JuliaHub

A Progressive Platform to Model New Science

Access all the high performance computing power you need to realize path breaking ideas — at any scale you want. Equipped with safety and reliability tools needed to run sophisticated scientific and math-based packages, JuliaHub is your best solution for modeling, simulation, data engineering, and building robust Julia applications. Welcome to modern technical computing.

The full power of Julia + Best-in-class dev tools

The VS Code IDE customized for Julia

Batch CPU + GPU for large scale parallel computing

Support for third-party tools and Windows and Linux applications

Easy access to over 9,000+ Julia packages to build your own apps

Collaboration tools to share datasets, files, folders

Pluto Notebook for reactive computation

Integration with Git for version control

Files and Datasets easily accessed all in one place on the cloud

Private packages and registries

Why JuliaHub?

Because Science Deserves Better Technology

Modern algorithms need on-demand distributed and GPU computing, including ways to work with big data. JuliaHub provides a seamless environment to work with the fastest scientific, mathematical and statistical computation language yet.

Faster than ever
100x faster simulations with modern AI libraries and cutting-edge techniques

Competitive Edge
Improved engineer productivity reduces time to market

Future-driven
Decades old legacy codebases thwart new capabilities

Laser Sharp
Differentiable programming is a core Julia capability

On-demand distributed computing
Cloud deployment layer to run large apps at scale in an optimized Julia environment

Modern AI Libraries
Working with Big Data and integrations with ML/AI

JuliaHub

Platform as a Service (PaaS) that makes work within the Julia ecosystem easy and fast

With JuliaHub you can direct all your energy into creating, testing and deploying, without additional tech support or infrastructure.

INFRASTRUCTURE

- HPC Configuration
- Run single process or distributed jobs on 100+ nodes
- CPU and GPU on multiple cores with ability to set time-based limits
- Full reproducibility of past jobs archived and restorations managed

PACKAGES & REGISTRIES

- Package Server and controls keep the sanctity of your package versions safe and intact
- Private registries to keep proprietary code safe

JULIA PRODUCTS

- Run single process or distributed jobs on 100+ nodes
- CPU and GPU on multiple cores with ability to set time-based limits
- Full reproducibility of past jobs archived and restorations managed

APPLICATIONS

- JuliaHub includes access to the JuliaIDE environment and Pluto for interactive notebooks.
- Other third-party applications include Windows and Linux workstations, RStudio, and more...

SECURITY

- Encrypt code and control access to sensitive data.
- SOC 2 compliant, TLS 1.2+ encryption; both client-facing & server-side, AES-256 bit encryption: files, mounted vols., & databases

Team Collaboration

Projects

The most efficient, secure way to work together on Julia code, data, notebooks, packages, and resources.

- Projects allow you to encapsulate resources such as packages, files, folders, datasets
- Includes Access Controls and Permissions to keep resources private from other teams
- Git-behind the scene provides ability to rollback changes made by individual users
- Add, browse, and manage files and data in the Web UI or launch in various applications
- Includes the ability to create workspaces to branch changes or have teams work out of just 1 branch

Manage access for team members or groups

Set different permissions for each team. Grant group or individual access, by product or folder.

High Performance Computing Configuration

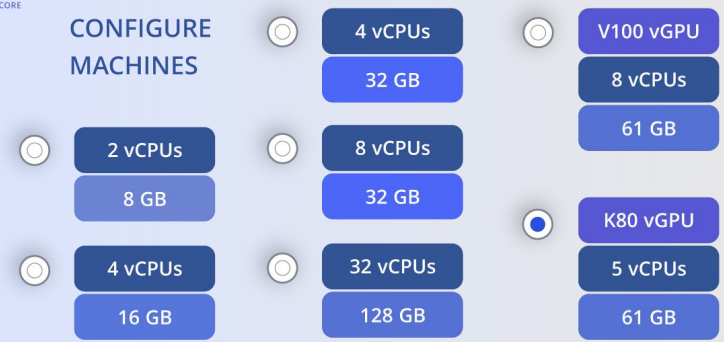
CloudStation

A configuration feature that allows admins to manage High Performance Virtual Machines. Run jobs with hundreds of nodes in parallel.

- CPU and GPUs provisioned, managed, and monitored
- All storage capabilities handled; including large datasets over 2GB with upcoming CI integrations
- Distributed Jobs allow you to run parallel processes with full control of when to scale up
- Proprietary Julia products managed by our award-winning team of scientists and developers

Turning your laptop into a supercomputer

With JuliaHub you can direct all your energy into creating, testing and deploying, without additional tech support or infrastructure.

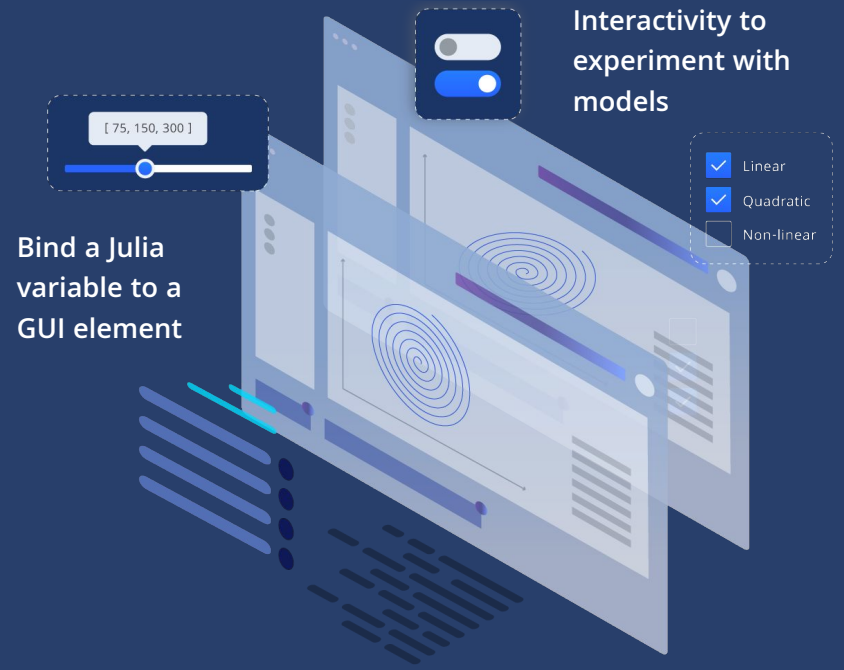


Cloud Hosted Notebooks

Pluto.jl

A modern interactive notebook environment for data science, modeling and simulation, numerical analysis, and machine learning.

- Notebook Interface for working with Julia Packages and Code
- Built for the Julia stack. With HTML and Web interactivity.
- Free, open source notebook environment for Julia. Designed to make scientific programming and reporting simple!
- A fantastic tool for connecting Julia to the web! Learn more about using HTML, CSS and JavaScript in Pluto to take your visualization skills to the next level.



Jump right into Pluto notebooks to explore data with Julia, share and work together with your team, and build interactivity with web components — all in the cloud.

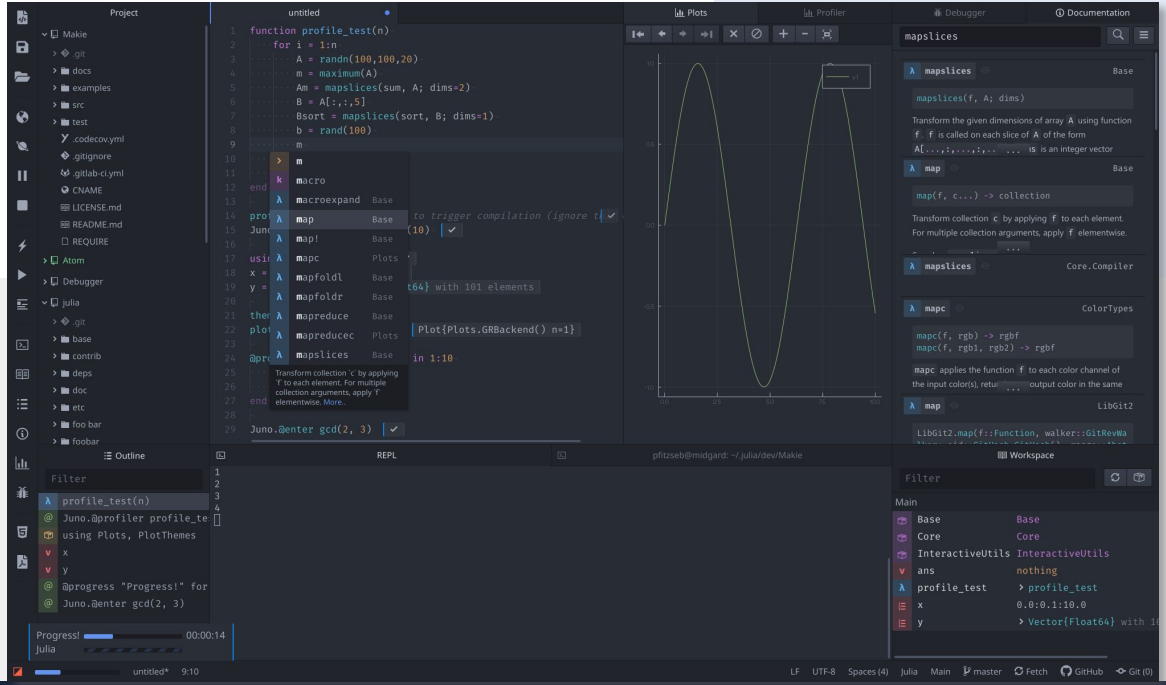
Built for Visual Studio Code

JuliaIDE

Access the whole Julia ecosystem of packages and extensions inside VSCode.

Integrations and Extensions like GitLens.

Add datasets, launch jobs, install over 9,000+ open source packages, with a built-in package manager for version control.



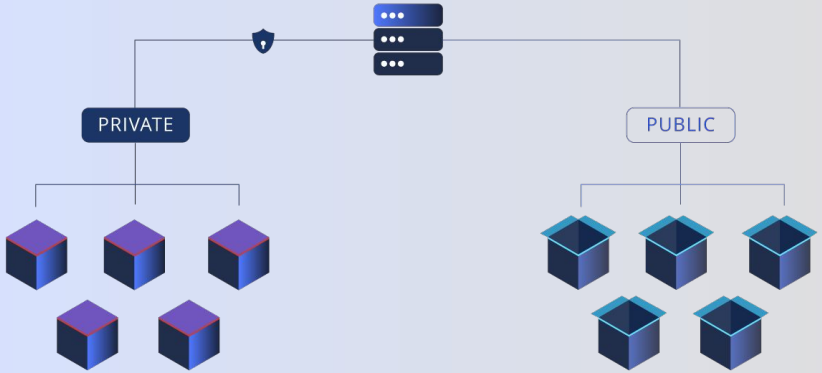
Curate Your Ecosystem

Package Manager & Private Registry

Advanced Package Manager with dependency management and version control built-in. Combined with private registry management tools to store proprietary and custom packages.

- Localized access to every package and version in the Julia registry including documentation
- Private registries allow you to store custom packages; sync with git-providers
- Package usage analytics and traceability provide clarity into how packages are being used
- Built for the Julia stack. With HTML and Web interactivity.

JuliaHub includes the Julia Package Server that keeps all versions of packages up-to-date, helps you with one-line installs, and provides the ability to create a local registry with features such as access controls.



PACKAGE MANAGEMENT
Git | Auto-Generated Documentation
Private and Public Registries |Package Server

For Modern SciML

Package Ecosystem

Access 9,000+ open source packages as part of the official Julia Package Registry. Checkout some of our most impressive packages built by the vast array of open source developers and technical programmers in the Julia ecosystem. With the fastest suite of packages for mathematics, numerical computing, modeling, simulation and more...

TSFrames.jl
Handle timeseries data. Built on top of the powerful **DataFrames.jl**

Flux.jl
Relax! Flux is the ML library that doesn't make you tensor

Turing.jl
Bayesian inference with probabilistic programming

MixedModels.jl
JuliaStats: A Julia package for fitting (statistical) mixed-effects models

NeuralPDE.jl
Handle timeseries data. Built on top of the powerful **DataFrames.jl**

DiffEqFlux.jl
Universal Neural Differential equations fused with machine learning

julia

SciML.jl

flux

CUDA.jl

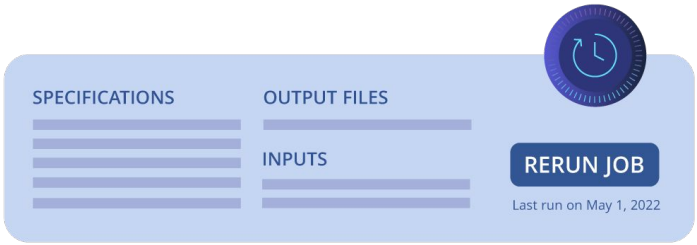
Zygote

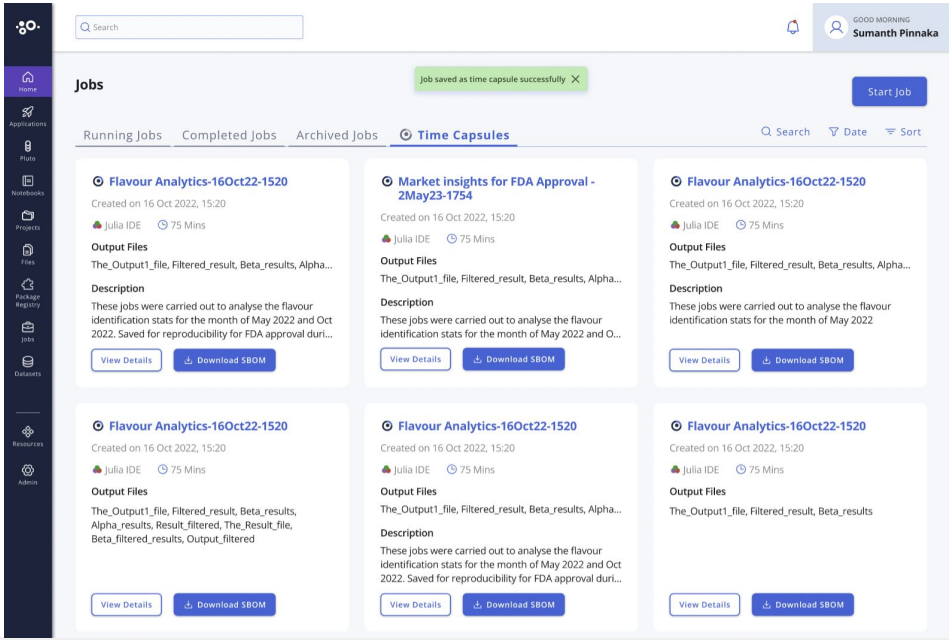
DataFrames.jl

For Batch Job Reproducibility

TimeCapsule

A way to re-run old batch jobs with the same environment / settings / data. This can help in a number of domains, but one example is in making scientific experiments reproducible.





Job Reproducibility
Re-run old jobs with the same environment, settings or data.

Job Archiving
Archive past jobs for a specified length of time, set by you.

Time Capsule Captures:

- Julia Version
- Package Version
- Input Data
- Project Container
- Output Data

AskAI

AskAI allows you to provide questions and prompts around Julia, Julia packages, and JuliaHub. Using our ChatGPT feature means you'll have the full knowledge base of the Julia ecosystem at your fingertips with real coding examples and language guidance that will help you achieve the best results.

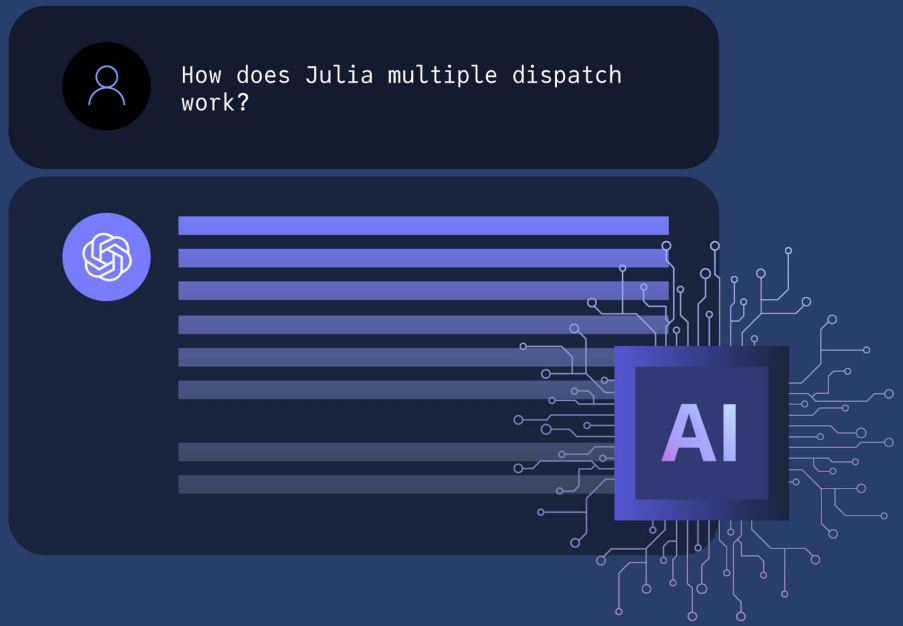
Example Questions:

What are the best Julia language packages to build machine learning applications?

What tools on JuliaHub can help my company speed up modeling & simulation?

How can I use JuliaHub to build and deploy apps easily?

ChatGPT Integration



Web Apps

Web Hosting for Dashboard Applications in Julia

Web Hosting

JuliaHub now provides a web server where you can host multiple web-based applications and websites.

Low-Code Dashboards

Featuring Dash.jl as a framework with templates to quickly launch dashboard and analytical web apps.

Sharing and Auth

A mechanism to make your web app completely public or display it only for users who have a password. You decide.

Security & Compliance

SOC 2 TYPE 2

AICPA SOC

REGULATORY

Company-wide best practices and auditing ensure compliance

- SOC 2 Compliant
- GDR Compliant
- Independent quality department ensures training and policies are effective
- Established Software Development Lifecycle (SDLC)
- Organisational support for virtual audits
- **Enterprise tier supports:** FDA 21 CFR Part 11

NETWORK

Control over inbound and outbound comms down to the intra-cluster level

- TLS 1.2+ encryption, both client-facing & server side
- Distributed Denial-of-Service (DDoS) protection
- Fireballing of ports
- Regular penetration tests
- **Enterprise tier supports:**
  - Virtual Private Cloud | Virtual Private Network integration | On-premise and/or air-gapped installation

DATA

All data is fundamentally secure and protected

- AES-256 bit encryption: files, mounted volumes & databases
- AWS S3 storage durability of 99.99% (eleven 9's) and 99.99% availability
- RPO and RTO under 24 hours
- **Enterprise tier supports:**
  - Isolated tenancy of both files and application database

APPLICATION

Access controls for software components overseen by a user management system

- Single sign-on (SSO) with support for 2FA
- Logging at user and job level
- Scheduled vulnerability scans
- API keys with token refresh
- Isolation & credentials for each analytical job
- **Enterprise tier supports:**
  - Staging environments | Custom SSO via OpenID, OAuth, AD & LDAP with group integration

For Domain-specific Modeling

AI-based Products

A suite of powerful plug-and-play modeling and simulation products that accelerate product development. Build your own Julia Products and host them within your JuliaHub instance for your team to use.

Julia SIM

Digital Twins, Acausal modeling, Automatic model discovery, Optimization and Controls

Cedar EDA

Analog Circuit Simulation for Verilog/A and SPICE netlists

pumas

Pharmaceutical modeling and simulation,
Drug discovery

Build your own Julia products and host them within JuliaHub for your team to use

JuliaHub

Accelerating Scientific **Breakthroughs**

contact us sales@juliahub.com

Run Apps & Scale Julia Jobs

Kubernetes

Data Catalog & App Storage

S3, EFS, EBS

Docs & Package Registry

Julia Pkg.jl

Julia IDE & Notebooks

VS Code, Pluto