

Making Waves: AI Apps with H2O Wave

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Agenda

- Introduction to H2O Wave
- How to run H2O Wave applications on your local workstation
- Code demo to build an H2O Wave App
 - Use the H2O-3 aggregator function to summarize a large dataset
 - Build a custom, interactive app to visualize the results as a table or plot

MAKE



**Feature
Transformation**



**Artificial
Intelligence**

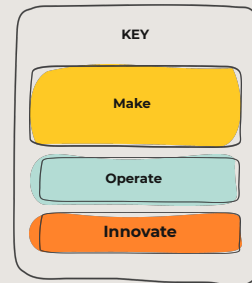
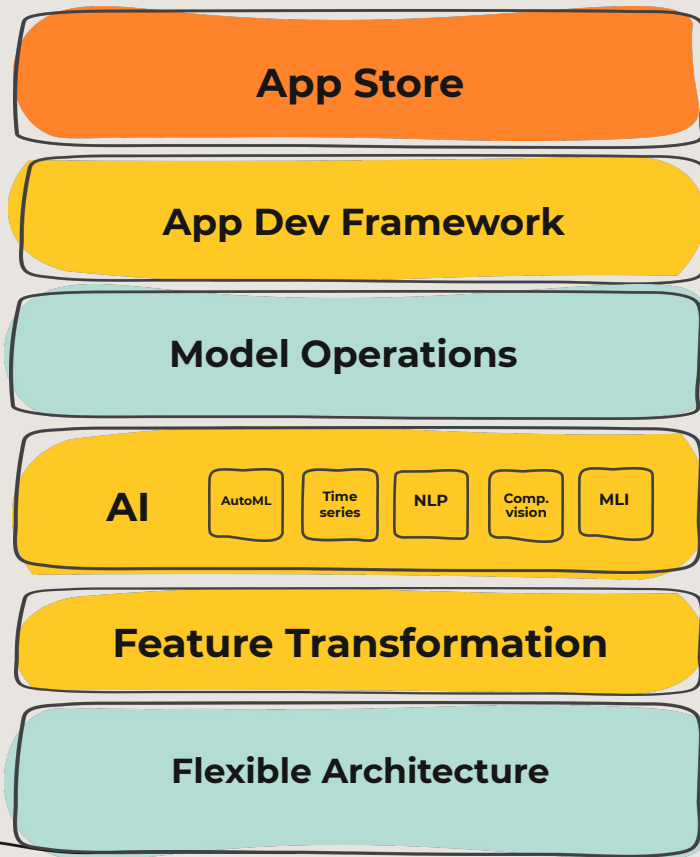


**Machine
Learning
Interpretability**



**App Dev
Framework**

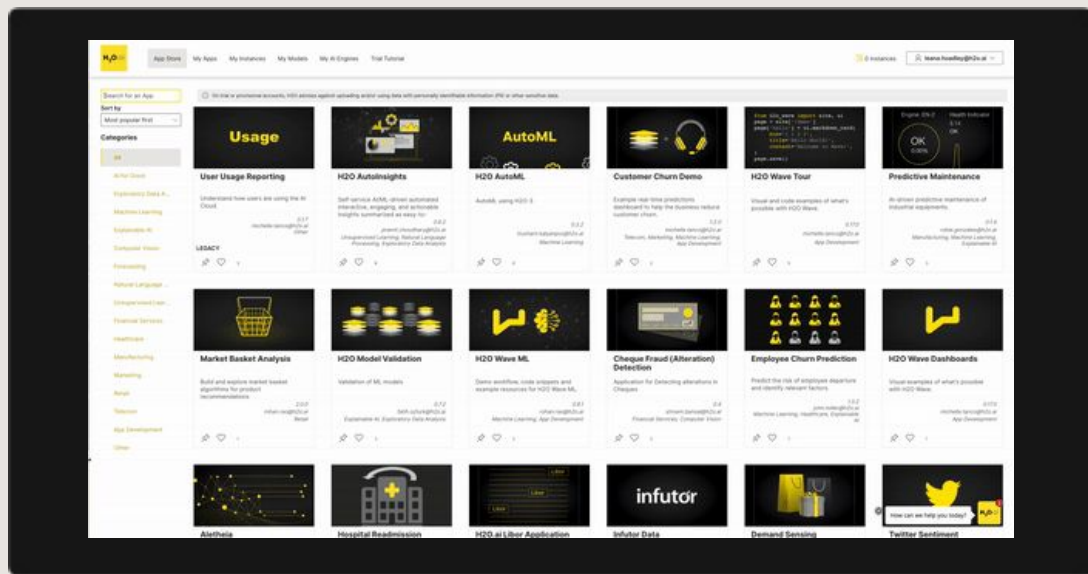
H2O AI HYBRID CLOUD



H2O AI Hybrid Cloud

Rapidly Build AI Apps

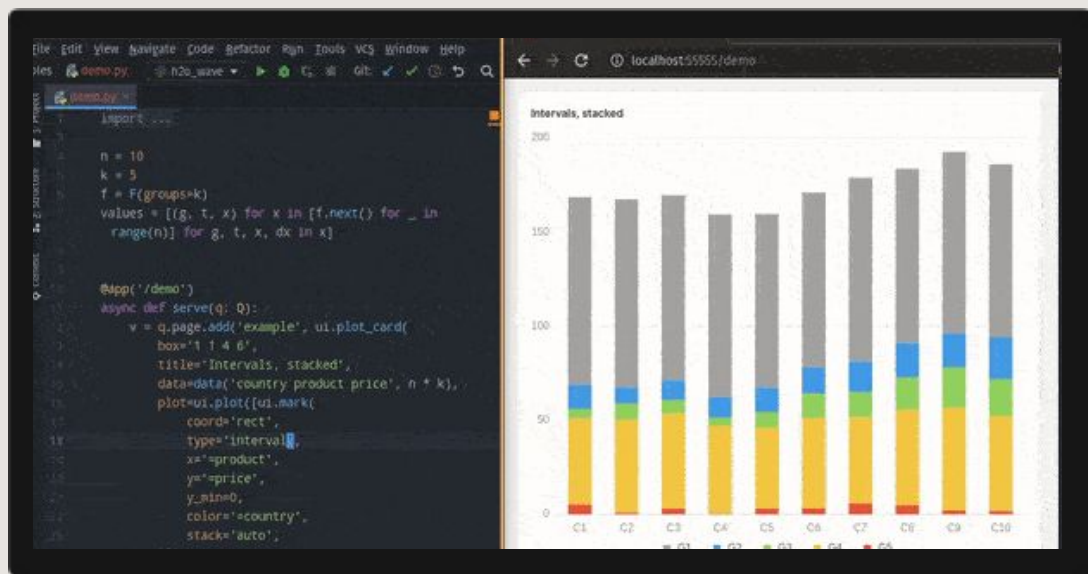
- Simple deployment of H2O Wave applications
- Easy application sharing
- Leverage existing ML/digital assets
- Secure environment for AI-first applications
- Business expansion with AI lines of business



H2O WAVE SDK

Rapidly Build AI Apps

- H2O Wave - open source low-code Python and R development framework, SDK + App Server
- Empower Data Scientists to rapidly prototype business facing AI applications
- Easy integration with AutoML from H2O AI Hybrid Cloud
- Easily produces sophisticated visuals
- Real-time capability
- Example micro services and application code for easy adaptation



Three components of H2O Wave

Application Code

Written in Python or R

h2o_wave package

Sends data to the content server

Determines how to handle user events

Content Server

10MB static, binary executable

Runs anywhere

Store site content

Transmits content changes to browsers

Transmits browser events back to apps

Browser-Based Client

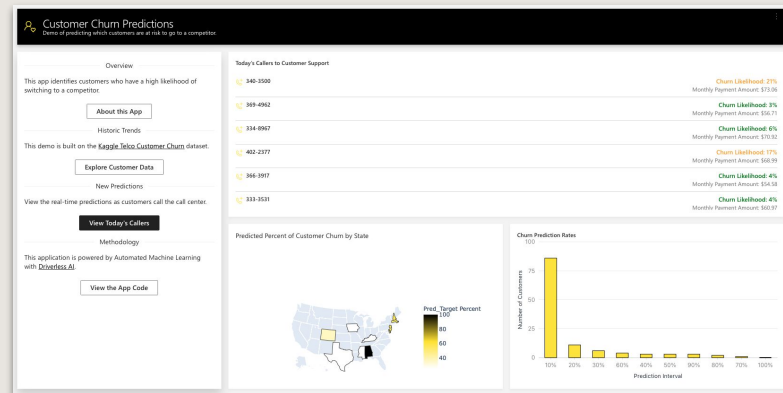
Hosts the user interface built by the h2o_wave package

Renders content to users

Sends user events to content server

How does it work?

- The H2O Wave server holds a collection of pages.
- Each page can have one or more cards with different types of content.
- Developers reference a page or card, change it, and save.
 - Static dashboards
 - Interactive applications
- Browsers pointing to your app can get updates automatically, in real-time.



Example page with 5 cards.




What will we build?

- An app for visualizing any large dataset, without losing the shape of the data or any outliers. Easily digest and find interesting points in your dataset.
- Use the Open Source H2O-3 Aggregator to reduce the size of our original data without losing any information.
- Display the data as a table for searching and filtering.
- Display the data as a scatter plot between any two columns.
- Allow the user to decide how they want to digest the data and which columns they want to plot.
- <https://github.com/h2oai/wave-big-data-visualizer>

Building a Wave App

Setting up the H2O Wave Server on your local workstation

- Download the latest release from <https://github.com/h2oai/wave/releases>
 - H2O Wave v0.17.0

 wave-0.17.0-darwin-amd64.tar.gz	8.51 MB
 wave-0.17.0-linux-amd64.tar.gz	8.61 MB
 wave-0.17.0-windows-amd64.tar.gz	8.56 MB

- Untar the file.
- Run the command `./waved` from the directory to start the H2O Wave server.
- Navigate to `localhost:10101`

Setting up our app project

- Write code where you want to! An IDE is recommended.
- Create a python virtual environment: `python3 -m venv venv`
- Create a requirements.txt file.
- Create a source code file: `app.py`

Code Plan

1. Create a static H2O Wave script and set up our landing page UI.
2. Reformat as an interactive H2O Wave app which shows our landing page when new users visits the running app.
3. Add navigation functionality: what happens when the user wants to switch views.
4. Use mocked data to make our UI table and interactive plots.
5. Use H2O Aggregator to prepare for handling large data.

What's Next?

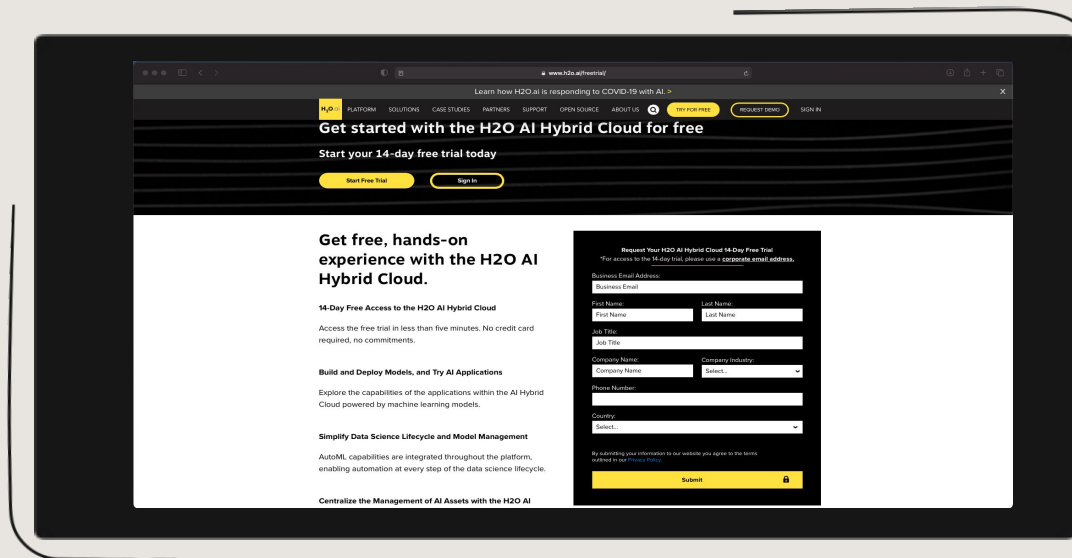
Suggested Next Steps

- **Data uploading**
 - Allow users to connect to their own data from a database, cloud storage, or local machines
- **Modeling**
 - Connect to a production H2O Cluster
 - Let the user decide Aggregation parameters like number of final rows
- **Visualizations**
 - Add different visualization types for different data types
- **App Robustness**
 - Add unit tests
 - Write README for new developers

H2O AI Hybrid Cloud

Easy and fast to get a 14 day free trial

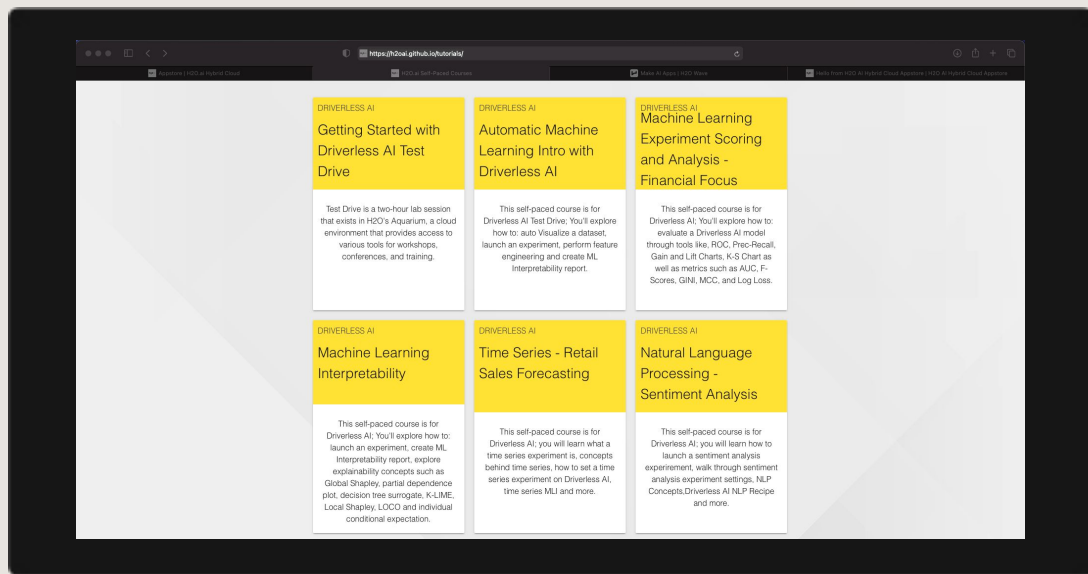
- h2o.ai/free
- Use your corporate email address
- Check your spam folder!
- Email from cloud-noreply@h2o.ai



Learn More

Discover how the H2O AI Hybrid Cloud makes your company an AI company.

- [Learn more about building apps with H2O Wave](#)
- [Source code to example H2O Wave apps](#)
- [H2O trainings and tutorials](#)



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Get direct access to the Makers at H2O.ai.

- <https://www.h2o.ai/slack-community/>

