Introduction to Ray AI Libraries

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👋 Welcome!

We’re happy to have you here.

Meet the team!

Emmy

Balaji

Yunxuan

The Plan

Here’s what to expect today.

Today's agenda.

9:00am (15 min)	**Talk:** Introduction to Ray AI Libraries
9:15am (15 min)	**Demo:** End-to-end mini example
9:30am (60 min)	**Coding Lab:** HF Vision Transformer + Ray Train for image classification
10:30am (15 min)	Coffee Break
10:45am (60 min)	**Coding Lab:** Scaling out with Ray Data and Ray Serve
11:45am (15 min)	**Talk:** Resources for Further Exploration

Course Set-Up

Tech checks all around.

✅ Tech check.

Participating via app.sli.do

- Join with code **#ray-ailib**
- Ask questions.
  - Pose your own and upvote others.
  - TAs will be answering questions on a rolling basis.

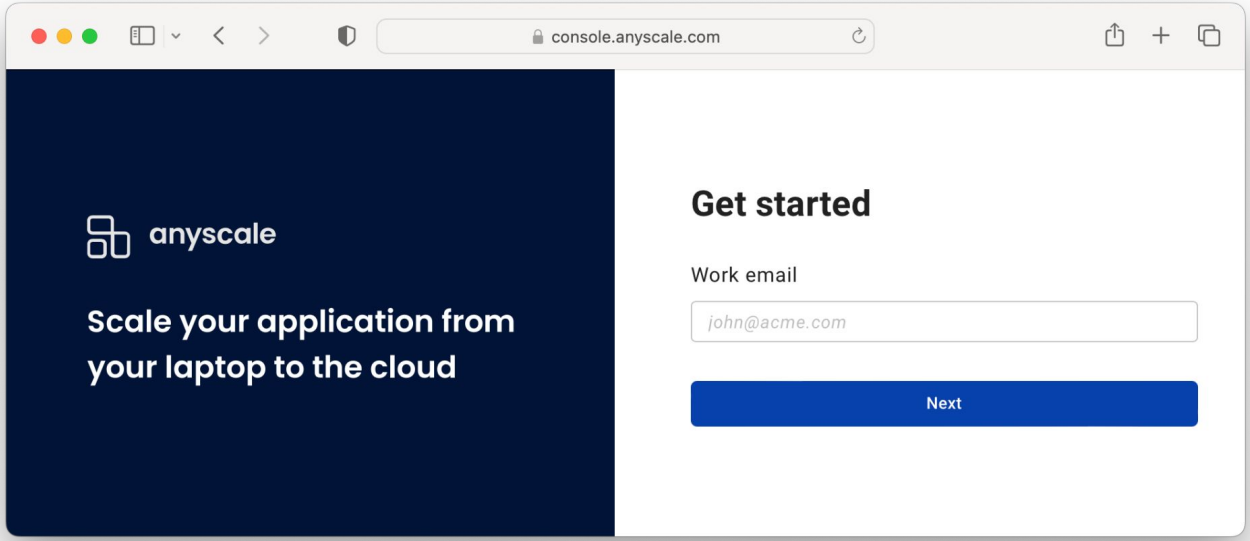
✅ Tech check.

 Accessing Anyscale clusters.

- All work will be in Anyscale provisioned clusters.
- Our GitHub repo will be mounted automatically.
- Access begins now.
  - Check your email for login information.
  - Step-by-step instructions to follow.

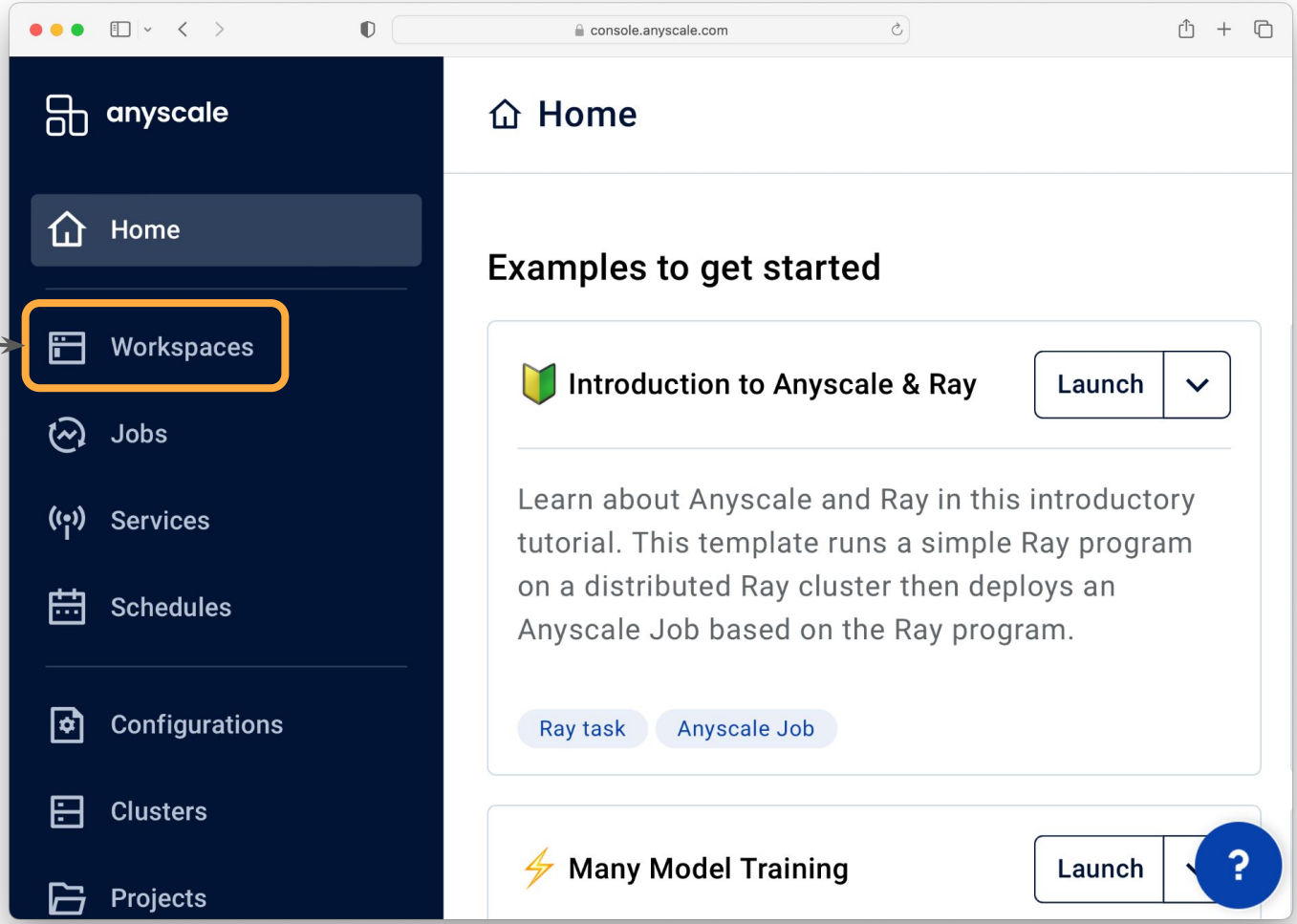
Anyscale login

Link to Anyscale cluster: console.anyscale.com

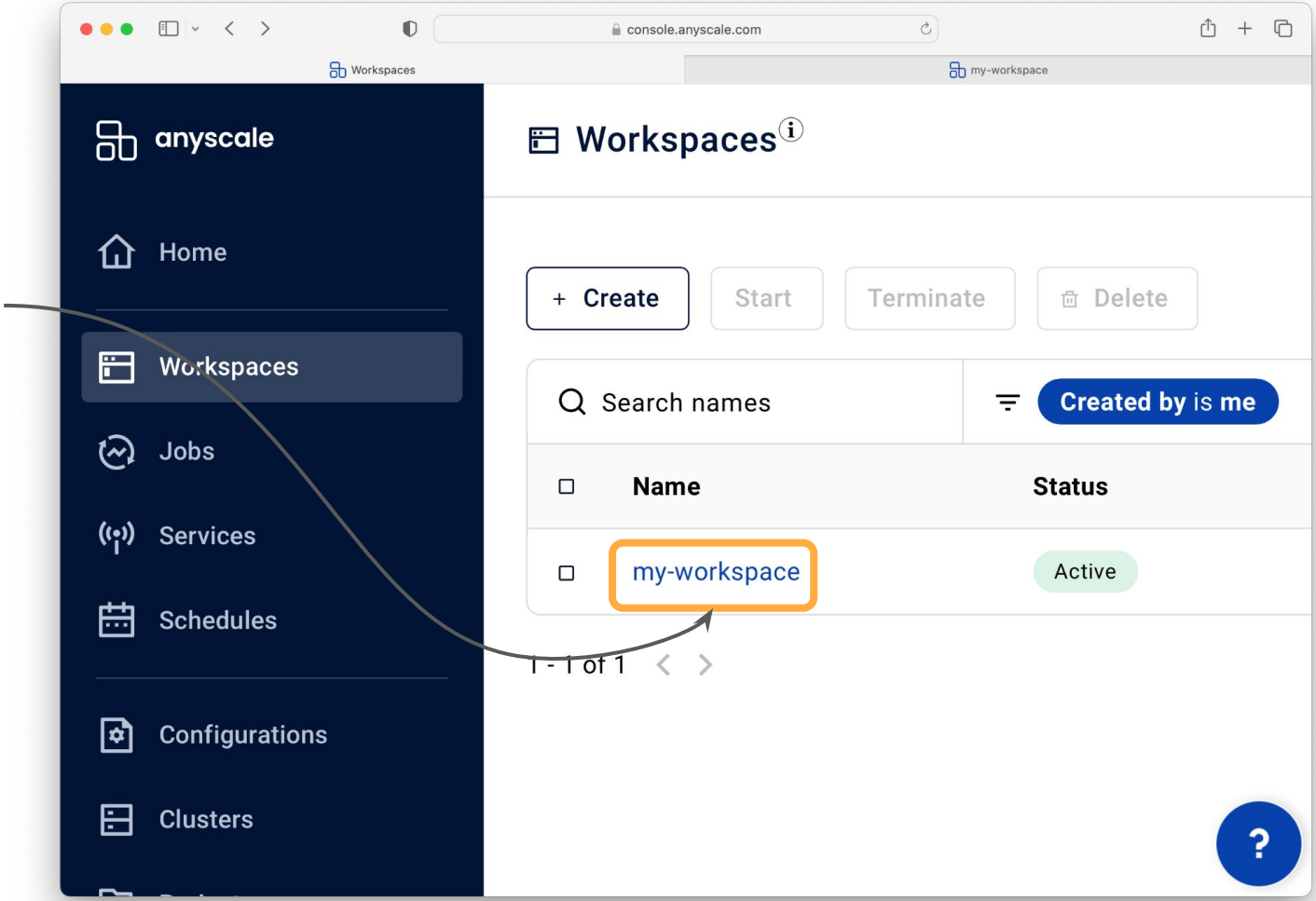


Enter the **unique credentials** sent to your email!

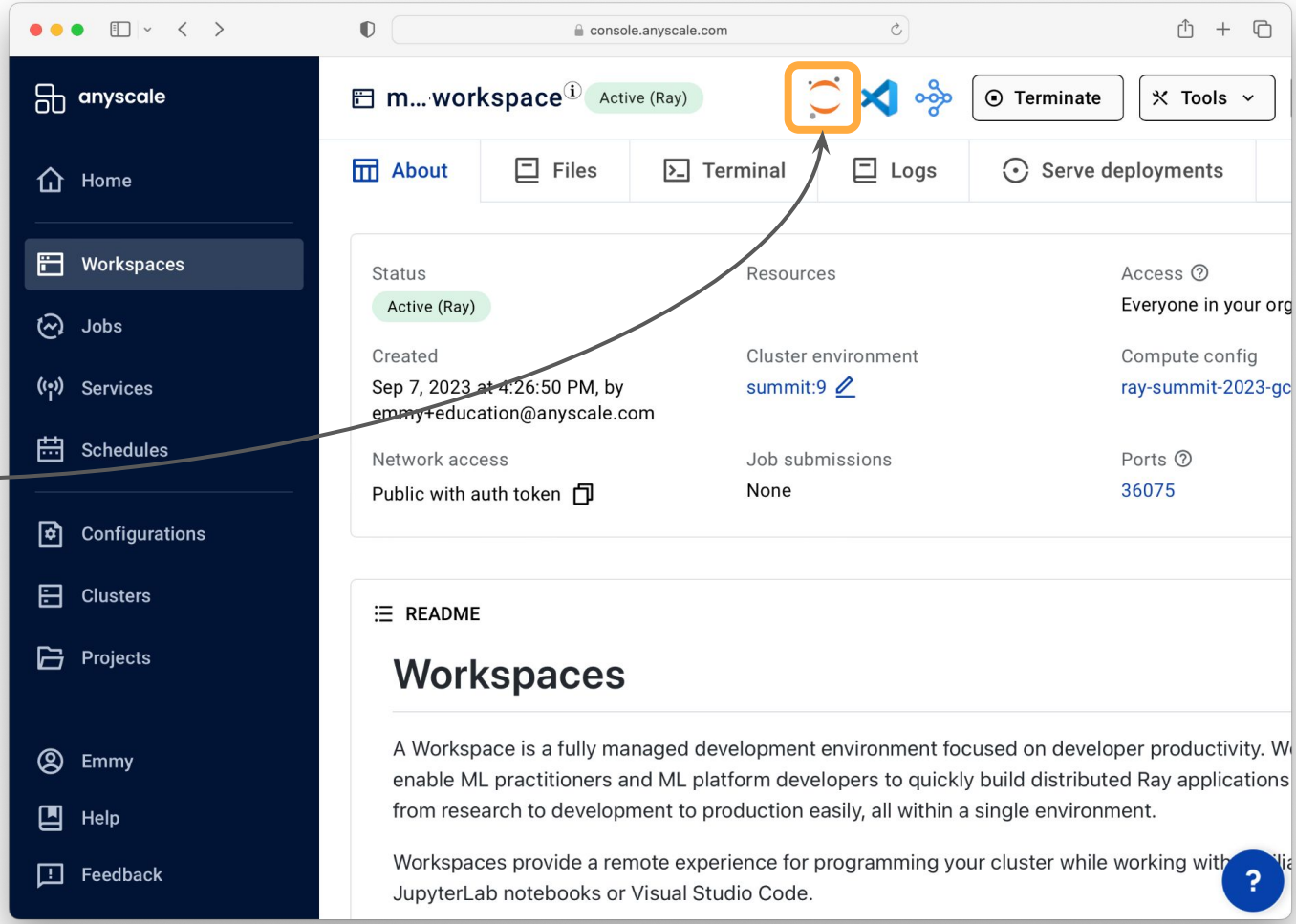
1. Select Workspaces



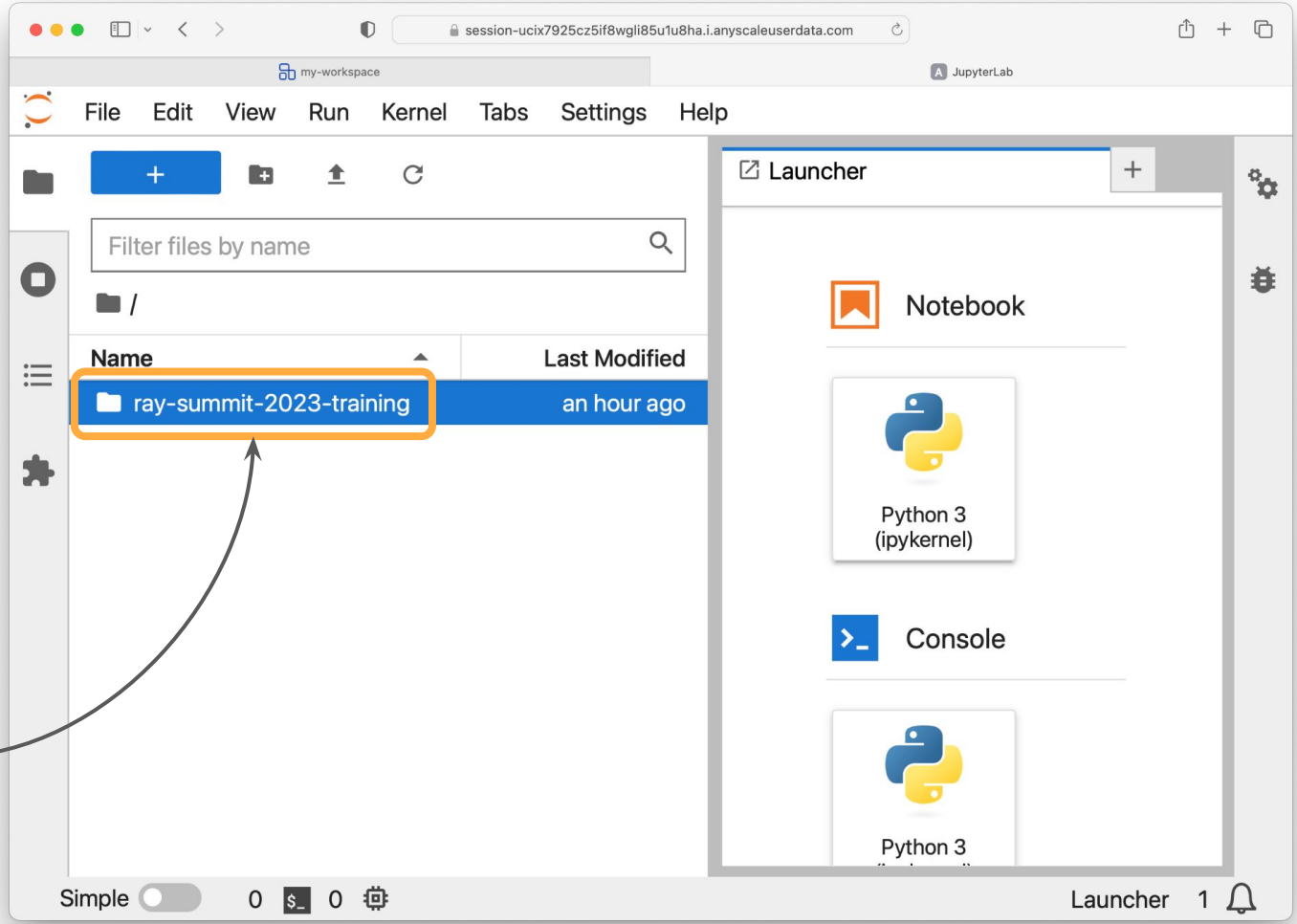
2. Select Your Workspace



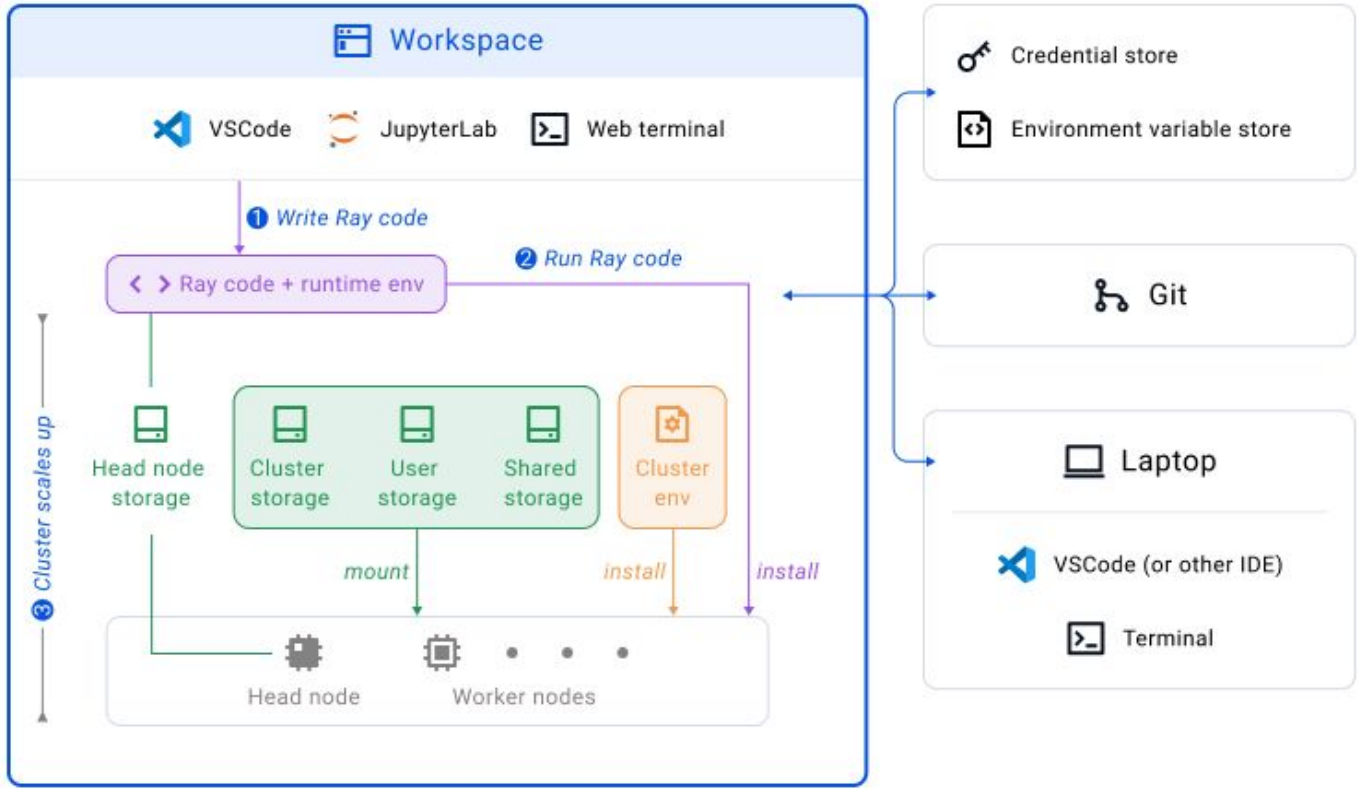
3. Click on Jupyter icon



4. Find the content for your class here.



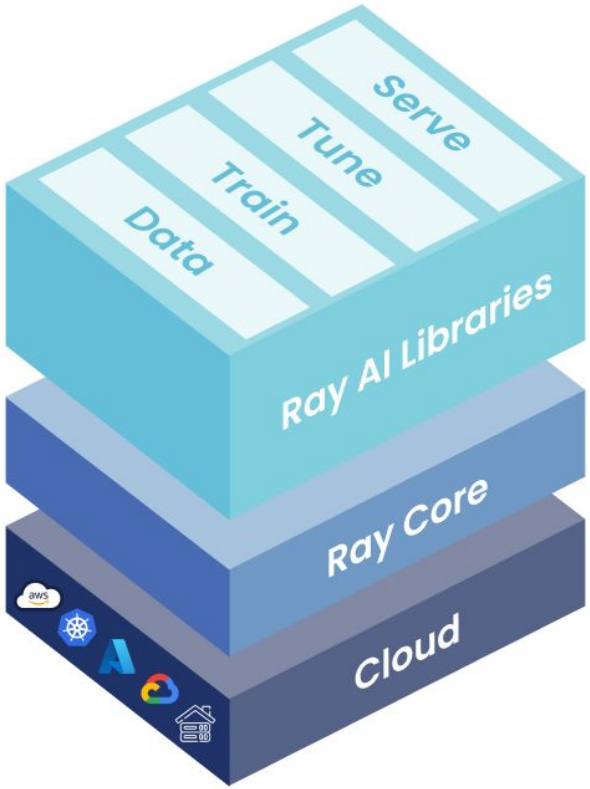
What are Anyscale Workspaces?



Ray AI Libraries

Your morning briefing.

Overview of Ray AI Libraries



high-level libraries that enable simple scaling of AI workloads

a low-level distributed computing framework with a concise core and Python-first API

Ray Data

A scalable data processing library well-suited for distributed data ingest, preprocessing, and batch inference.

Highlights

➕ Streaming execution across CPUs and GPUs
➕ World-record breaking scalability.
➕ Peak performance for offline batch inference

Ray Train

A library for distributed training and fine-tuning with integrations with PyTorch, Tensorflow, XGBoost, and much more.

Highlights

➕ Training for LLMs across 1000s of GPUs.
➕ Fine-tuning LLMs with DeepSpeed.
➕ Cost-savings on heterogeneous hardware.

Ray Tune

Easily scalable hyperparameter tuning.

Highlights

➕ Integrations with Hyperopt, Optuna, Nevergrad and more with access to algorithms like PBT and HyperBand/ASHA.
➕ Many model training for millions of workloads.

Ray Serve

Scalable model serving library for building online inference APIs.

Highlights

➕ Optimizations for LLMs like response streaming, dynamic request batching, multi-node serving, etc.
➕ Framework-agnostic serving from huge models to Python business logic.

🔑 The essentials.

✅ **Scalable ML** - Targeted libraries for large machine learning workloads.

✅ **Ease of use** - Pythonic distributed computing primitives designed for smoother dev-to-prod.

✅ **Flexibility** - Integrations with popular machine learning frameworks (e.g. PyTorch, Tensorflow, LightGBM etc.) and infrastructure (e.g. Kubernetes, AWS, GCP, Azure, etc.)

Let’s make our way over to the notebooks!

Time for a Break!

15 minutes.

More Resources

For further exploration with Ray, Anyscale, and GenAI.

🍎 Today we learned...

🚂 Overview of Ray AI Libraries

Getting acquainted with each library for distributed ML.

🔬 Hugging Face ➡️ Ray

Converting a vision transformer to run distributed.

🔍 Exploring Ray Train, Data, Serve

Constructing an end-to-end ML pipeline with Ray.

🍏 Sneak Peek: Self-Paced Ray & Anyscale Education

📧 Online at training.anyscale.com

🔍 Preview special technical content releases from the whole team!

Fill out the survey.

🔗 Go to bit.ly/ray-summit-feedback

🔗 Reading list.

Self-Paced Ray & Anyscale Education

Access bonus notebooks and scripts about Ray.

Ray documentation

API references and user guides.

Anyscale Blogs

Real world use cases and announcements.

YouTube Tutorials

Video walkthroughs about learning LLMs with Ray.

Upcoming events

Bay Area AI + Ray Summit Happy Hour

Today at 5:00p.m.

Cap off an exciting conference with lightning talks, new friends, and good times!

bit.ly/bayai_ray_meetup

Connect with the community.

👋 Join the community

Attend events, *subscribe to newsletter*, *follow on Twitter*.

🙋 Get support

Join Ray Slack, *ask questions on forum*, *open an issue*.

🔭 Contribute to Ray

Read contributor guide, *create a pull request*.

Thank you!

We hope to meet again.