

Practical G Suite Administration

Presented by:

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Google Cloud



Study Jams





About the Speaker

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A little about Machine Learning (Prize #1)



What is Machine Learning?

From Dave Dave Robinson (<https://opendatascience.com/user/dave-robinson/>)

Data science or Analytics produces insights based on data either manually or automatically.

Machine Learning (ML) builds on Data science to produce predictions.

Artificial Intelligence (AI) builds on Machine Learning and produces actions.



Introduction of Apache SINGA



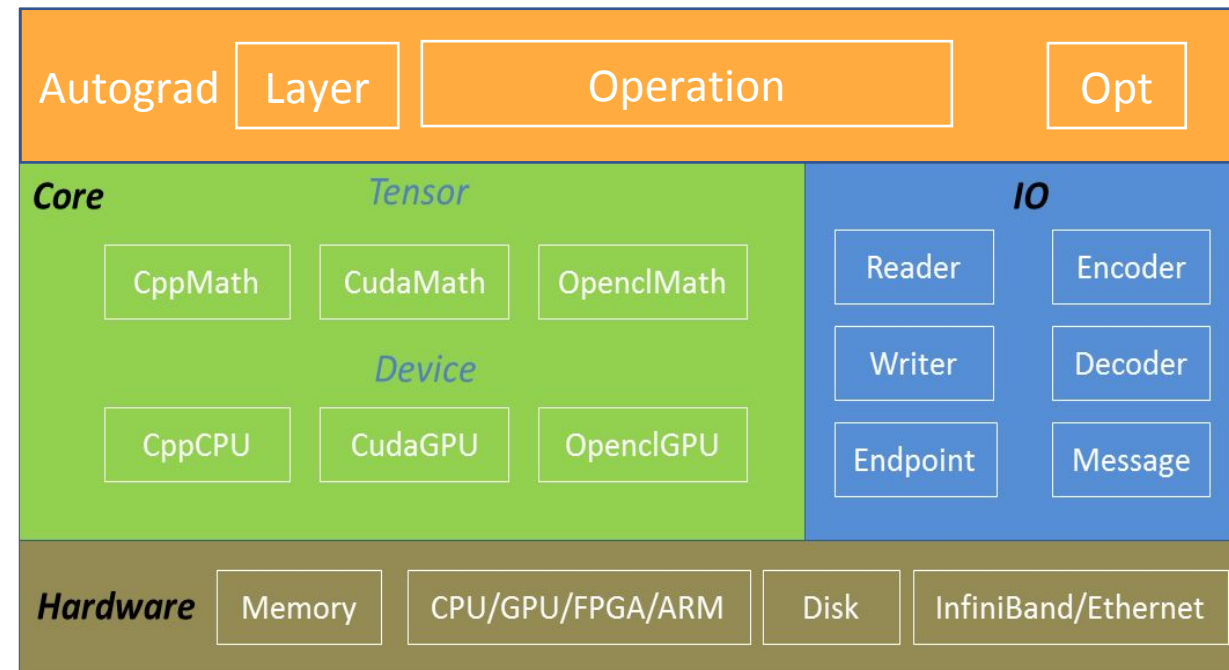
Apache

SINGA



What is Apache SINGA

- Apache SINGA is a machine learning library with the focus on training **deep learning** models in a **distributed** environment
- Users define the neural network architecture using **Layer** and **Operation** abstracts
- **Training** mainly involves matrix mathematic calculation, which is optimized on **specific hardware**
- **Communication** optimization is provided for **distributed training**



SINGA graduated as a
Top-Level Project
(TLP) of the Apache
Software Foundation
on 16 Oct 2019.



How to use it

● Installation

- *conda install -c nusdbsystem -c conda-forge singa-gpu*

● Define the neural network in Python

- Create operations
- Feed the data through the operations
 - The dataflow indicates the network architecture

```
from singa import autograd

# create operations
conv1 = autograd.Conv2d(1, 32, 3, padding=1)
conv2 = autograd.Conv2d(32, 16, 3, padding=1)
linear = autograd.Linear(16 * 7 * 7, 10)
pooling1 = autograd.MaxPool2d(3, 2, padding=1)
pooling2 = autograd.AvgPool2d(3, 2, padding=1)

def forward(x): # feed the data through operations
    y = conv1(x)
    y = autograd.relu(y)
    y = pooling1(y)
    y = conv2(y)
    y = autograd.relu(y)
    y = pooling2(y)
    y = autograd.flatten(y)
    y = linear(y)
    return y
```


How to use it

- Prepare the training algorithm and data
 - Easily switch between stand-alone and distributed training

- Iterative training

```
from singa import opt

sgd = opt.SGD(lr=0.01)
sgd = opt.DistOpt(sgd) # for distributed training
autograd.training = True
```

```
for epoch in range(epochs):
    for i in range(batch_number):
        inputs = tensor.Tensor(...) # input feature
        targets = tensor.Tensor(...) # ground truth label
        y = forward(inputs)
        loss = autograd.softmax_cross_entropy(y, targets)
        for p, gp in autograd.backward(loss):
            sgd.update(p, gp)
        sgd.step()
```

How to join the Apache Singa community

- The current development team includes people from
 - National University of Singapore, NetEase, Zhejiang University, Osaka University, Alibaba, Université Grenoble Alpes
- Steps to join the community
 - Contribute code, documentation, examples (tutorial)
 - Create JIRA tickets
 - Send Pull Requests
 - Participate in the discussion via dev@apache.singa.org
 - The PMC will nominate new committers and start the voting via private@apache.singa.org



Prize #2

What month and year did Apache Singa become a Top Level Project?



Goal is to be ready for Certification

Certification: <https://cloud.google.com/training/admin>

&

G Suite Administrator Fundamentals

<https://google.qwiklabs.com/courses/858>



G Suite Practical Administration



Sandbox

Sandboxes are the first step to a cyber range

Today we'll be setting up a G Suite Sandbox live



Why a Sandbox aka How to Get Involved in CyberSecurity?

Network Printer

Switch & a Few Cables

COTS Firewall

Laptop

Raspberry Pi

Excercises with the Lab/Range



G Suite Versions

Different versions of G Suite

Basic (\$6 USD/month)

Business (\$12 USD/month)

Enterprise (\$25 USD/month - *negotiable*)

Also Education, NPO, & Government...



Story Time #1

Google Etiquette

Google Pretty Please

Googlesplaining



Comparing G Suite Versions

<https://gsuite.google.com/compare-editions/>



Practical Differences of G Suite Versions

Basic - Very powerful and includes: Gmail, Hangouts, Calendar, Drive for storage as well as Docs, Sheets, Slides, Forms, and Sites

Business - Shared Drives, Vault, Data Regions & Appmaker

Enterprise - Cloud Identity Premium (+ Secure LDAP), DLP, recording of Hangouts Meet, live stream to 100K users



File Server Killer

Drive File Stream (DFS) + Shared Drives + Business G Suite = File Server Killer

Unlimited storage with 5+ users

We also love using GCP/AWS/etc. w/Google Cloud Print

Sadly Cloud Print to be canceled Dec 31, 2020



Domain Names

Pick a .com

Longer names are often better



Domain Name Service (DNS)

MX Record

TXT Record

DKIM

SPF

Verification

A Record

CNAME Record



Buy a Domain

Stickiness

eNom/GoDaddy/Network Solutions even Google

Use an existing domain: <https://support.google.com/a/topic/9196>



Let's Setup a G Suite Sandbox

Use Chrome web browser

Setup a new profile (manage people)

<http://goo.gl/pPbZdB>

Admin.google.com

Setup Email

Create a user

Control services



Email Improvements

SPF

DKIM

DMARC



Marketplace

Virtru



Groups & Organizational Units (OUs)

Admins

Executive

Accounting

All Staff

HR

Legal



Story Time #2

Surf Fishing



Security #1

Passphrases vs passwords

Password policies

password recovery options.



Security #2

POLP (Principle of Least Privilege)

Setup an admin using Cloud Identity Free

Two step verification (2SV)

Setup OU for Admins



Security #3

<https://www.bettercloud.com/monitor/a-top-g-suite-expert-shares-his-31-best-modern-security-tips/>



Groups & OUs to Limit Services

Allows you to enable for all or a subset of users.



Let's check Mail, Calendar & Drive/Docs

Core Services: Gmail, Calendar, and Drive & Docs.

Admin Core Services

ToS



File Server Killer

Install Drive File Stream

Using Microsoft Office with Drive & Docs as well as via DFS

Fonts are the biggest issue. You can't add them to Google Docs



Google Vault

Google Vault, Google's e-discovery tool

<https://ediscovery.google.com/>



Final Story Time

"Don't worry ladies, it'll dry"



Migrate Mbox Format Mail

<https://github.com/jay0lee/got-your-back/wiki>

NOTE: PSTs use GSSMO

<https://support.google.com/a/users/answer/153866?hl=en>



Additional Items (time permitting)

Add a calendar resource

Setup a Google Site

What can you do with admin console reports?

Add another alternate domain to your account.

Whitelist and block API access to your account.

Manage the G Suite Marketplace for trusted applications only



More Additional Items

Setup email whitelists, blacklists and approved sender lists.

Single Sign on (SSO) options

Google as an Identity Provider versus a 3rd party provider.

Secure LDAP

Look at the security and alert center

Setup mobile device management



Thanks!

Image Credits:

KAM photo taken by Ted King, used with permission.

Company Logos are Brand Resources of their Respective Companies

Thanks to:

Wang Wei for the Singa Introduction Slides



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