

ANACONDA CON

Up and running (and machine learning) with Anaconda Enterprise 5

AnacondaCON '18

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Schedule

- Introduction to Anaconda Enterprise (AE)
- Hands-on with AE
- Considerations when installing AE
- Administrator workflows with AE
- Data science workflows with AE
- Overview of machine learning and model deployment in AE
- Use Case 1 - Fashion with MNIST, Tensorflow/Tensorboard, model training
- Use Case 2 - House price prediction, scikit-learn, UI, prediction API
- Use Case 3 - Image classifier, Tensorflow, Flask UI

Introduction

Your Speakers For Today



Kristopher Overholt
Senior Product Manager,
Anaconda, Inc.



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Product Manager,
Anaconda, Inc.

Introduction

What we want to accomplish today

- Learn about operational and security requirements and considerations for a data science platform
- Walk through the Anaconda Enterprise installation process
- Perform data preparation for production machine learning pipelines
- Exercise data science workflows related to model training, development, and deployment with industry-standard machine learning tools
- Learn hands-on techniques to help your data science team work together along the model development process



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...and many more!

ANACONDA ENTERPRISE

Enterprise-Ready Data Science Platform



Collaboration



Reproducibility



Deployment



Security



Scalability



Governance

ANACONDA DISTRIBUTION

The Most Trusted Python Distribution for Data Science



...and many more!

ANACONDA SUPPORT

World-Class Support for
Production-Ready
Deployments of
Open Source

ANACONDA CONSULTING & TRAINING

Solve Enterprise
Data Science
Challenges with
the Creators of
Anaconda

DATA SOURCES



Flat Files



SQL



NoSQL



Distributed SQL
Engines

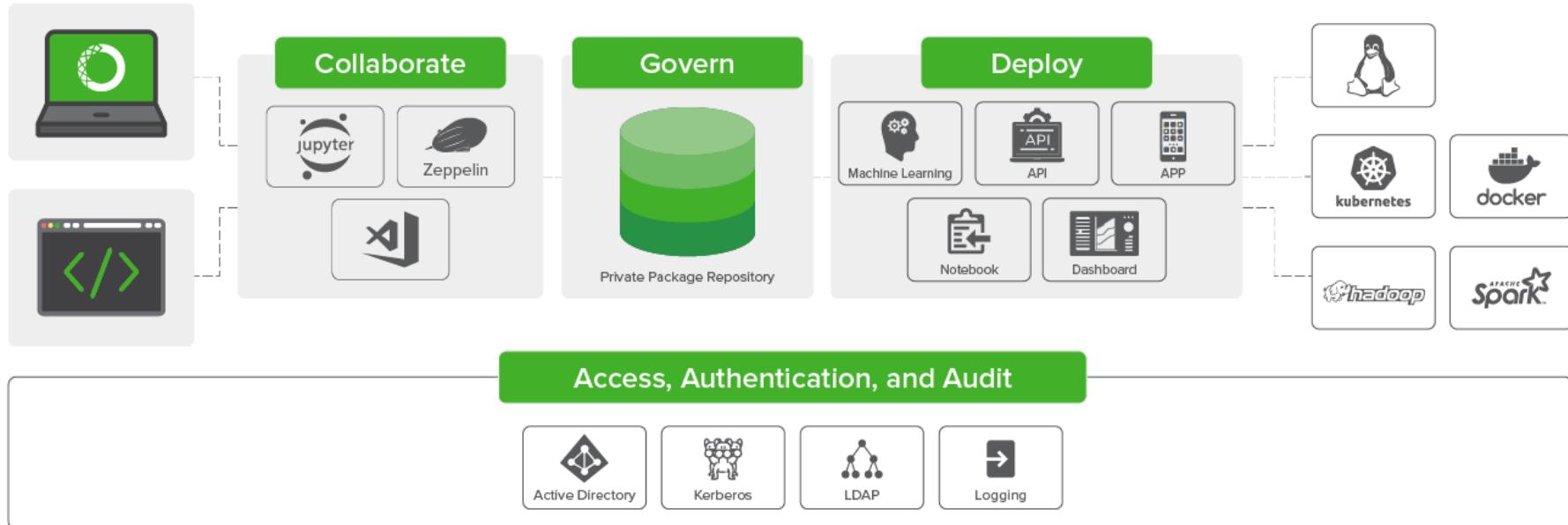


Apache Hadoop



Cloud-Based
Storage

Anaconda Enterprise



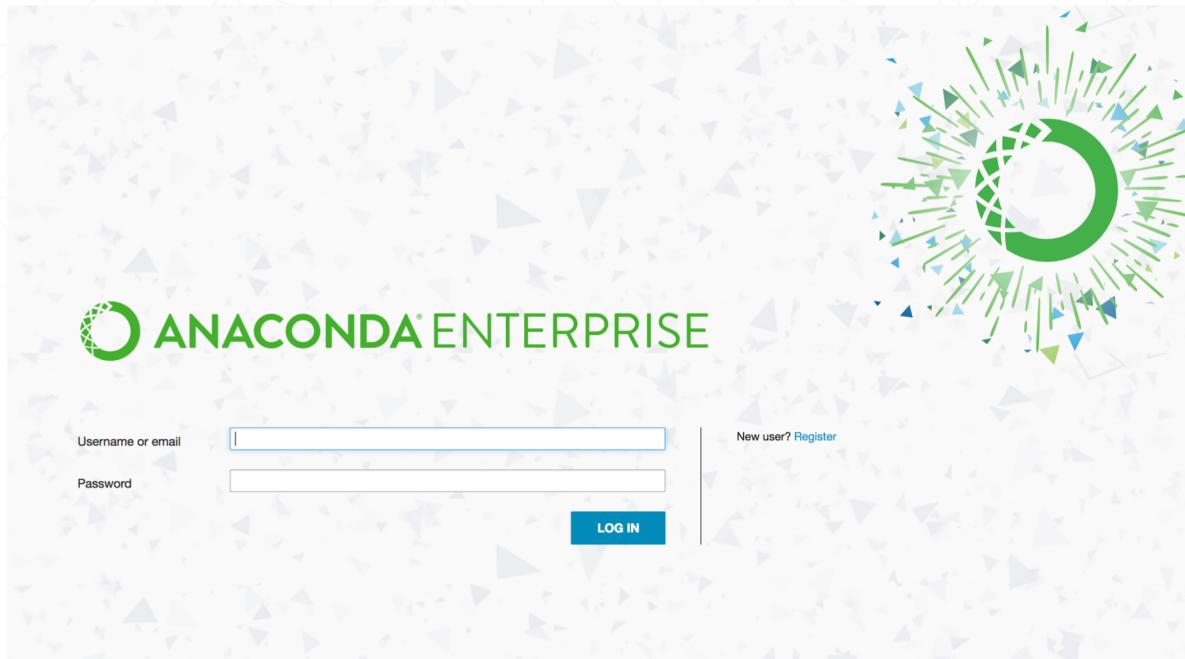
Tutorial Materials

Access materials for this tutorial:

<https://github.com/anaconda-platform/ac18-tutorial/>

Hands-on with Anaconda Enterprise

Create your account



Deploy a sample project

- Click “Sample Projects” on the top right
- On the “data_clustering” sample project, click “Save to My Projects”
- Return to the Projects view
- Click on the “data_clustering” project
- Click on the “Deploy” tab
- Click on the “Deploy” button
- Click on the “Deployments” link in the top navigation bar
- Click on the “data_clustering” project
- View and interact with your first deployment!

Upload a sample project

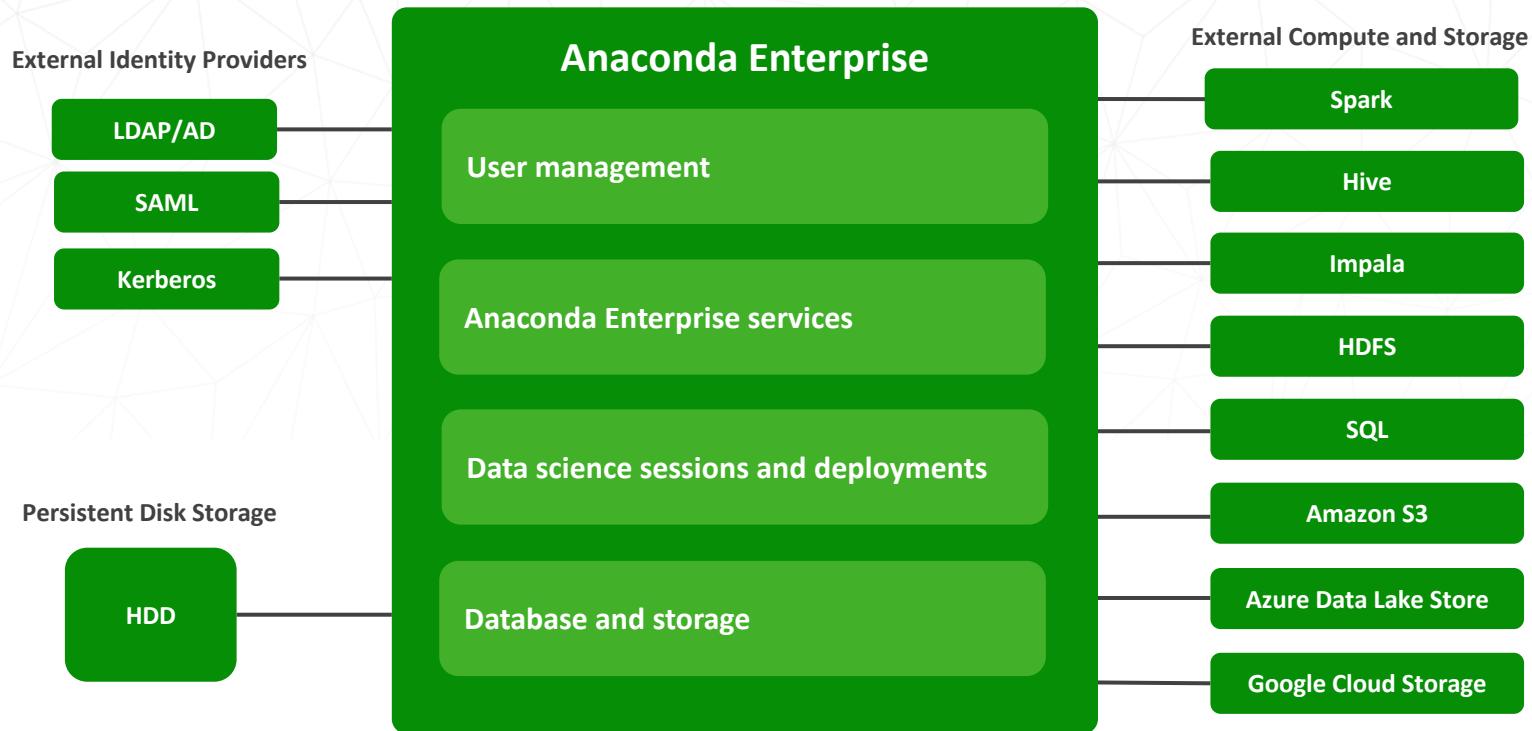
- Click “+” and “Upload Project” on the top left
- Browse to the “2_house_price_predictions.zip” from the tutorial materials
- Click “Next” and “Upload”
- Click on “View” after the project uploads
- Click on the “Deploy” tab
- Click on the “Deploy” button
- Click on the “Deployments” link in the top navigation bar
- Click on the “2_house_price_predictions” project
- Interact with your new deployment!

Create a new project from a template

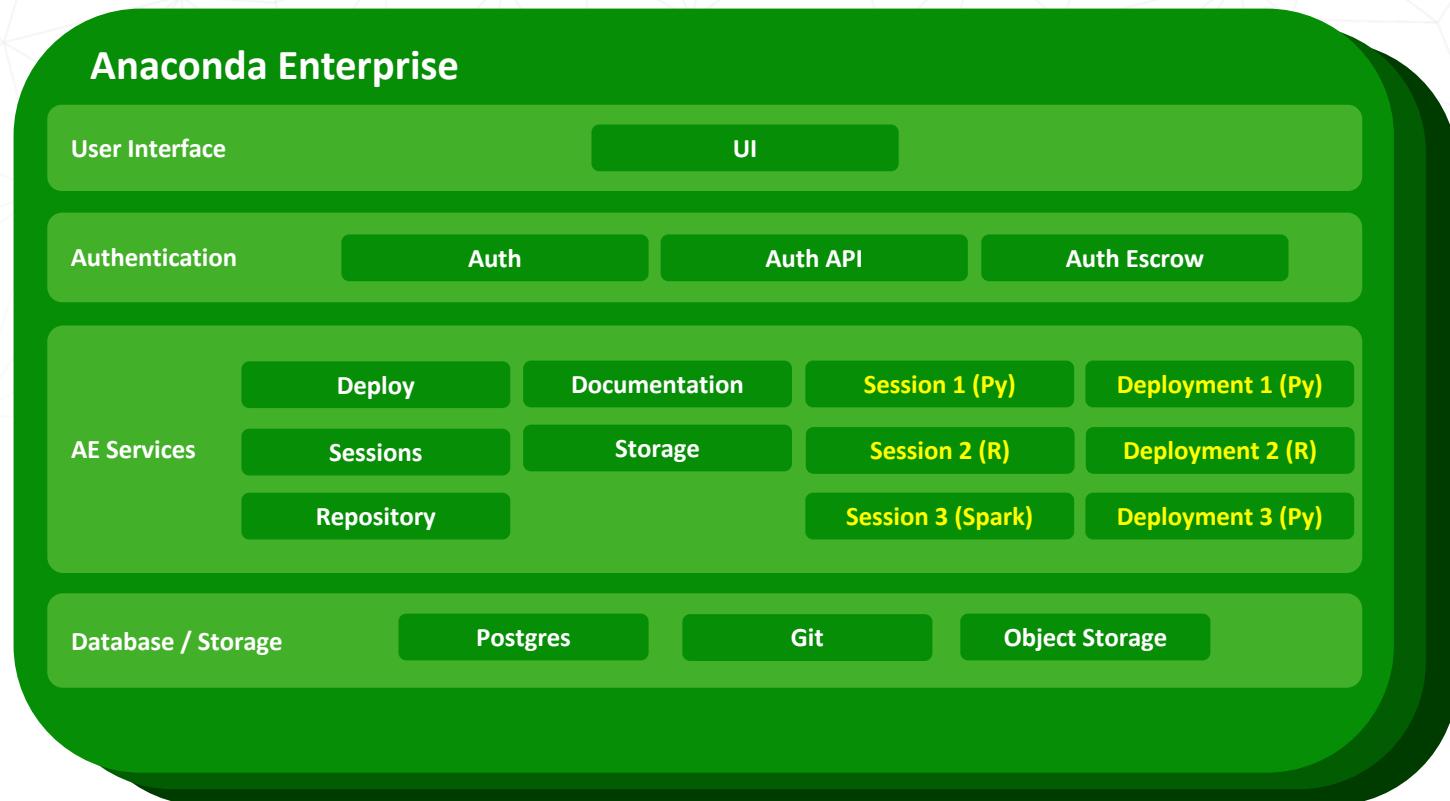
- Create a new project
- Click “+” and “Upload Project” on the top left
- Select different project templates - Python 3, Spark-Hadoop, R

Considerations when installing AE

External Connectors



Anaconda Enterprise Architecture



Anaconda Enterprise Installation

- Design
- Requirements
- Pre-installation checklist
- Installation
 - 54.162.157.214
- Post-install installation configuration
 - ac18-install.product.anaconda.com 300 IN A 54.152.21.219
- User management
- Cluster management

Working with Anaconda Enterprise - Administration

Operational Lifecycle

Deployment and integration

Scalable compute and storage

Package governance and lifecycle

Monitoring, logging, and alerting

Backup, restore, upgrades

Security and availability

On-premises
Including air-gapped

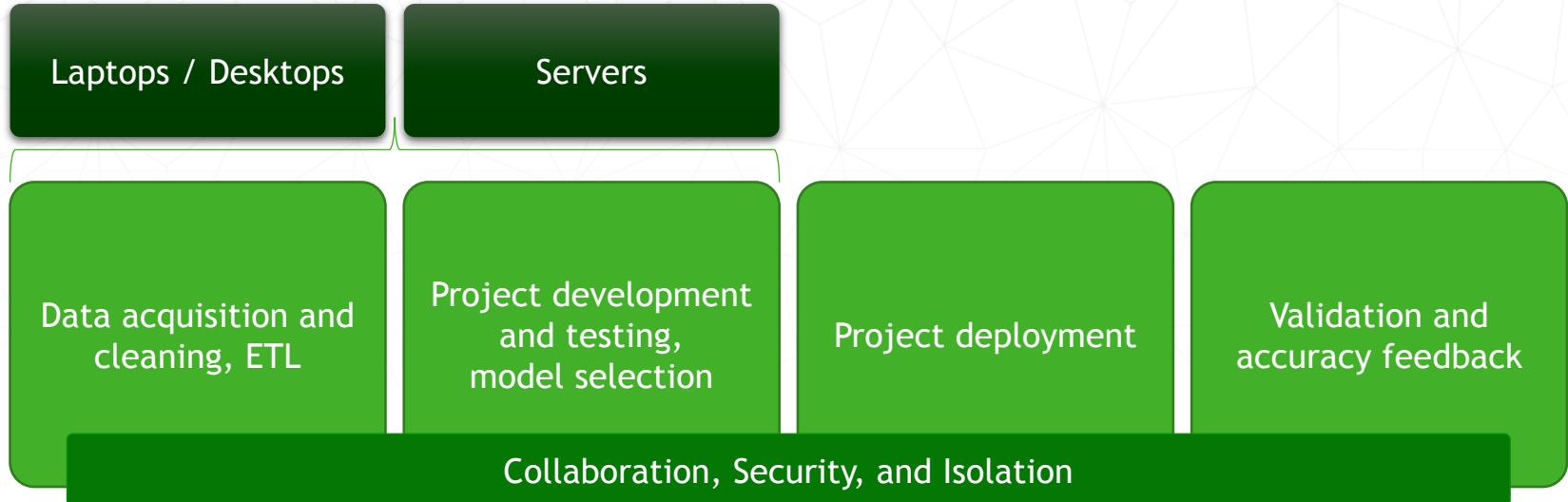
Cloud Providers
AWS, Azure, GCP

Architecting Anaconda Enterprise

- Add a cluster node
- Monitor cluster utilization
- Connect to external identity provider
- Manage users
- Audit logs

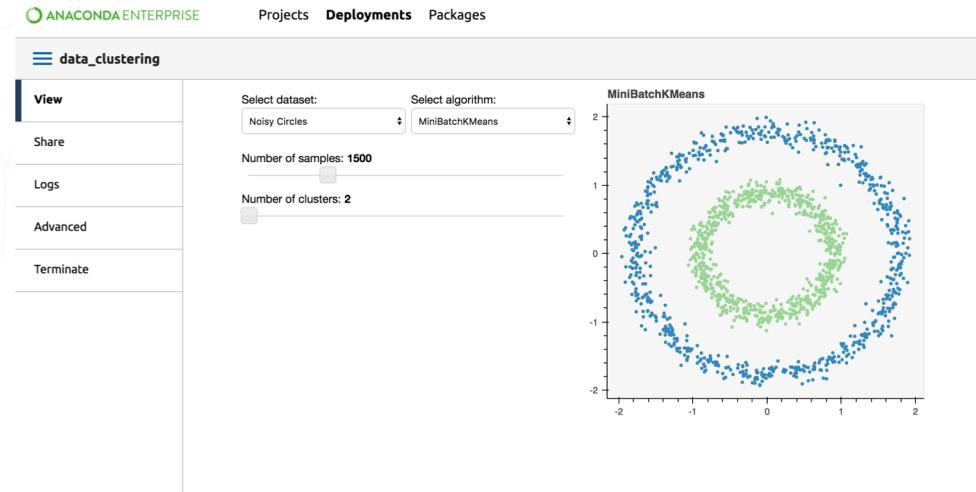
Working with Anaconda Enterprise - Data Science

Data Science Lifecycle



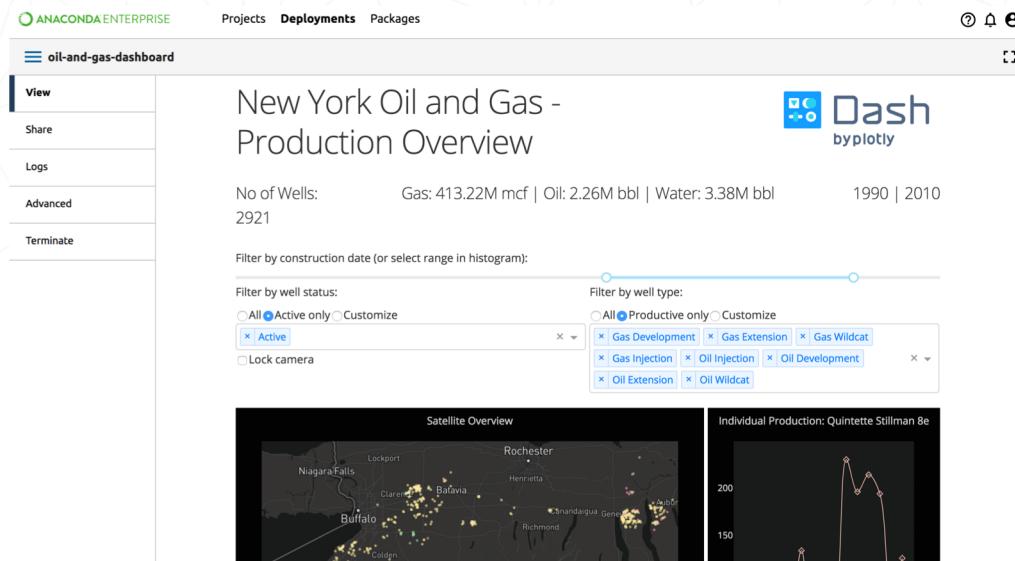
Projects and Collaboration

- Hands-on tasks:
 - Save and deploy the “data_clustering” sample project
 - Share the project with someone
 - Make a change, commit a new version, then deploy the new version



Deploy anything with Anaconda

- How to deploy any Python or R project in AE
 - Create a new folder
 - Place all files in folder
 - Add anaconda-project.yml with package dependencies
 - Ensure app servers to port 8086 from all origins/hosts
- Example - Plotly Dash Oil and Gas Dashboard
 - <https://github.com/plotly/dash-oil-and-gas-demo>



Machine Learning Workflows with Anaconda Enterprise

Data Science Workflow

1. Data gathering
2. Data preparation/exploration
3. Model selection
4. Model training
5. Model evaluation
6. Parameter tuning
7. Model prediction and scoring

Machine Learning Libraries in Anaconda

- Scikit-learn
- Tensorflow
- PyTorch
- H2O
- CNTK
- mxnet
- Caffe and Caffe2
- xgboost
- Lasagne
- Neon

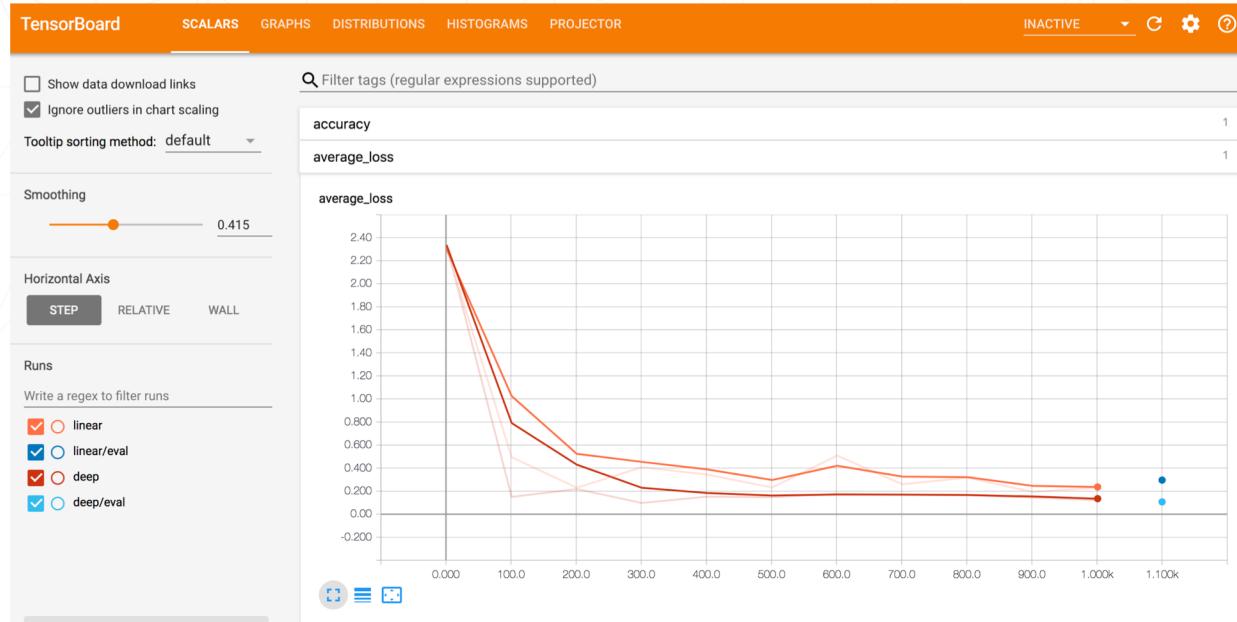
Getting Started with Tensorflow and Anaconda for Image Classification

Use Case 1

Image Classification

Use Case 1 - Fashion MNIST

- Upload **1_fashion_mnist.zip** project to AE
- Getting started with Tensorflow and Anaconda
- Train multiple ML models
- Analyze their performance



House Price Predictions with scikit-learn

Use Case 2

House Price Predictor

Use Case 2 - Prediction

- Upload `2_house_price_predictions.zip` project to AE
- Getting started with scikit-learn and Anaconda
- Feature selection
- Model selection
- Deploying a REST API
- Developing an application/frontend to query the deployed model

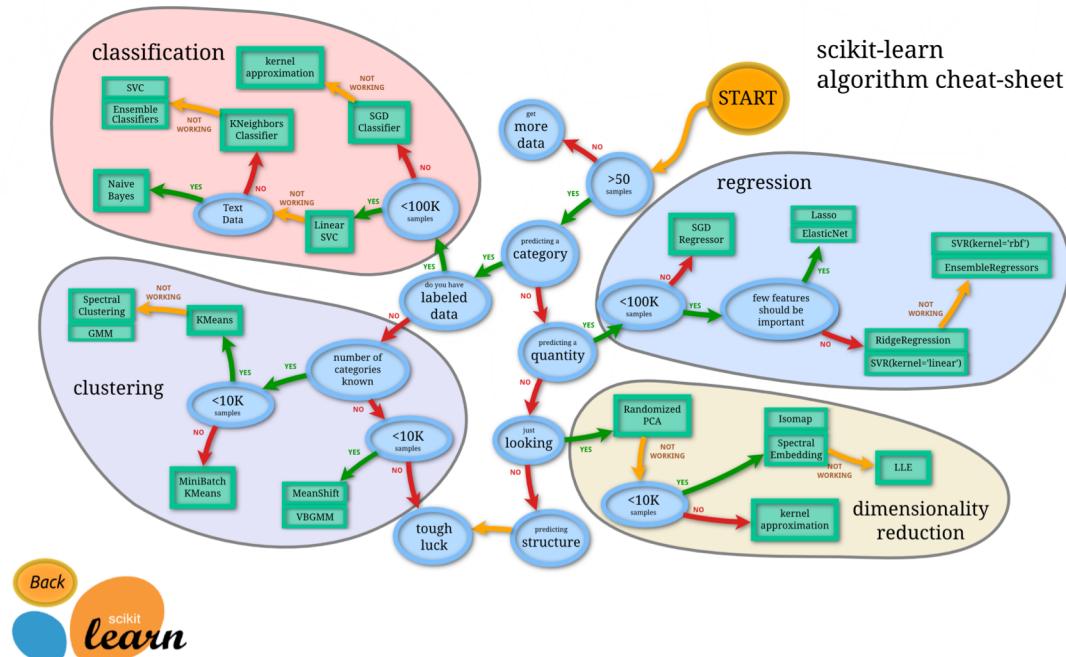


Image Classification for Fun and Profit

Use Case 3

Image Classification and UI

Use Case 3 - Images

- Upload **3_image_classifier.zip** project to AE
- Image classification and frontend for consumers
- Transfer learning with a pre-trained image classifier

ANACONDA ENTERPRISE Projects Deployments Packages

image_classifier_flask

View Share Logs Advanced Terminate



Classification Results

giant panda, panda, panda bear, coon bear, Ailuropoda melanoleuca (score = 0.93291)
lesser panda, red panda, panda, bear cat, cat bear, Ailurus fulgens (score = 0.00121)
brown bear, bruin, Ursus arctos (score = 0.00110)
lawn mower, mower (score = 0.00075)
earthstar (score = 0.00063)

Classify New Image