

# Kubeflow Intro

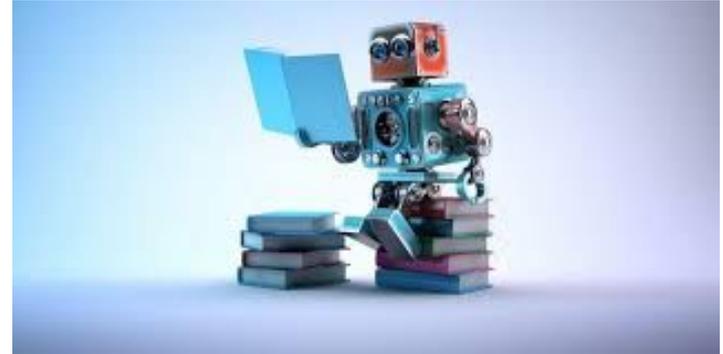
Ala Raddaoui  
Michal Jastrzebski

# \$whoami

- Ala Raddaoui
- Michal Jastrzebski

# Current situation

- Data scientists must learn Devops
- Devops must learn machine learning



ML on stage



ML behind the scenes

# What is Kubeflow?

The Kubeflow project is dedicated to making deployments of machine learning (ML) workflows on [Kubernetes](#) simple, portable and scalable. Our goal is not to recreate other services, but to provide a straightforward way to deploy best-of-breed open-source systems for ML to diverse infrastructures. Anywhere you are running Kubernetes, you should be able to run Kubeflow.

# So what is Kubeflow?

- Multiple components deployed together
  - JupyterHub
  - Tensorflow operator
  - PyTorch operator
  - Caffe2 operator
  - Katib
  - KVC
- Community focused on bringing ML to Kubernetes

# Model lifecycle

- Setup infrastructure
- Develop model
- Train model
- Serve model

# What do we deploy?

- Kubernetes 1.9.5
  - Deployed by Kubespray
- S3 over GCS
- Rook
  - Persistent volumes
- Kubeflow v. 0.1.0



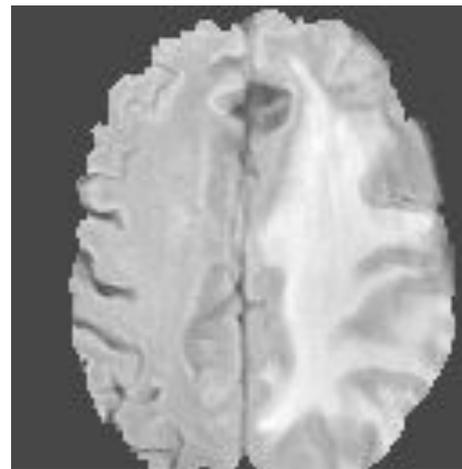
Let's go through an end  
to end example

# Kubeflow installation

# Model development

# What do we train?

- UNet
  - Paper by Olaf Ronneberger, Philipp Fischer and Thomas Brox
  - Implementation by Tony Reina and Dina Suehiro, Intel AI
- Dataset
  - Courtesy of University of Pennsylvania BraTS team



# Training

# Without Kubeflow



## Setup infrastructure

1. Deployment
2. Setup networking
3. Bootstrapping



## Setup scheduling

1. Cluster spec
2. Which is which



## Launch training

Launch training in each server

# With Kubeflow

➤ Create a docker image

↻ Run training job

1. Create ksonnet protoype
2. Set params
3. apply

# Serving

# Without Kubeflow

## ➤ Setup infrastructure

1. Deployment
2. Setup networking
3. Bootstrapping

## ↻ Deploy model

## ⌘ Setup load balancing

## 🚀 monitoring

# With Kubeflow

## Deploy model

1. Instantiate ksonnet prototype
2. Set params
3. apply

# What's next

- Join Slack channel
- Join mailing list
- Subscribe to twitter account
- Look for Kubeflow talks
- Contribute!



Questions?