Open Source - An exploration

Seminar Series Presentation

Group 18

March 2024

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1 What is Open-Source?

1. What is Open-Source?

2. Benefits & Downsides

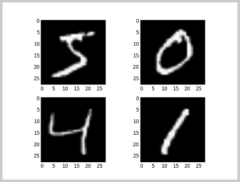
3. Case Study

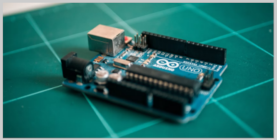
4. How can I contribute to a project?

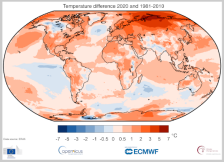
Definition of Open Source

1 What is Open-Source?

So much more than software!







Key Characteristics

- Transparency
- Collaboration
- Community-driven Development
- Innovation and Iteration
- Freedom to Use and Modify
- Licensing

Licensing

1 What is Open-Source?

Copyleft licenses

Permissive licenses

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2 Benefits & Downsides

1. What is Open-Source?

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Pro&Con Table

2 Benefits & Downsides

Pros	Cons
▶ Transparency	▶ Lack of Support
▶ Community collaboration	▶ Fragmentation
▶ Customization	▶ Perceived Lack of Accountability
▶ Cost-Effective	
▶ Innovation and rapid development	
▶ Vendor Independence	
▶ Learning Opportunities	
▶ Ethical Considerations	

Table 1: Pros and Cons

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3 Case Study

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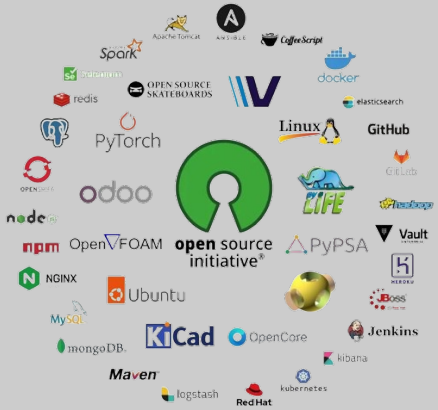
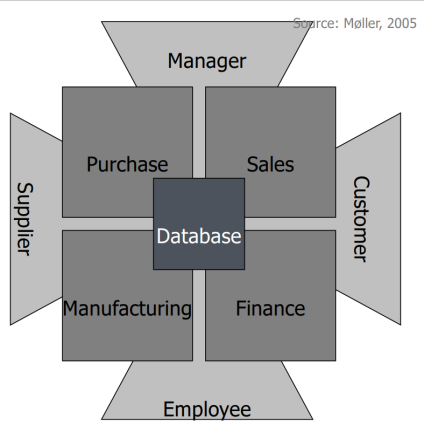
Open Source Projects

3 Case Study



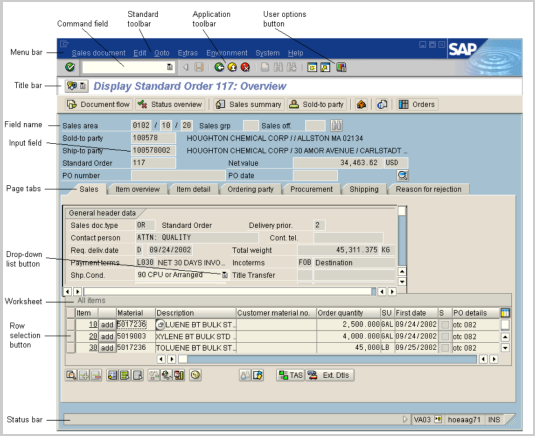
Enterprise Resource Planning Systems

3 Case Study



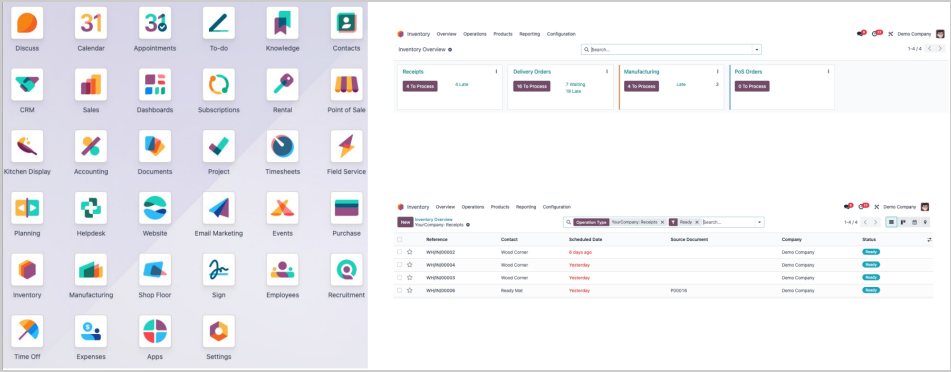
SAP

3 Case Study



Odoo

3 Case Study



Odoo Pros and cons

3 Case Study

Pros	Cons
▶ Transparency	▶ Lack of Support
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▶ Cost-Effective	
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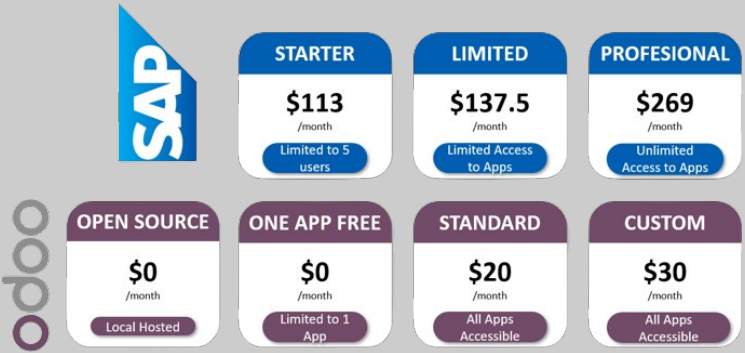
▶ Vendor Independence	
▶ Learning Opportunities	

Price Comparison

3 Case Study



What is TensorFlow? (I)

3 Case Study

- Platform for machine learning
  - Machine learning library
- Free and open source
  - License: Apache license 2.0
  - Initially from Google

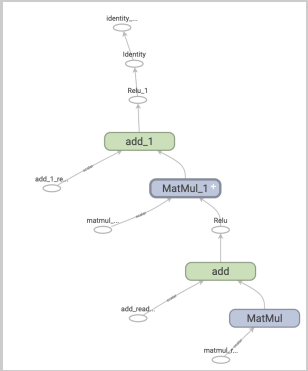
What is TensorFlow? (II)

3 Case Study

- Data flow graphs
  - ML algorithms as a graph of connected operations
  - Quick and intuitive work flow
- Works with Python, C++ etc.
- Visualization of work by TensorBoard

```
import random
import numpy as np
import tensorflow as tf
from tensorflow import keras
from sklearn.model_selection import train_test_split
```

Source: Udacity, Inc.

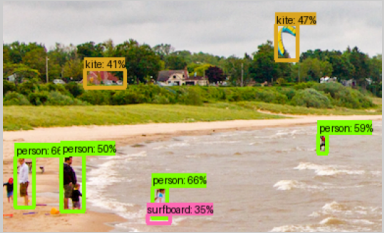


Source: tensorflow.org

What is TensorFlow? (III)

3 Case Study

- Natural language processing
- Image recognition
- Computational-based simulations
- Training and execution on GPUs, CPUs or TPUs (Cloud)



Source: tensorflow.org

Tensor flow: Open-source characteristics

- Google as contributor **and** promoter
  - Part of Googles business model
- Network of collaborators
- Beyond source code: Sharing of models and datasets

Tensor flow: Google's perspective

3 Case Study

- Google developed closed code until 2015
- Googles AI products use TensorFlow
- (Worldwide) collaboration - exposure
- More users, potential profit
  - Googles cloud-TPUs

Tensor flow: Pros and cons

3 Case Study

Pros	Cons
Transparency	Lack of Support
▶ Community collaboration	Fragmentation
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▶ *Google as big contributor*	▶ *Google as big contributor*

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1. What is Open-Source?

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4. How can I contribute to a project?

Short answer

4 How can I contribute to a project?

GitHub GitLab

A quick example

4 How can I contribute to a project?

- Suppose you want to **contribute** to a project which is currently working fine

A quick example

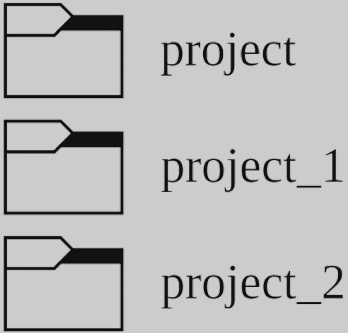
4 How can I contribute to a project?

- Suppose you want to **contribute** to a project which is currently working fine
- And you want to make a change **without breaking anything**…

A quick example

4 How can I contribute to a project?

- You could use some Cloud Based service and copy your folder and files



A quick example

4 How can I contribute to a project?

- And find yourself with a real mess…

What is git?

4 How can I contribute to a project?

- **Version Control Software** - such as Autodesk Vault

What is git?

4 How can I contribute to a project?

- How can I actually use it?

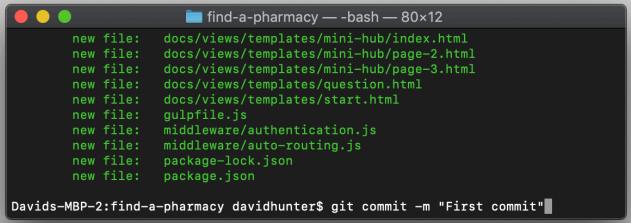


Figure 1: Terminal commands

What is git?

4 How can I contribute to a project?

- How can I actually use it?

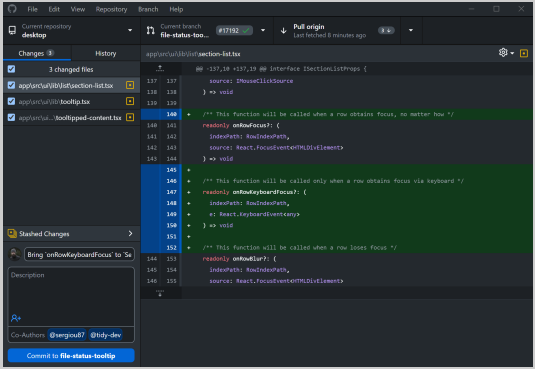
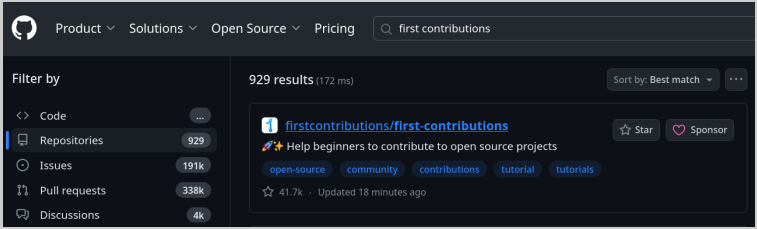


Figure 2: Graphical User Interface

A practical guide

4 How can I contribute to a project?

1. Create a GitHub Account
2. Search for the first-contributions project



What are the first files that you should look for in a project?

- **README.md:**
  - Project landing page.
  - Goals, purpose, how to start, and additional info.

What are the first files that you should look for in a project?

- **contributing.md:**
  - Details contributions sought by maintainers.
  - Process for submitting changes or getting involved.

What are the first files that you should look for in a project?

- **Code of Conduct (CoC):**
  - Guidelines for community interaction.
  - Lists unacceptable behaviors and reporting mechanisms.
  - Indicates positive behaviors encouraged by maintainers.

What are the first files that you should look for in a project?

- **license.txt:**
  - Specifies open source license.
  - Contains full license text.
  - Essential for understanding usage, modification, and enhancement permissions.

A practical guide

4 How can I contribute to a project?

1. GitHub Account - Done

A practical guide

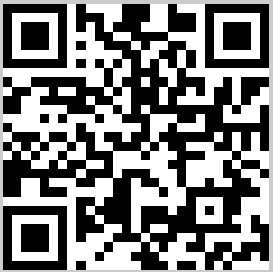
4 How can I contribute to a project?

1. GitHub Account - Done
2. Find the project page - Done

A practical guide

4 How can I contribute to a project?

1. GitHub Account - Done
2. Find the project page - Done
3. Follow the step by step guide and start contributing

Open Source - An exploration

Thank you