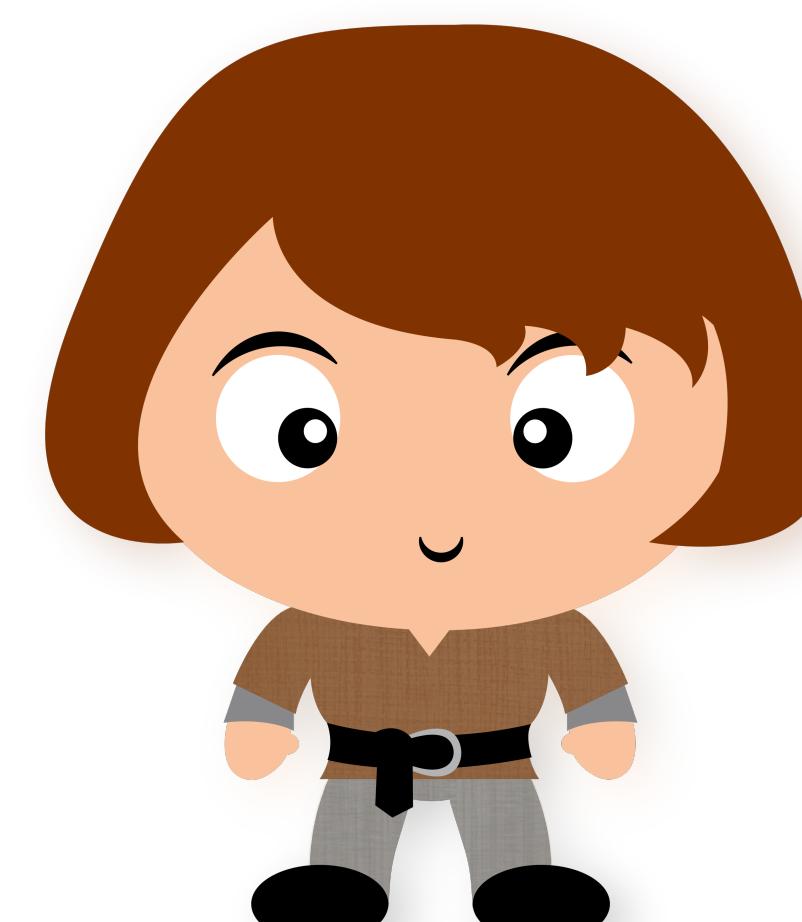


# Guild AI: Simple Reproducibility in Machine Learning

Garrett Smith, Project Lead  
Chicago, USA  
<https://github.com/guildai>

## ML Reproducibility Scenario - Arya and Clegane

Published Researcher



Goal: support discovery and use of her work

Arya

Survey Author



Goal: understand and reproduce Arya's results

### 1 Develop

```
$ guild run train.py dropout=uniform[0.0:0.9] --optimizer bayesian
```

Capture each experiment      Optimize hyperparameters  
Study and compare results      Annotate key results

### 2 Document

```
key-findings:  
description: Key findings for dropout between 0.8 and 0.95  
steps:  
- run: train.py dropout=0.8  
- run: train.py dropout=0.9  
- run: train.py dropout=0.95
```

Add guild.yml to project

### 3 Publish

```
$ git commit -m "Final results" && git push
```

```
$ guild push arya-experiments-on-s3
```

### 4 Retrieve

```
$ git clone https://github.com/arya/important-project.git
```

```
$ guild pull arya-experiments-on-s3
```

### 5 Discover

```
$ guild help
```

Project help auto generated from Guild file (guild.yml)

### 6 Recreate

```
$ guild run key-findings
```

Re-run Arya's experiments      Compare results side-by-side



## Features

- Automatically capture runs as unique experiments
- Compare and analyze differences across runs
- Publish runs to secure servers on-prem or in the cloud
- Reproduce customized workflows
- Automate hyperparameter tuning
- Train remotely on accelerated hardware

## Frameworks

TensorFlow

PyTorch

Keras

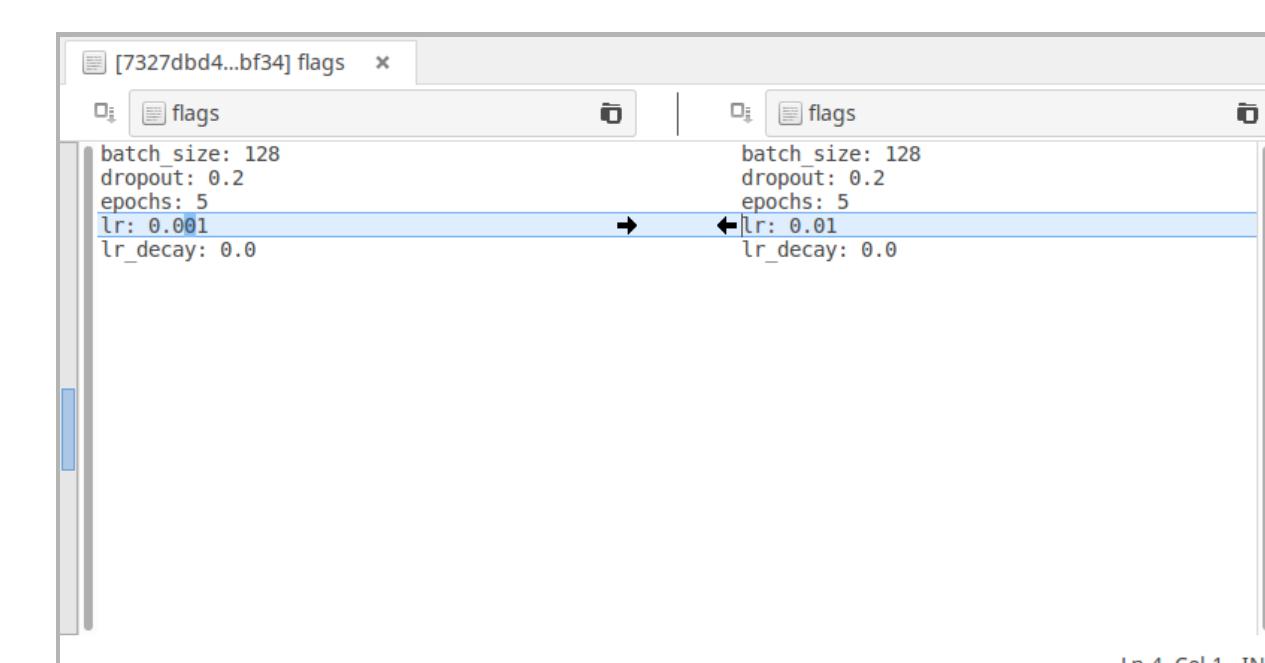
scikit-learn

mxnet

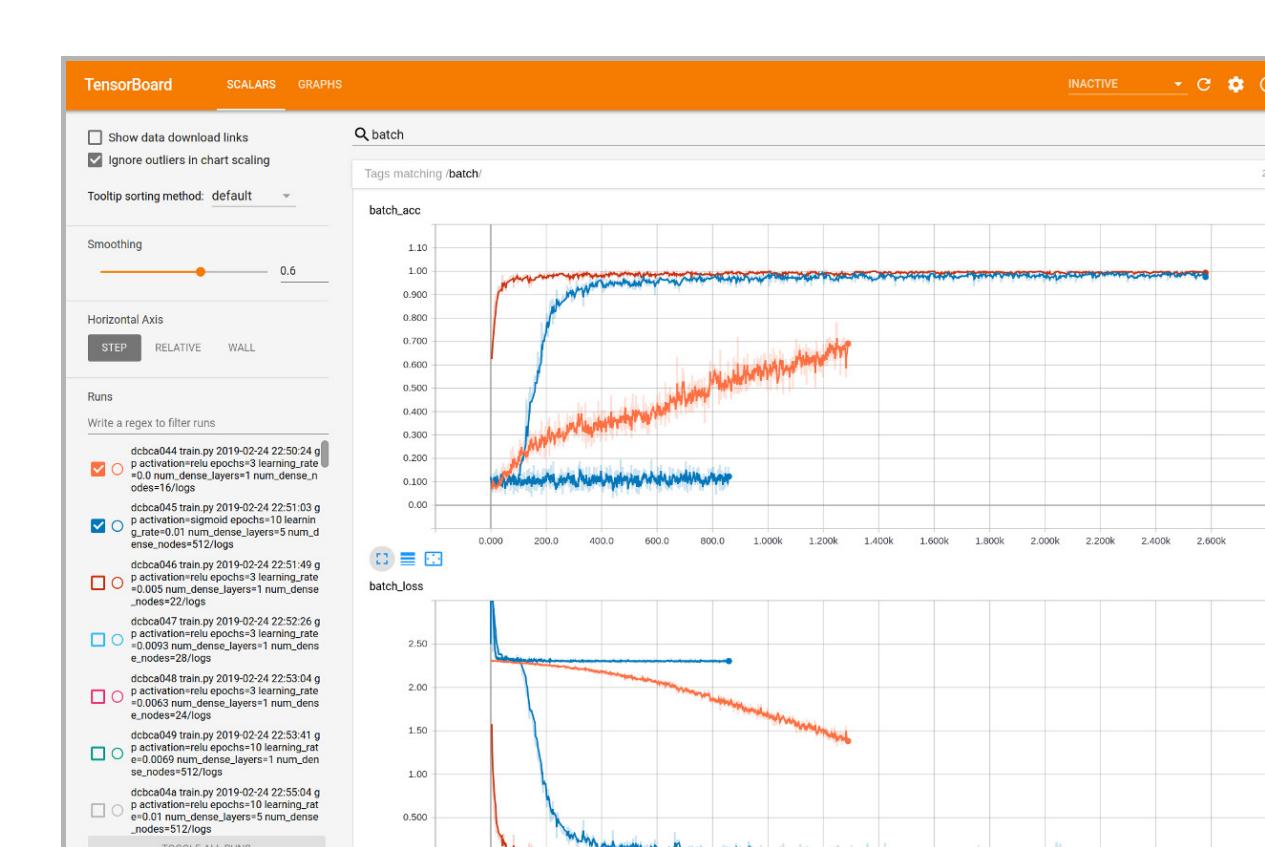
XGBoost

## Integration

System tools for viewing and diffing



ML visualization tools like TensorBoard



## Workflows

Run machine learning workflows, automatically resolving dependencies and capturing steps as trackable experiments.

