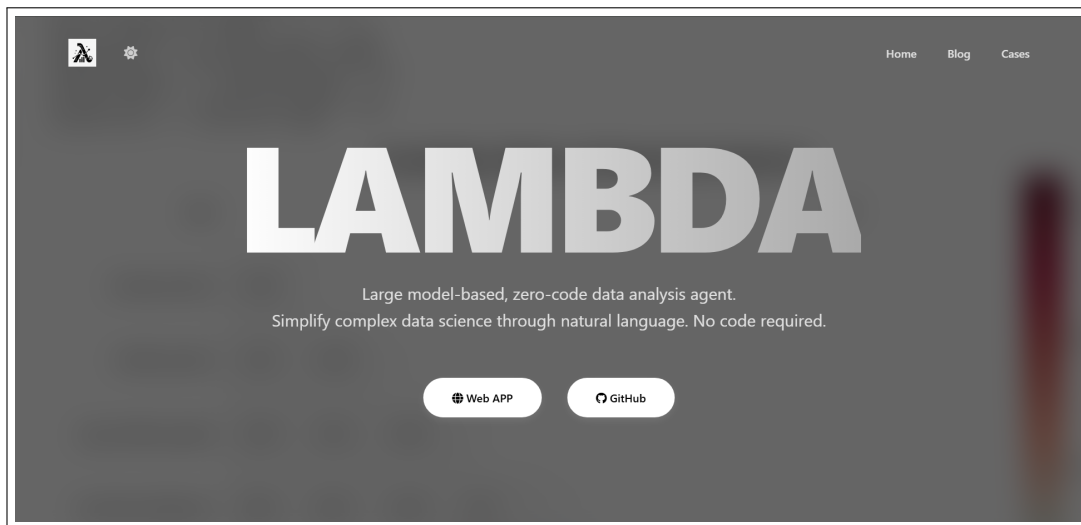
LAMBDA is a large model-based, zero-code data analysis agent system. It helps users complete data science tasks through natural-language interaction, from understanding uploaded data and planning an analysis to generating code, visualizations, reports, slides, and other deliverables.

LAMBDA is designed for researchers, students, and general users who want to work with data without having to manually write every line of code. It combines large-model reasoning with tools for file processing, statistical analysis, visualization, and document generation, while keeping the analysis process and generated files available for review.

Related LAMBDA publications and research are listed in References [1–5].

1.2 Intended Audience

- General users: register, log in, upload files, submit analysis tasks, review results, and download outputs.
- Researchers and students: use LAMBDA for exploratory data analysis, statistical analysis, visualization, report writing, and slide generation.



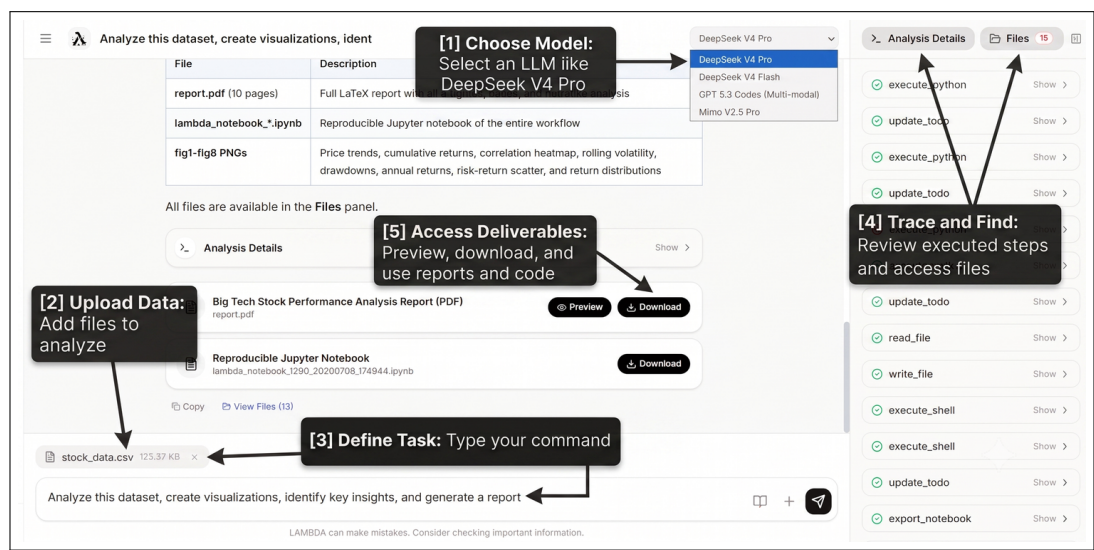
Manual cover or LAMBDA home page

2 Quick Start

2.1 Recommended Workflow

1. Register or log in to your account.
2. Select a model on the home page, or use the default model.
3. Upload a dataset, document, image, or compressed archive, or start from an example dataset.
4. Describe the task, for example: “Analyze this dataset, create visualizations, identify key insights, and generate a report.”
5. Review the final answer in the chat area, and inspect analysis details and generated files on the right panel.

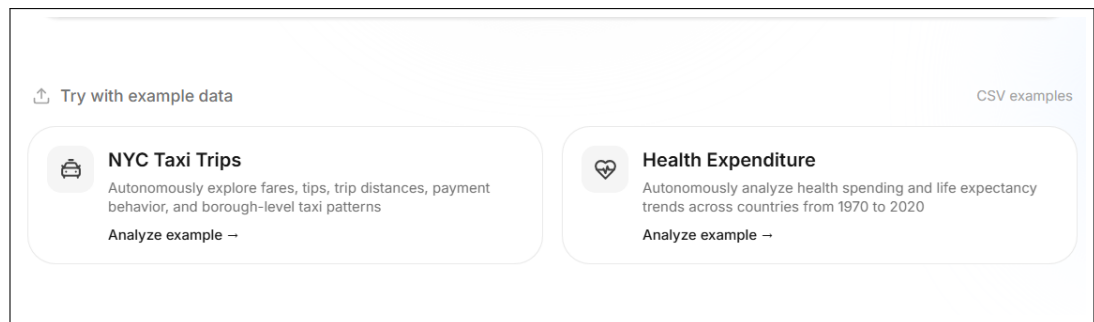
6. Preview, download, or package generated reports, figures, code, and other deliverables.



End-to-end workflow overview

2.2 Typical Tasks Supported

- Data cleaning, data profiling, descriptive statistics, and exploratory data analysis.
- Visualization generation, including trends, distributions, correlations, and group comparisons.
- Statistical analysis, model building, interpretation, and methods documentation.
- Automatic generation of PDF reports, PowerPoint slides, code files, tables, and figures.
- Reading and analyzing uploaded files such as CSV, Excel, Word, PDF, images, and zip archives.
- Connecting to GitHub repositories to help read, generate, or upload project files.



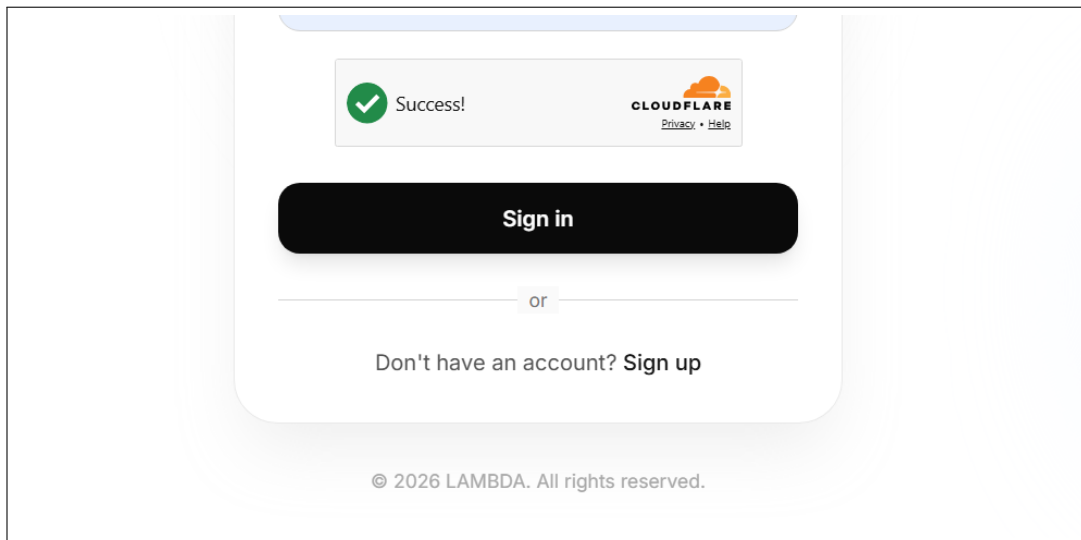
Example tasks or example datasets on the welcome page

3 Account Registration

3.1 Open the Registration Page

Feature	Create a new LAMBDA user account
Use case	Use this when you are using LAMBDA for the first time or need a separate account for your email address.

Open the LAMBDA website in your browser and use the registration entry from the login page.

*Registration entry*

3.2 Fill in Registration Information

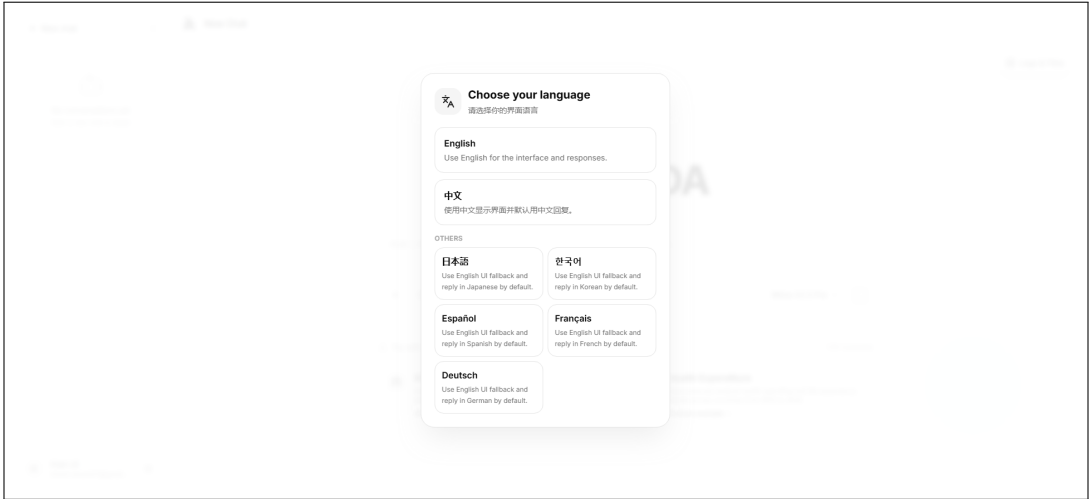
The registration form usually includes name, email, password, and password confirmation. If invite code or human verification is enabled, follow the prompts shown on the page.

1. Enter your name or display name.
2. Enter your email address.
3. Set and confirm your password.
4. If Cloudflare Turnstile is shown, wait until verification completes.
5. Click the registration button to create the account.

A screenshot of a registration form. The form is centered on a light blue background. It contains several input fields: "Full Name (optional)" with a person icon and the text "John Doe"; "Email" with an envelope icon and the text "you@example.com"; "Password" with a lock icon and masked characters "*****", with a small note below: "Use at least 8 characters with both letters and numbers."; "Confirm Password" with a lock icon and masked characters "*****"; "Invitation Code (optional)" with a link icon and the text "Enter invitation code if you have one", with a note below: "Optional. If provided, the invitation code must be valid."; "Email Verification Code" with an envelope icon and the text "Enter 6-digit code", with a "Send code" link to its right. At the bottom of the form is a green checkmark icon followed by the text "Success!". Below this is a black button with the text "Create account" in white.*Registration form*

3.3 First-login Language Preference

After the first login, LAMBDA may ask you to choose an interface language. This preference controls front-end text such as buttons, menus, and notifications. LAMBDA's answer language usually follows the language used in your prompt.



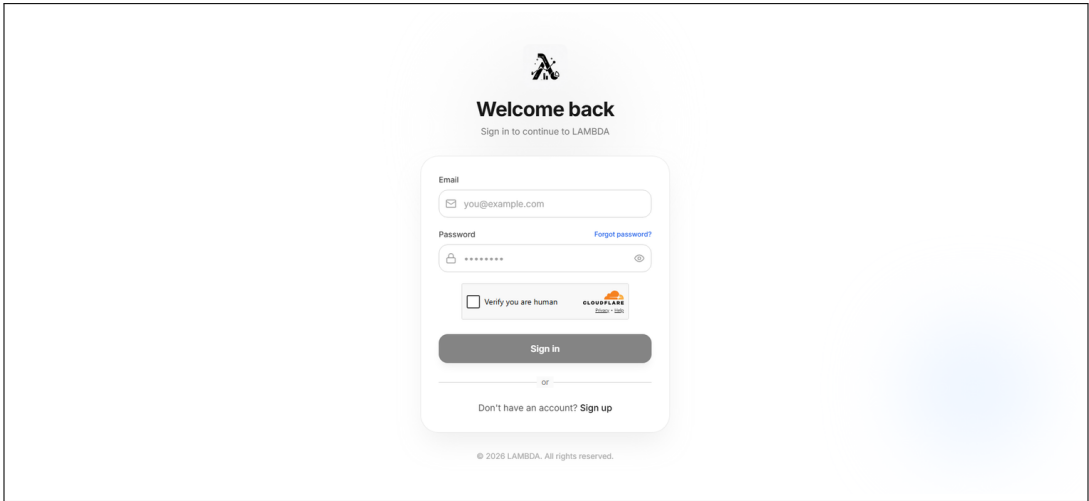
First-login language preference dialog

4 Login

4.1 Standard Login

Feature	Enter your personal LAMBDA workspace
Use case	Use this after an account has already been created.

1. Open the login page.
2. Enter your email and password.
3. Complete human verification if it appears.
4. Click the login button.



Login page

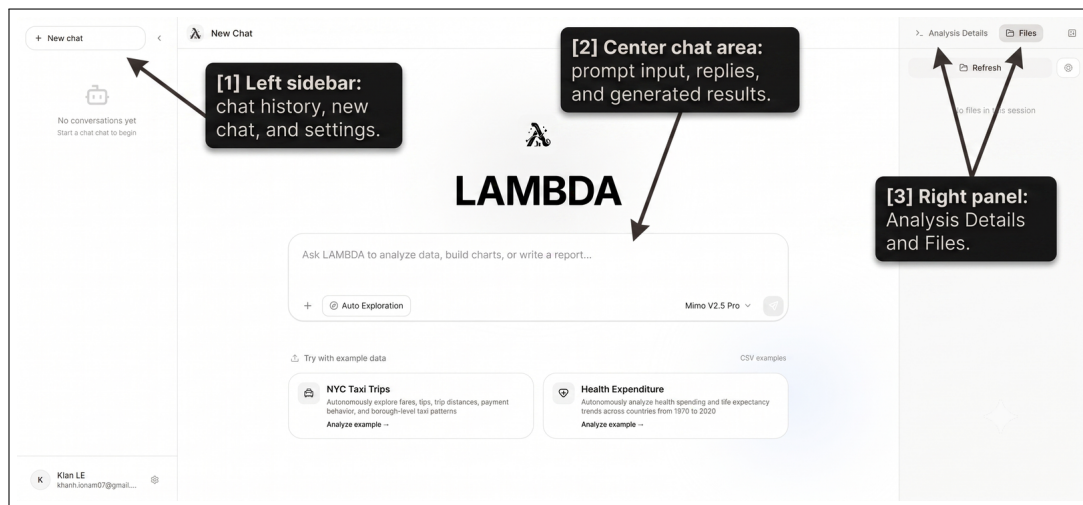
5 Home Page and New Chat

5.1 Home Page Layout

After login, you enter the LAMBDA main workspace. It usually contains:

- Left sidebar: chat history, new chat, and settings.

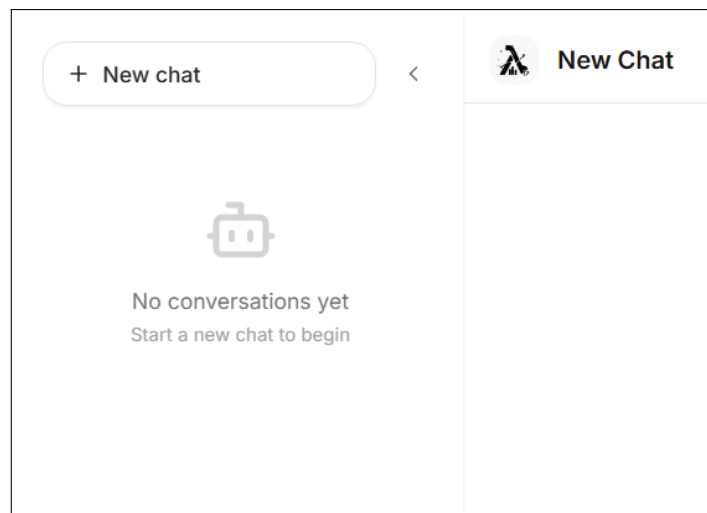
- Center chat area: prompt input, replies, and generated results.
- Right panel: Analysis Details and Files.



Home page layout

5.2 Create a New Chat

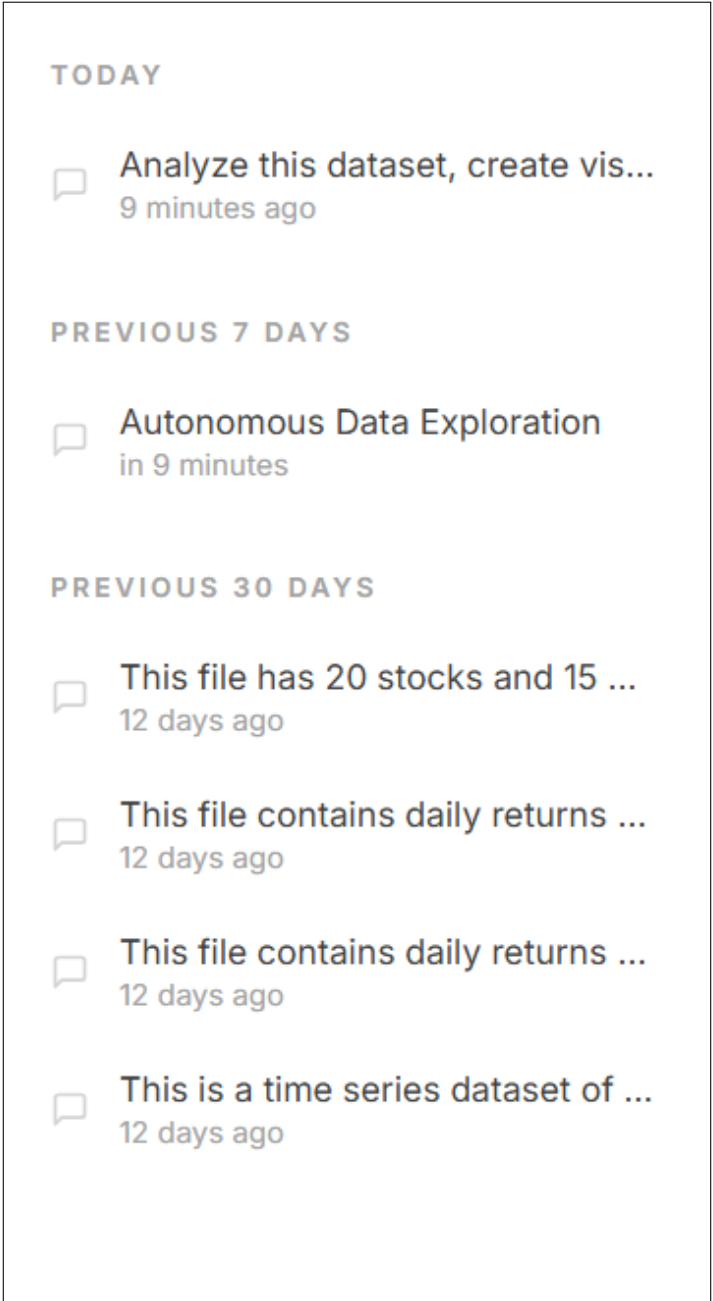
Click New Chat in the left sidebar to start a separate analysis session. A new chat has its own context, uploaded files, generated files, and conversation history.



New Chat button

5.3 Chat History

Chat History is grouped by time. Click any conversation to reopen it. Running tasks may show a running indicator.



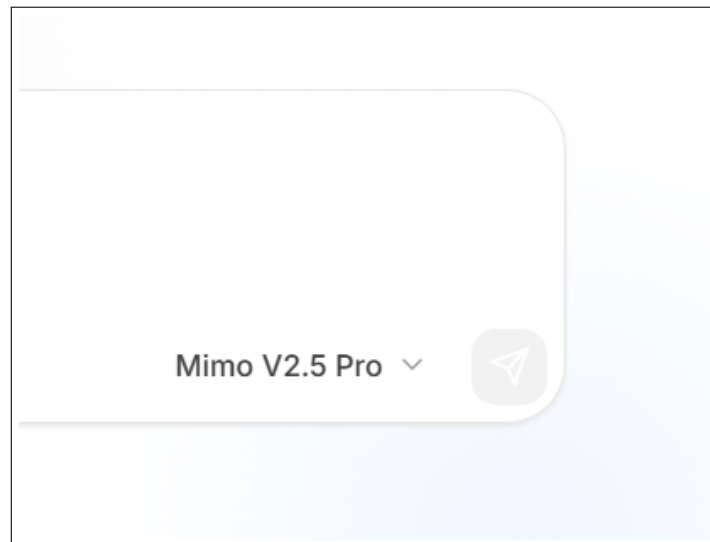
Chat History list

6 Model Selection

6.1 Where to Select a Model

Feature	Choose the AI model for the current task
Use case	Models may differ in speed, cost, stability, reasoning ability, and multimodal capability.

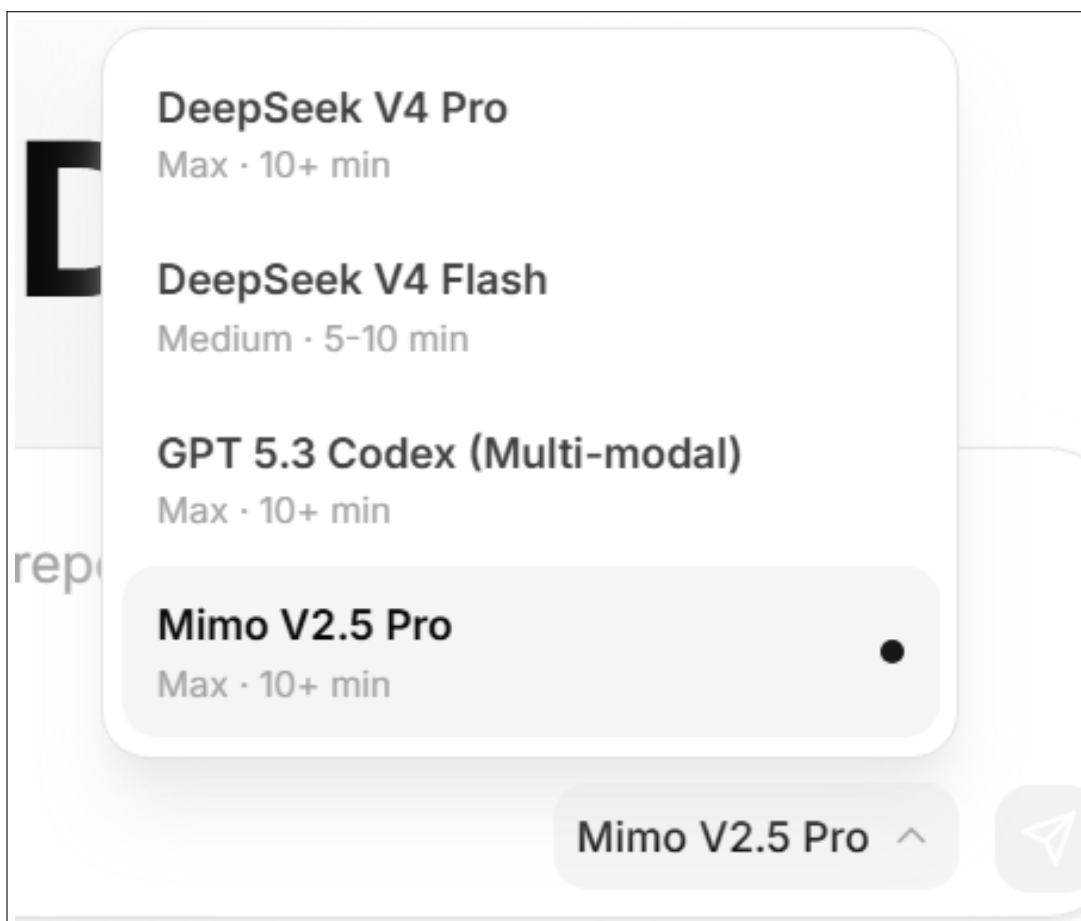
You can select a model from the home page or the top area of a chat page. If a model name includes “Multi-modal”, it supports image understanding and related multimodal workflows.



Model selector

6.2 Model Selection Tips

- General data analysis: use the default model.
- Complex reports, code, or reasoning tasks: use a stronger Pro or advanced model.
- Image interpretation or chart reading: select a model marked as Multi-modal.
- If the model is temporarily unavailable or the system is busy, retry later or switch models.



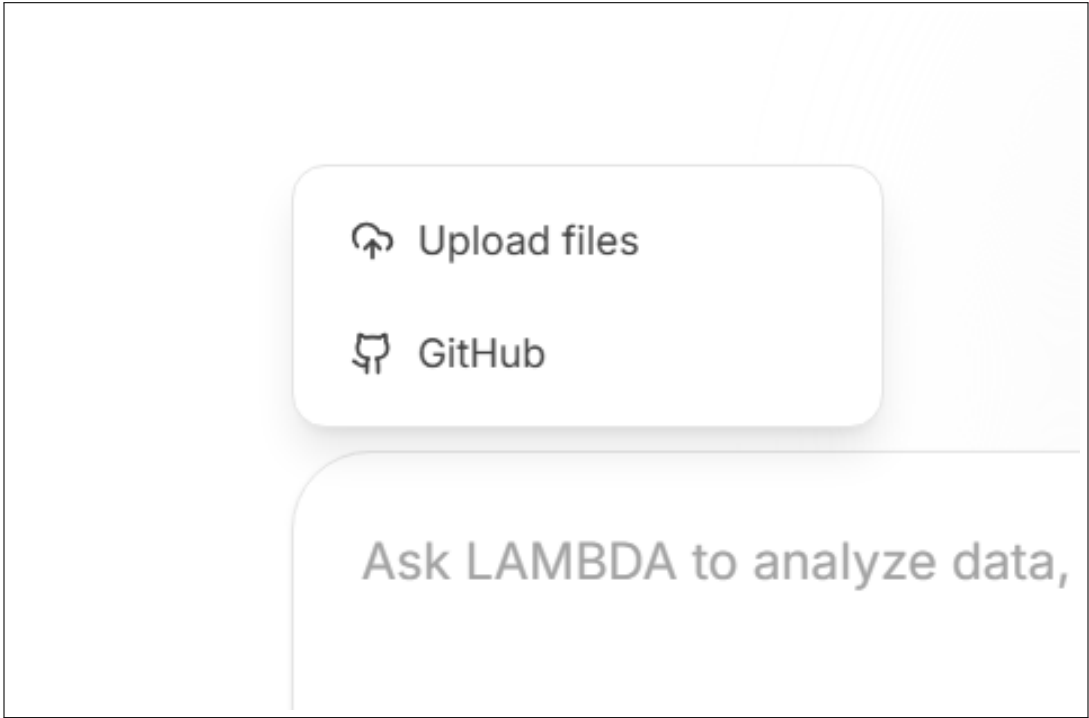
Model list and multimodal labels

7 File Upload

7.1 Upload from the Chat Input

Feature	Provide data or documents for LAMBDA to analyze
Use case	Use this for local datasets, documents, images, zip archives, and spreadsheets.

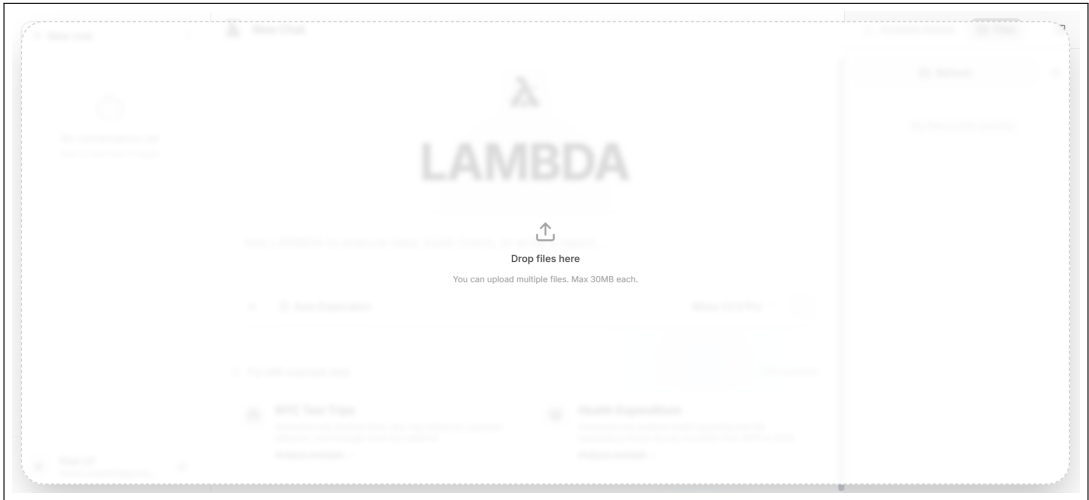
Click the add or upload button next to the chat input, choose local files, verify the pending file list, then type your request and send it.



Upload files from the chat input

7.2 Drag-and-drop Upload

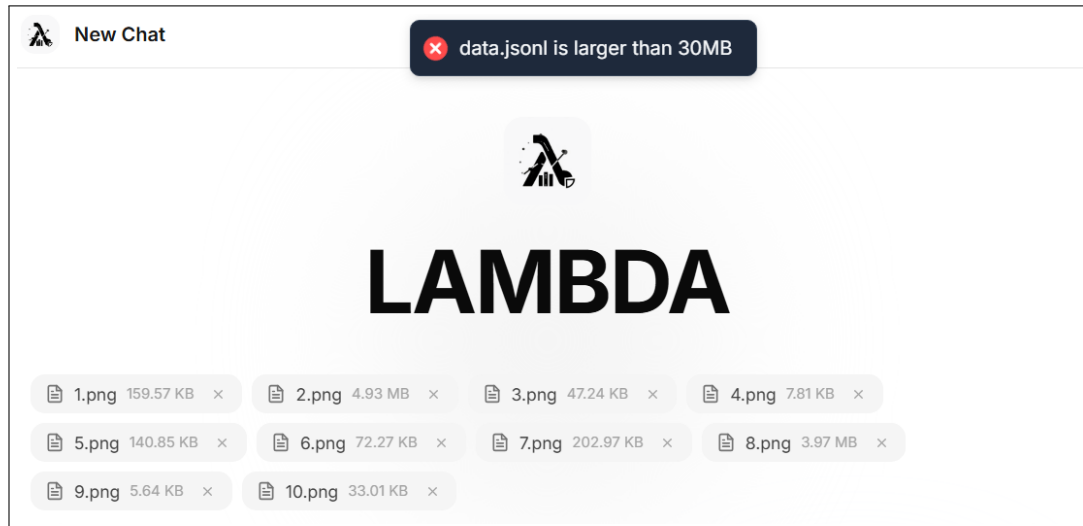
You can drag files directly onto the home page or chat input area. Dropped files are added to the pending upload list.



Drag-and-drop upload

7.3 Upload Limits and Recommendations

- The typical single-file size limit is 30 MB.
- For security reasons, executable programs and script files may be blocked.
- Chinese filenames, zip archives, and Office files are generally supported. If an encoding issue appears, describe the expected filename or content language in your prompt.
- For multiple related files, zip them together and explain how LAMBDA should process them.

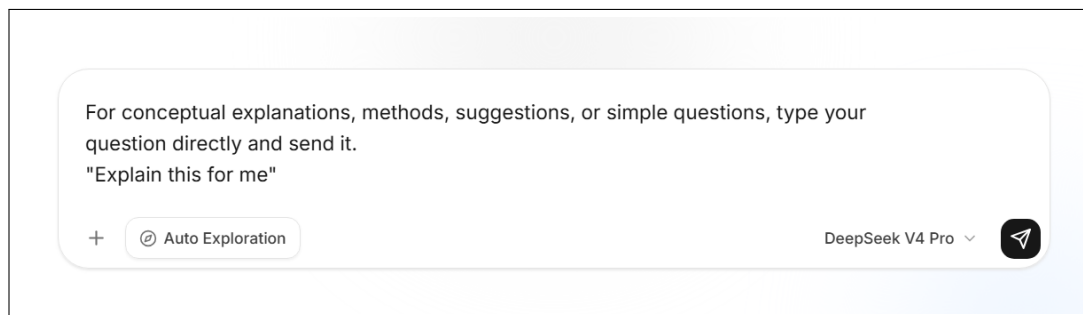


Pending uploaded files

8 Submitting Analysis Requests

8.1 General Questions

For conceptual explanations, methods, suggestions, or simple questions, type your question directly and send it.

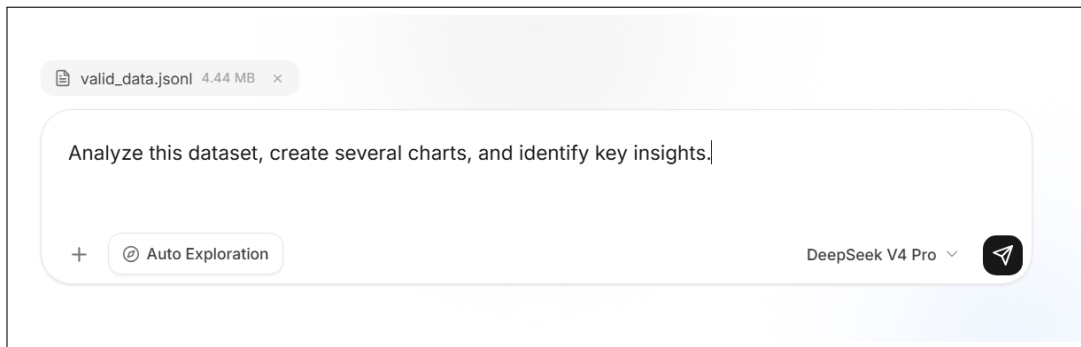


General text prompt

8.2 Data Analysis Requests

After uploading data, describe the goal in natural language. Examples:

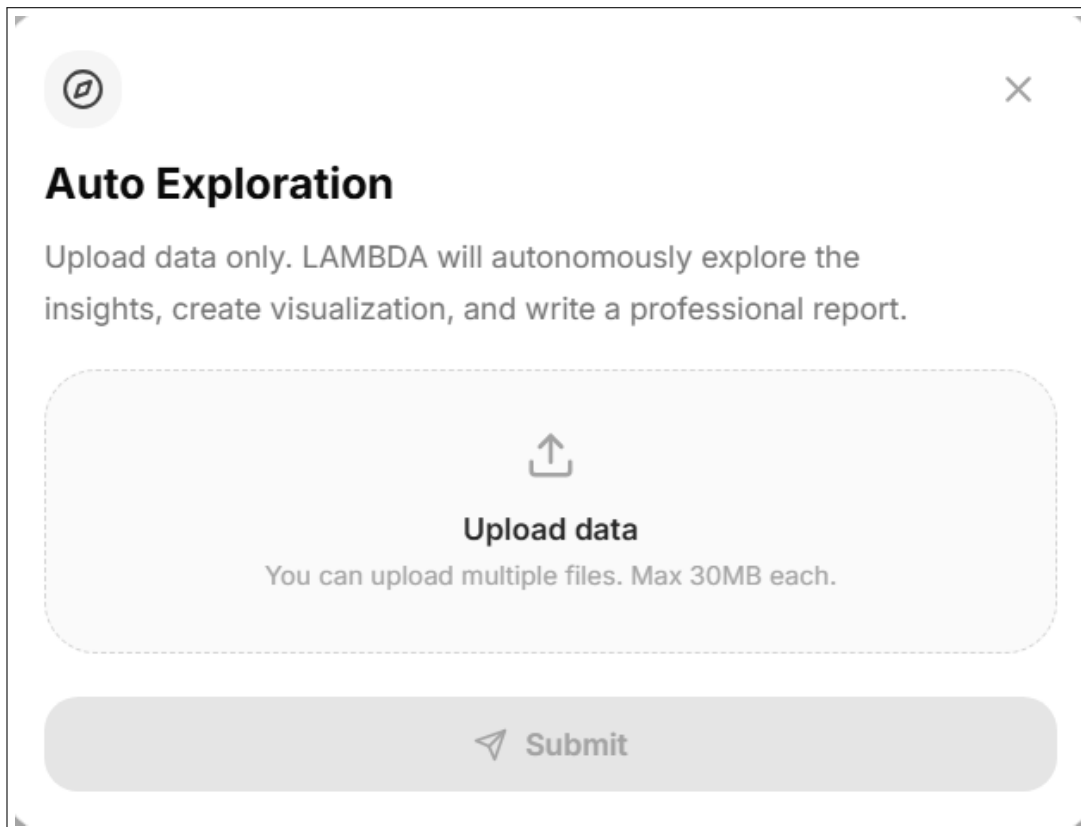
- “Analyze this dataset, create several charts, and identify key insights.”
- “Apply the statistical method described in the paper to the attached matrix.”
- “Generate a complete PDF report and include reproducible code.”
- “Turn the findings into a PowerPoint presentation.”



Data analysis prompt with files

8.3 Autonomous Exploration Mode

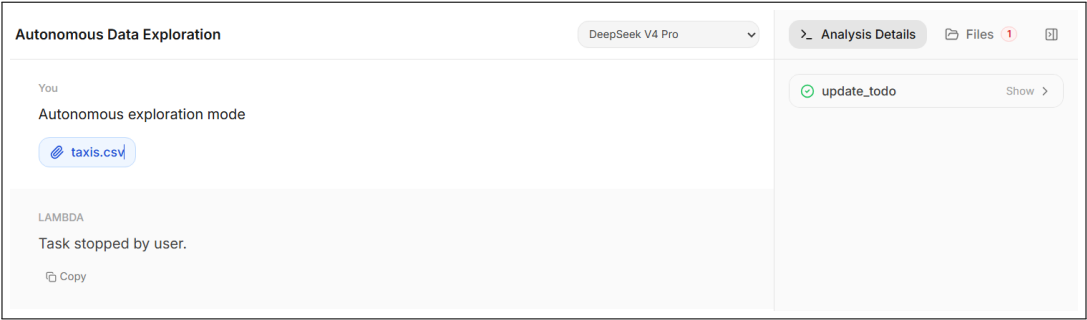
The home page provides Autonomous Exploration and example dataset entries. This mode is useful when you want LAMBDA to complete a full workflow, including exploratory analysis, visualization, report generation, and deliverable display.



Autonomous Exploration entry

8.4 Stop a Running Task

When a task is running, you can click the stop button. LAMBDA will try to preserve partial outputs and generated files so you can continue or retry.



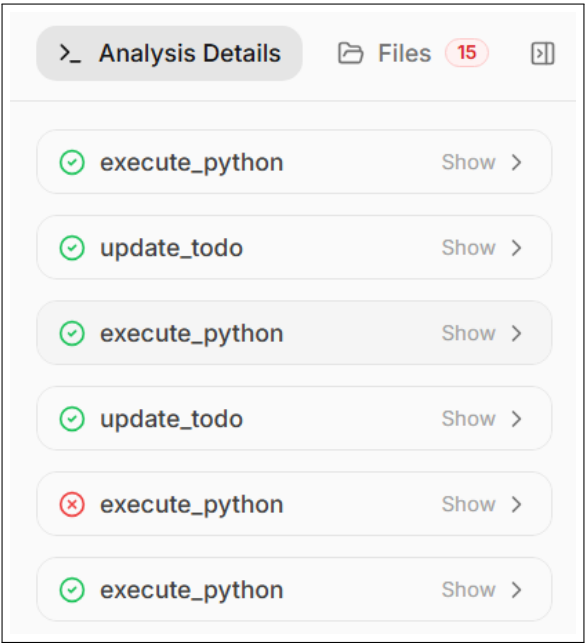
Stop task button

9 Reviewing the Analysis Process

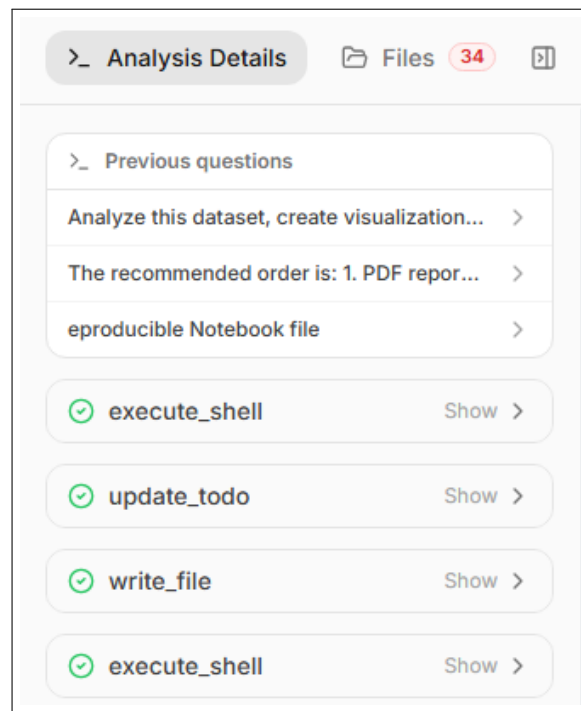
9.1 Analysis Details

Feature	Inspect LAMBDA’s execution process
Use case	Use this to review code, shell commands, file operations, tool calls, warnings, errors, and intermediate outputs.

The right-side Analysis Details panel shows the execution steps for the current analysis. You can expand or collapse individual steps.

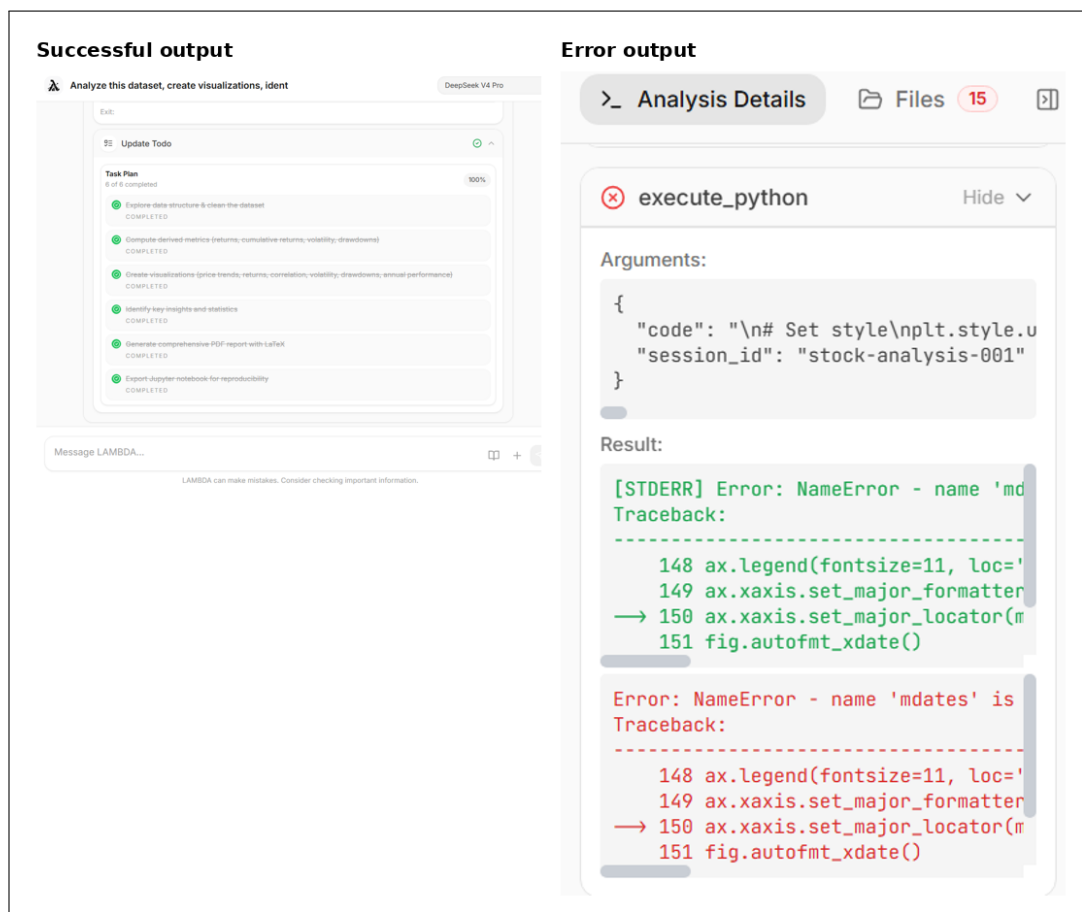


Analysis Details panel

*Archived analysis details*

9.2 Common Execution Outputs

- Successful output: code results, statistical tables, generated file messages, and summaries.
- Warning: runtime notices that may or may not affect the result.
- Error: script, model, or file-processing failures that need correction or retry.



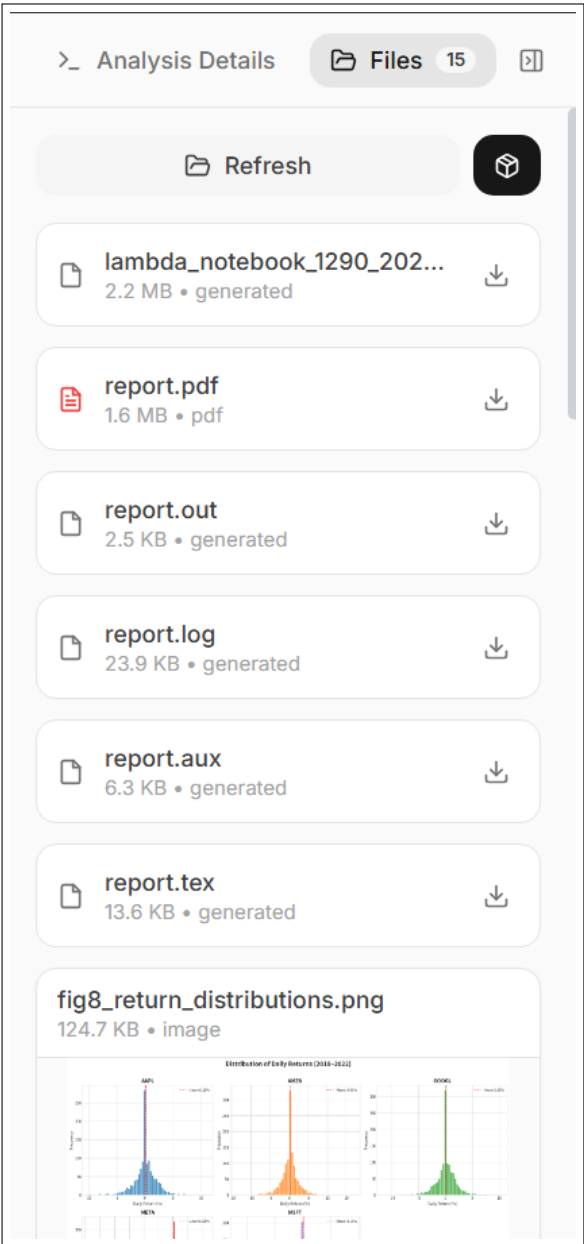
Successful output, warning, and error examples

10 Generated Files and File Management

10.1 Files Panel

Feature	View uploaded and generated files
Use case	Use this to access reports, figures, code, tables, slides, and archives.

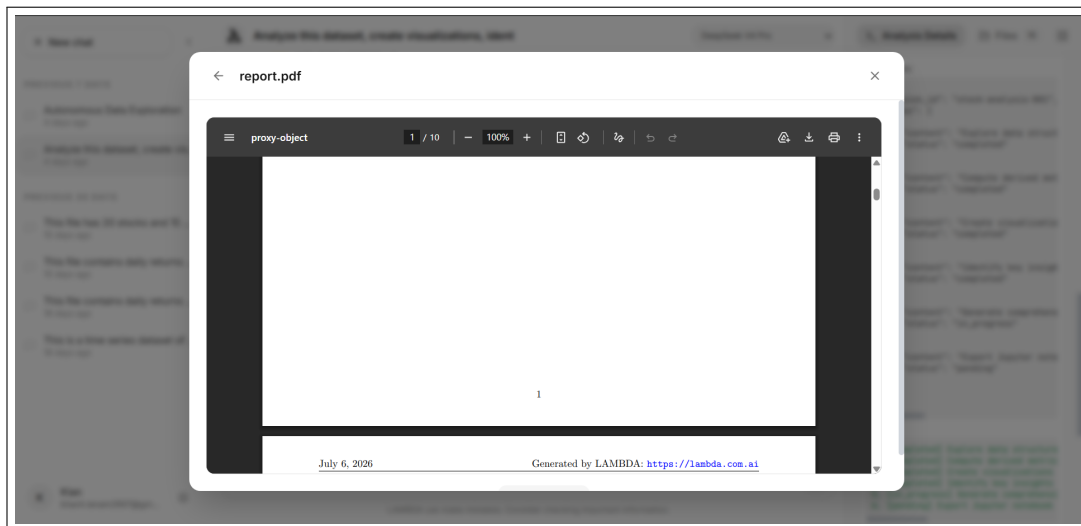
The Files panel lists files associated with the current chat. A file-count badge can indicate that new files have been generated.



Files panel and file count badge

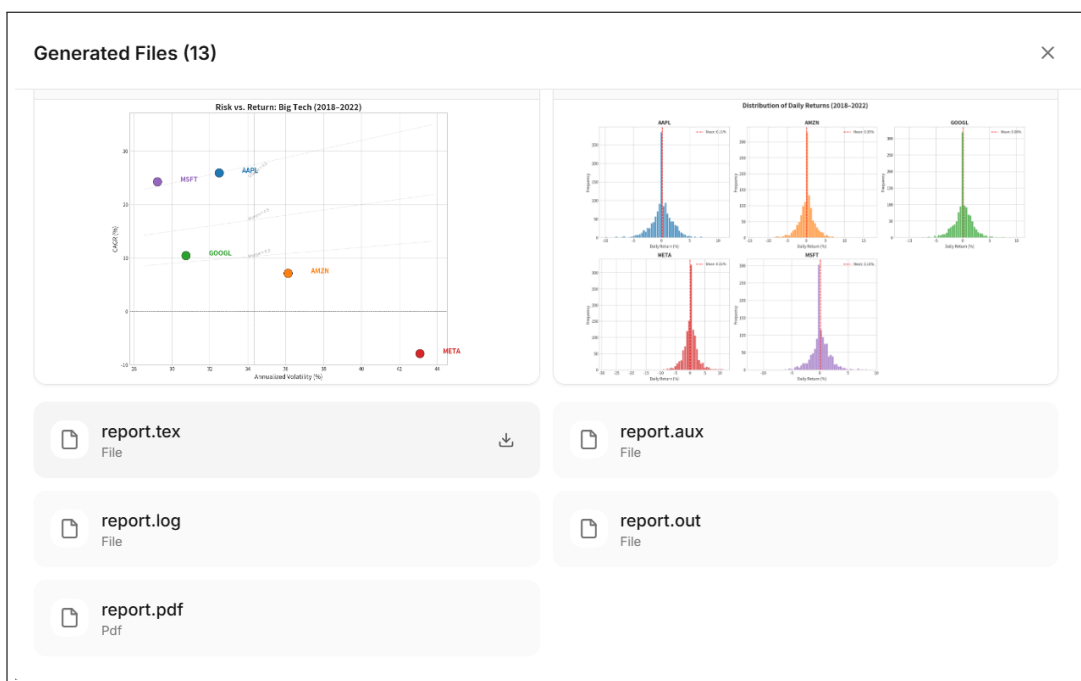
10.2 Preview Files

For supported files such as images, PDFs, and Markdown, click Preview to open a modal preview. Preview does not directly download the file.

*File preview modal*

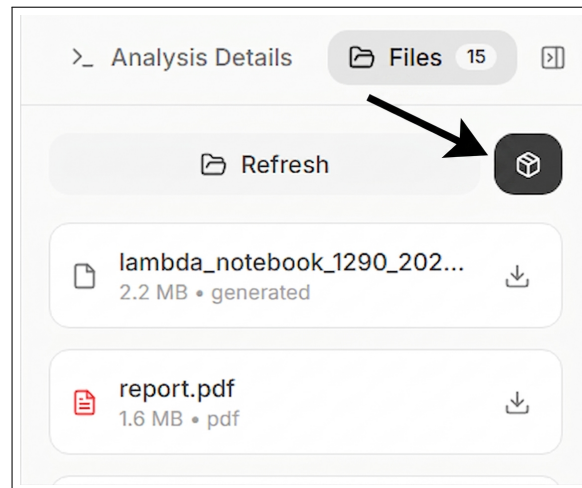
10.3 Download Files

Click Download to download an individual file. For slides, code, spreadsheets, and other non-preview files, the download button should trigger the browser download flow.

*Single file download button*

10.4 Package Download

The Files panel can package all files in the current chat into a zip archive for one-click download.

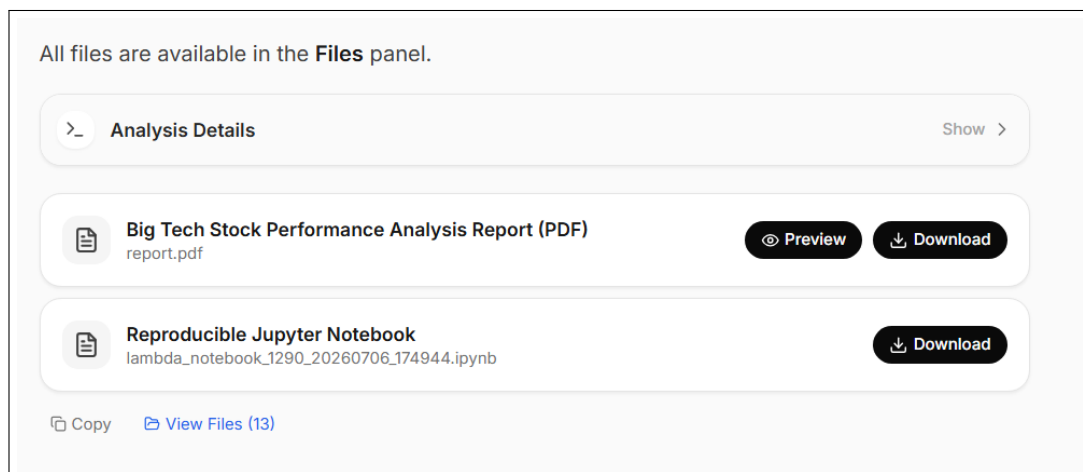


Package download button

11 Highlighted Deliverables

11.1 Display Files Area

When LAMBDA generates important deliverables such as reports, slides, figures, or code, it may highlight them under the final response for quick access.

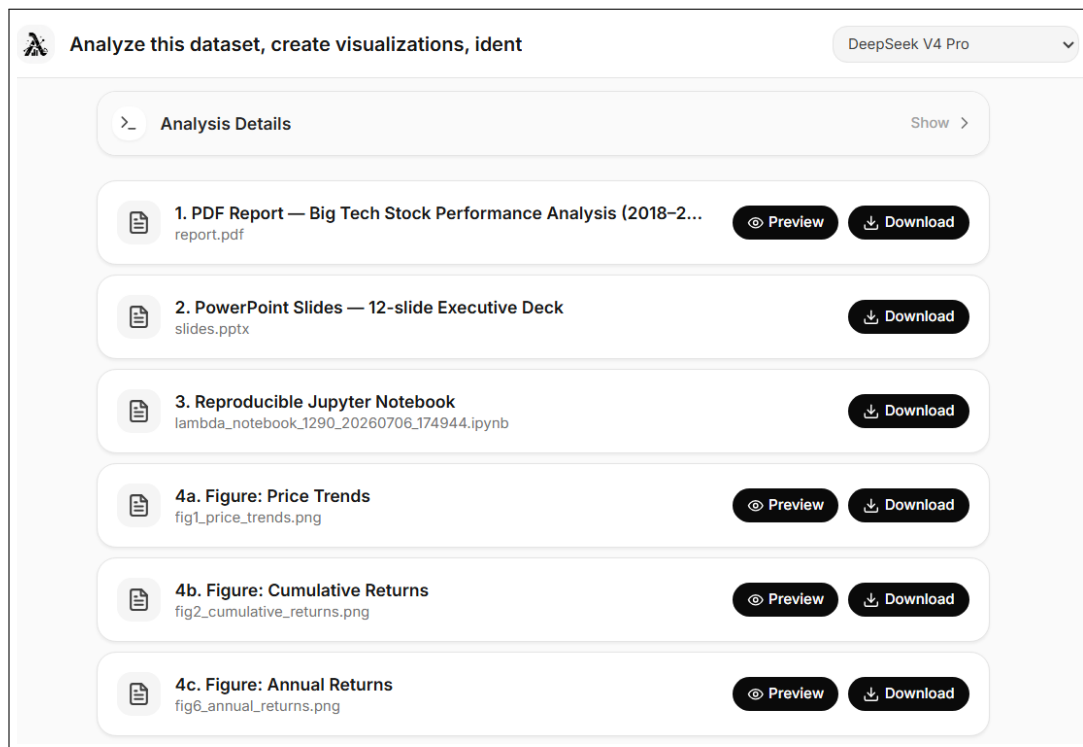


Display Files under the final response

11.2 Recommended Deliverable Order

The recommended order is:

1. PDF report or main report file.
2. PowerPoint slides.
3. Reproducible code or Notebook.
4. Key figures, tables, and supporting files.

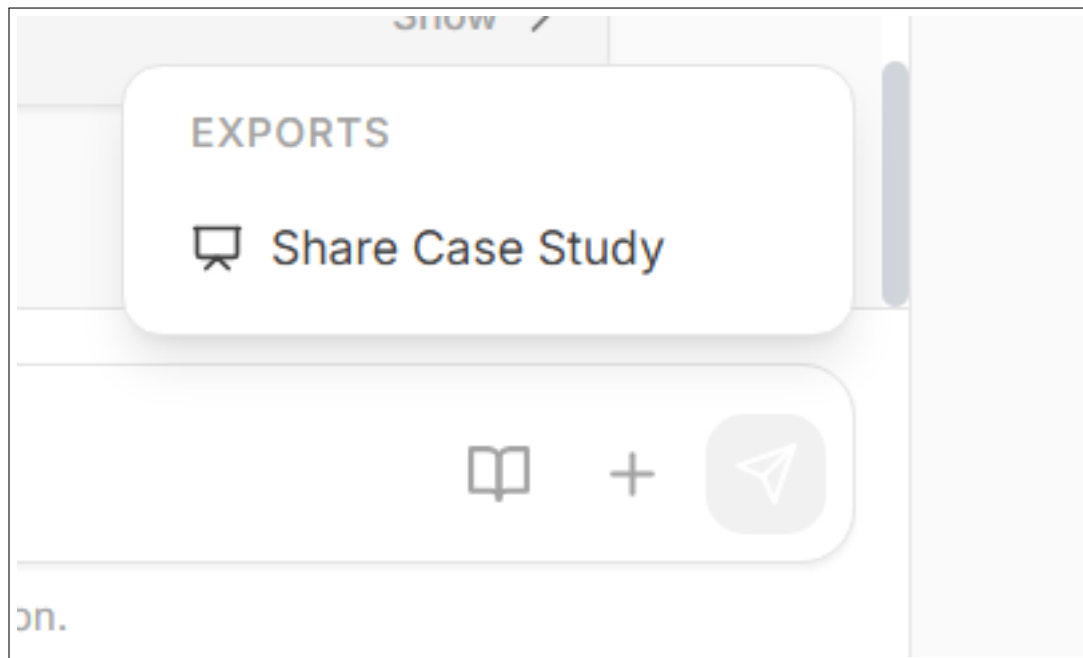


Report, Notebook, and figure display order

12 Export Features

12.1 Export Case Study

If a conversation is suitable for reuse or public presentation, export it as a Case Study.



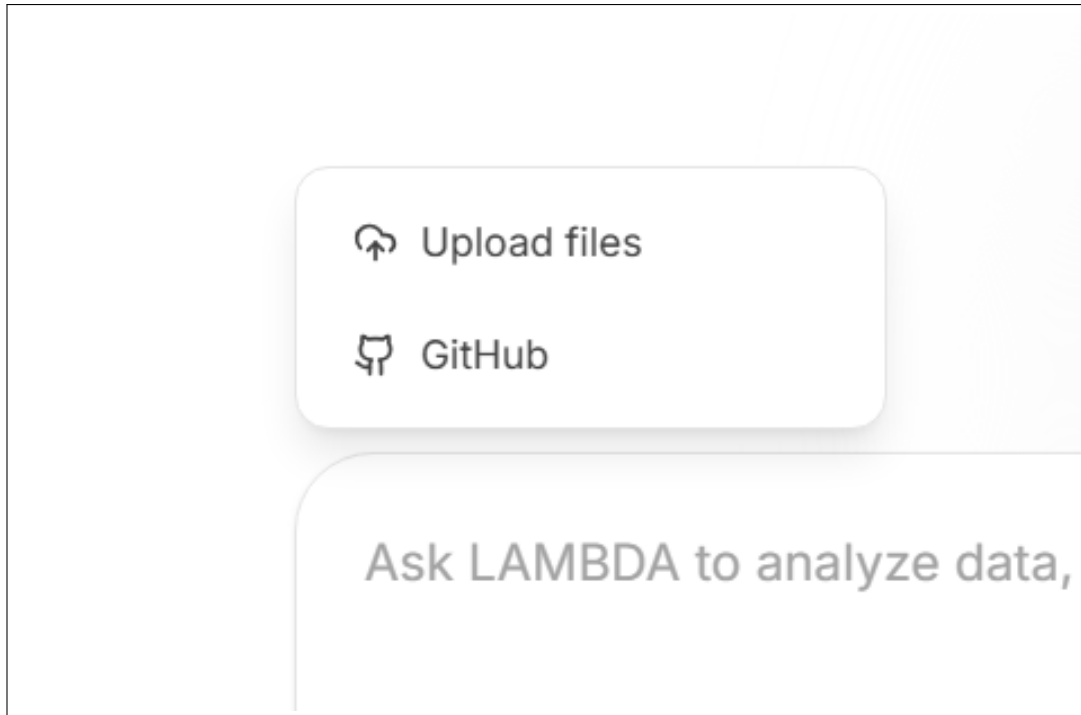
Export Case Study entry

13 GitHub Integration

13.1 Connect GitHub

Feature	Let LAMBDA work with a GitHub repository
Use case	Use this when the task involves code generation, repository files, or uploading analysis outputs to GitHub.

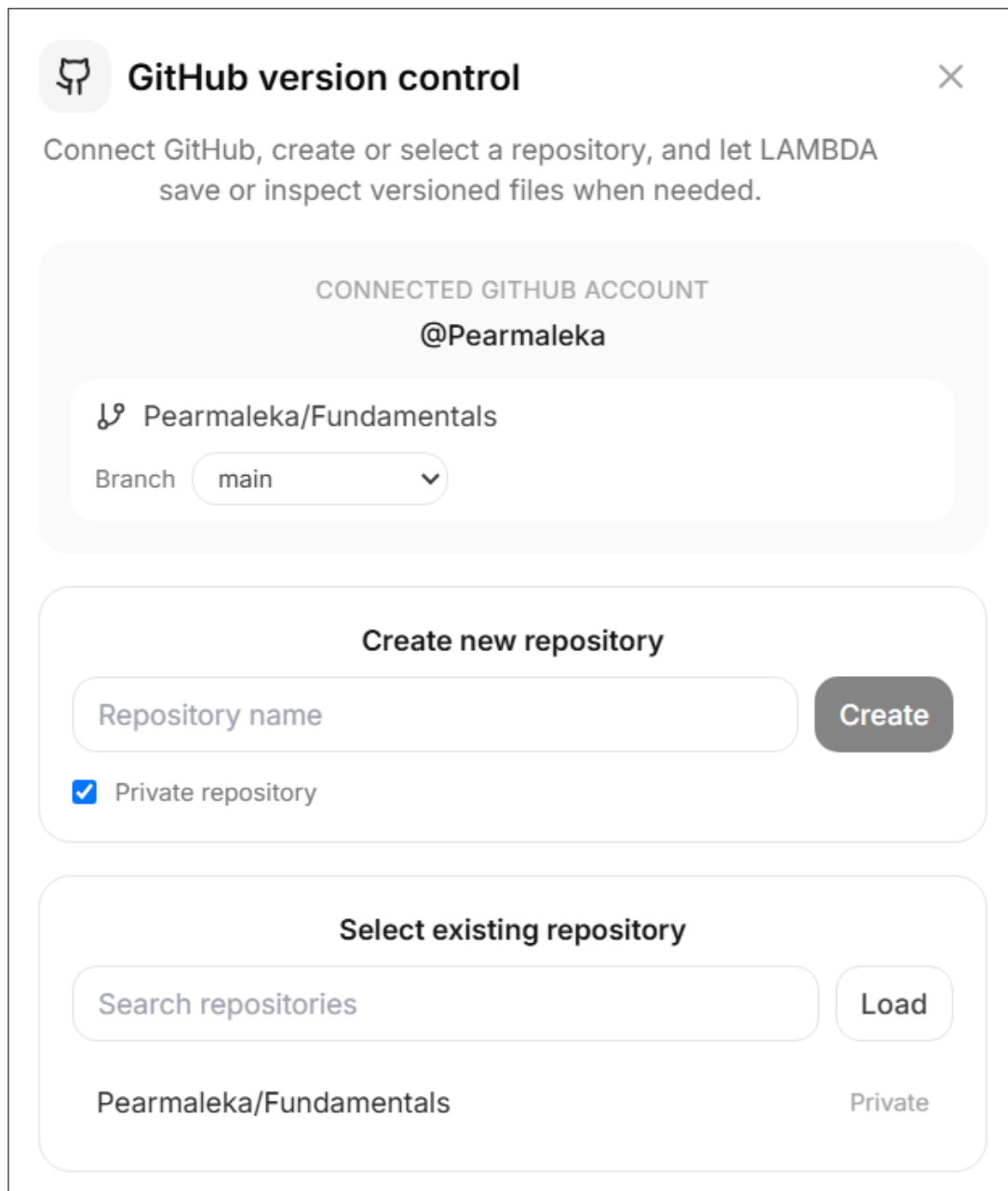
Open the GitHub entry near the chat input and follow the authorization flow. After authorization, you can choose an existing repository or create a new one.



GitHub connection entry

13.2 Select Repository and Branch

After connecting, select the target repository and branch. LAMBDA can then work around that repository context.



GitHub version control ✕

Connect GitHub, create or select a repository, and let LAMBDA save or inspect versioned files when needed.

CONNECTED GITHUB ACCOUNT

@Pearmaleka

🔗 Pearmaleka/Fundamentals

Branch main ▼

Create new repository

Create

☒ Private repository

Select existing repository

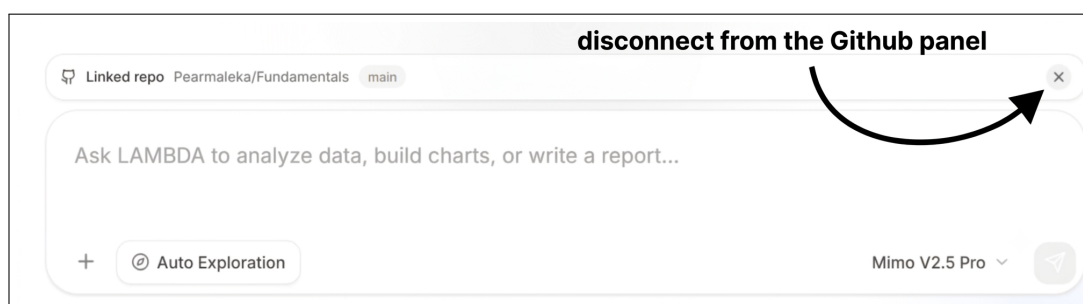
Load

Pearmaleka/Fundamentals Private

Select GitHub repository and branch

13.3 Disconnect GitHub

If GitHub integration is no longer needed, disconnect it from the GitHub panel.



disconnect from the Github panel

🔗 Linked repo Pearmaleka/Fundamentals main ✕

Ask LAMBDA to analyze data, build charts, or write a report...

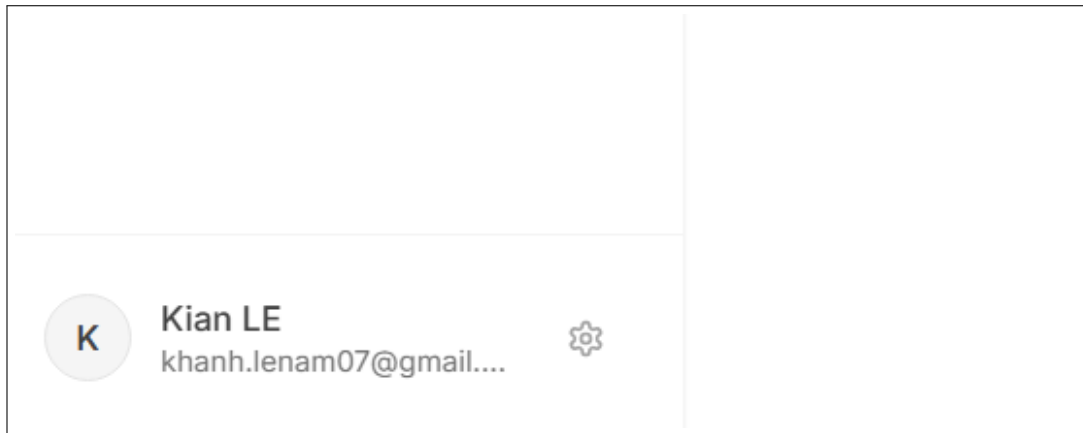
+ 🕒 Auto Exploration Mimo V2.5 Pro ▼ 📤

Disconnect GitHub

14 Settings

14.1 Open Settings

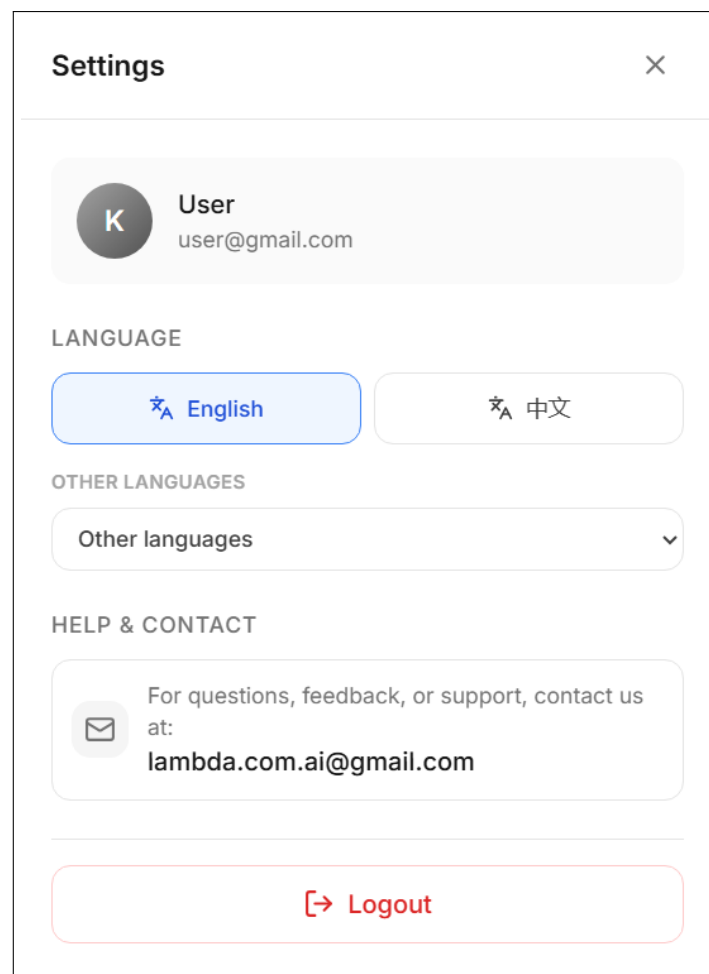
Click the Settings icon in the left sidebar or page controls to open the settings modal.



Settings entry

14.2 User Information

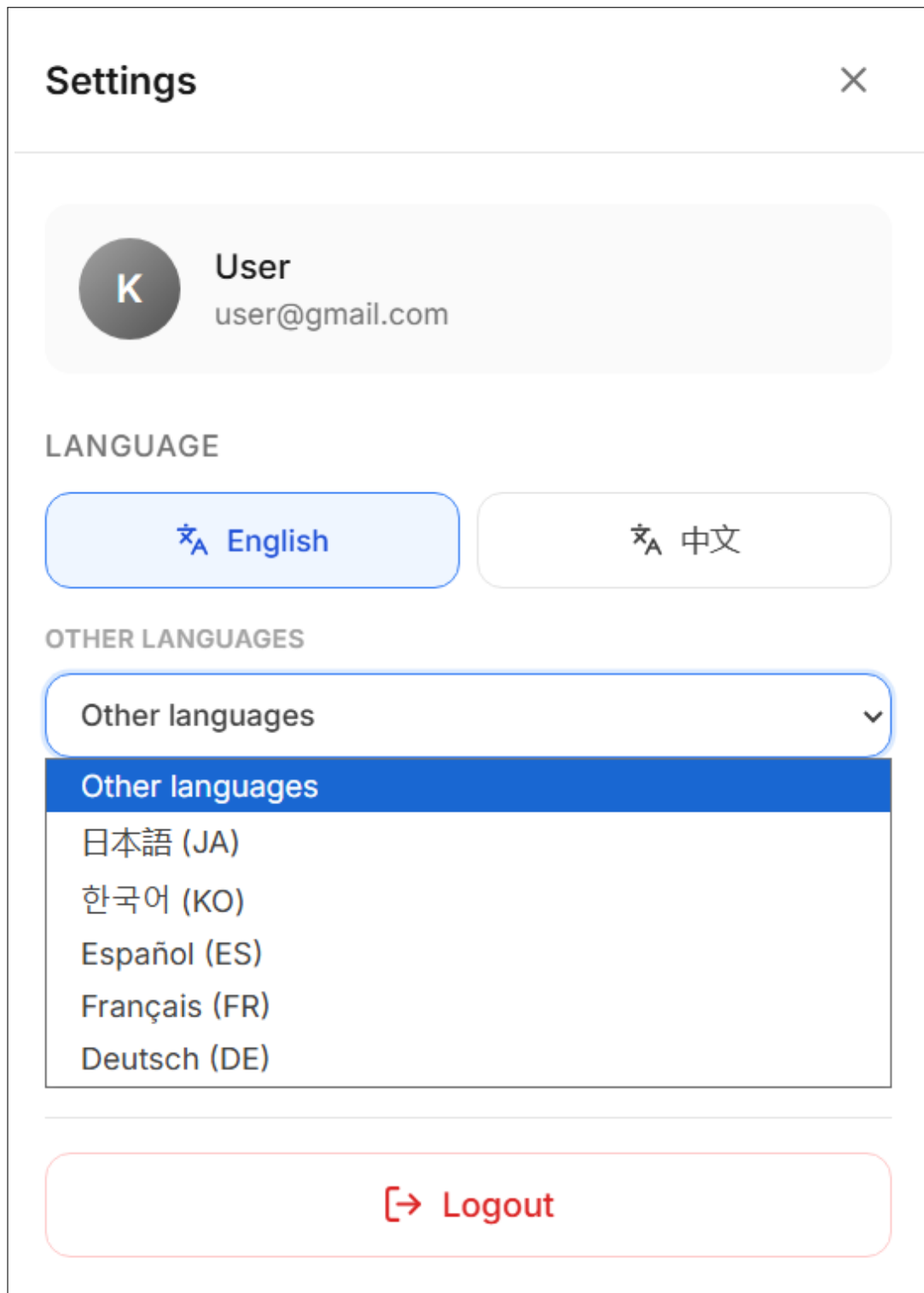
The settings panel shows the current user's name and email.



User information area

14.3 Interface Language

Users can choose the front-end interface language, including English, Chinese, and other languages. This setting controls UI text and does not force LAMBDA to answer in that language.

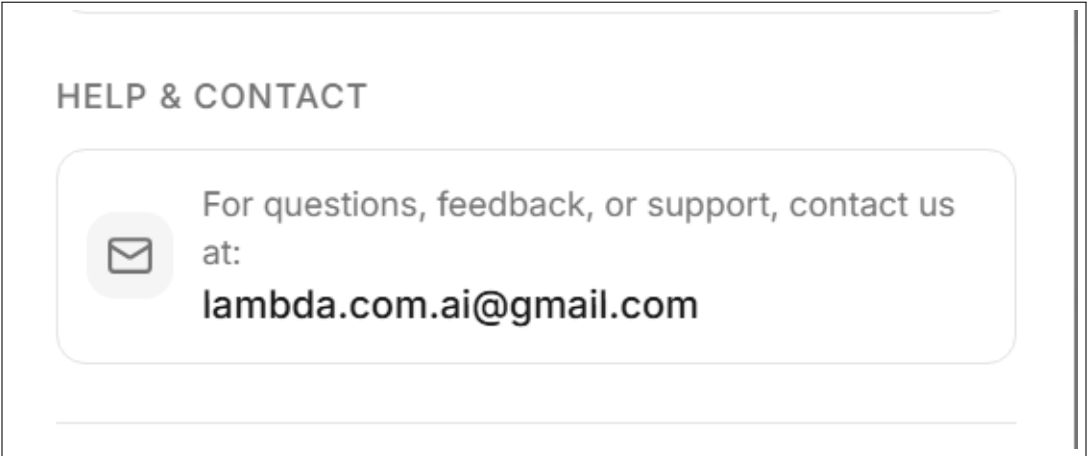


The screenshot shows a 'Settings' dialog box with a close button (X) in the top right corner. Below the title bar, there is a user profile section with a circular avatar containing the letter 'K', the name 'User', and the email 'user@gmail.com'. Underneath, the 'LANGUAGE' section features two buttons: 'English' (with a flag icon) and '中文' (with a flag icon). The 'OTHER LANGUAGES' section includes a dropdown menu currently showing 'Other languages'. The dropdown list is open, displaying the following options: 'Other languages' (highlighted in blue), '日本語 (JA)', '한국어 (KO)', 'Español (ES)', 'Français (FR)', and 'Deutsch (DE)'. At the bottom of the settings panel is a red-outlined button with the text 'Logout' and a red arrow icon pointing right.

Language settings

14.4 Help and Contact

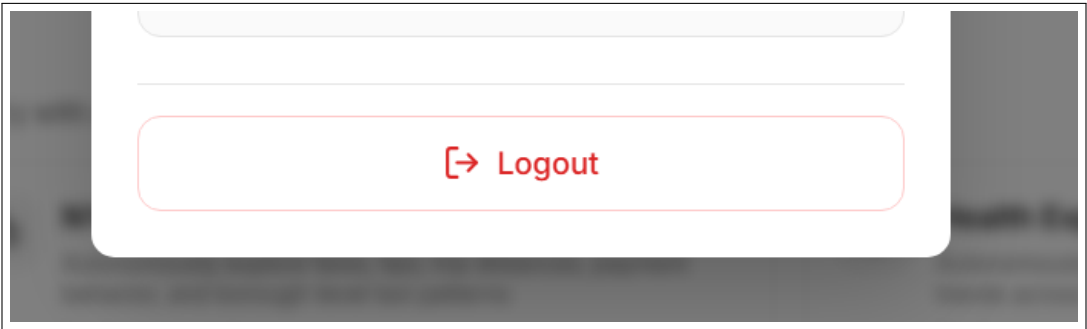
The settings panel includes the support email. Contact support for account, upload, model, or generated-file issues.



Help and contact area

14.5 Log Out

Click Logout to sign out of the current account.



Logout button

15 Case Study Pages

15.1 Browse Case Studies

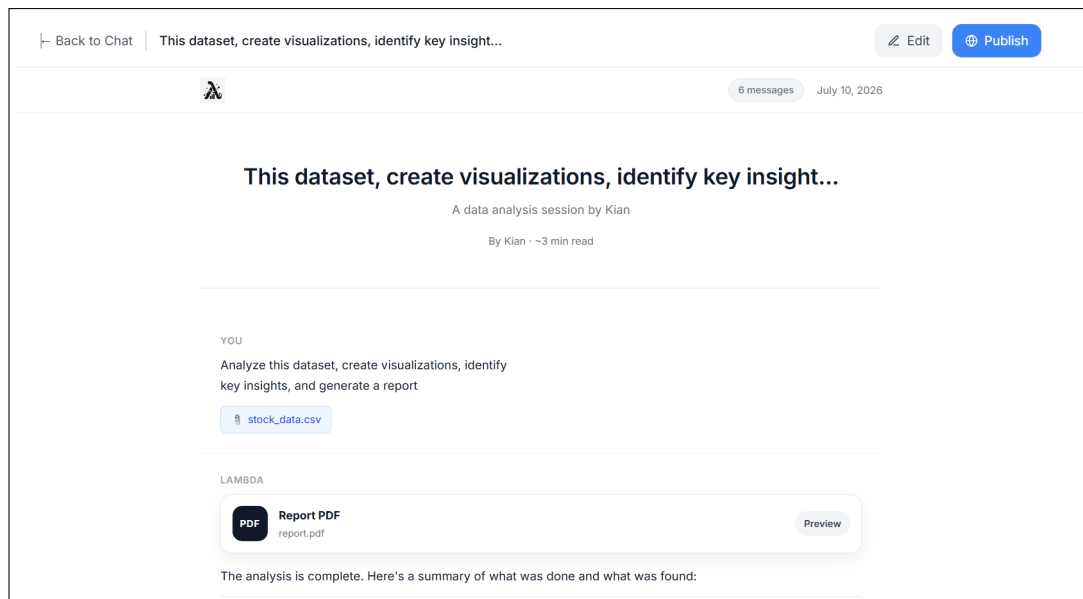
The Case Study page displays public examples that demonstrate task types and output quality.



Case Study list

15.2 View a Case Study

Open a case study to review its content, results, and related files.



Case Study detail page

16 Other Information

16.1 Contributors

- Students: Maojun Sun, Yifei Xie, Yue Wu, and Nam Khanh Le.
- Professors: Ruijian Han, Binyan Jiang, Defeng Sun, Yancheng Yuan, and Jian Huang.

17 References

- [1] Sun, M., Han, R., Jiang, B., Qi, H., Sun, D., Yuan, Y., and Huang, J. (2026). Rejoinder to the Discussions on “LAMBDA: A Large Model Based Data Agent.” *Journal of the American Statistical Association*, 121(553), 36–43.
- [2] Sun, M., Han, R., Jiang, B., Qi, H., Sun, D., Yuan, Y., and Huang, J. (2026). LAMBDA: A Large Model Based Data Agent. *Journal of the American Statistical Association*, 121(553), 1–13.
- [3] Sun, M., Wu, Y., Xie, Y., Han, R., Jiang, B., Sun, D., Yuan, Y., and Huang, J. (2026). DARE: Aligning LLM Agents with the R Statistical Ecosystem via Distribution-Aware Retrieval. *arXiv preprint arXiv:2603.04743*.
- [4] Sun, M., Xie, Y., Wu, Y., Han, R., Jiang, B., Sun, D., Yuan, Y., and Huang, J. (2026). DSAEval: Evaluating Data Science Agents on a Wide Range of Real-World Data Science Problems. *arXiv preprint arXiv:2601.13591*.
- [5] Sun, M., Han, R., Jiang, B., Qi, H., Sun, D., Yuan, Y., and Huang, J. (2025). A Survey on Large Language Model-Based Agents for Statistics and Data Science. *The American Statistician*, 1–14.