

Machine Learning Operations

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Resumen

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi vulputate tempus molestie.

Abstract

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi vulputate tempus molestie.

I. INTRODUCTION

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II. STATE OF ART

i. Concept

Machine Learning Operations, is an extension of the DevOps methodology that seeks to include the machine learning and data science processes in the development and operations to make ML development more reliable and productive[1]. .

ii. Objective

The goal of MLOps is develop, train and deploy ML models with automated procedures that integrate data, developers, security and infrastructure teams[1]. .

iii. Importance of MLOps

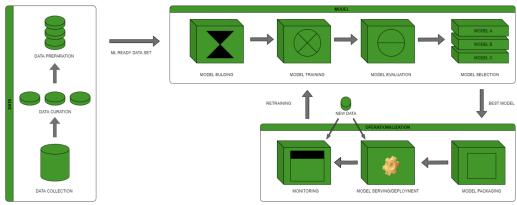
We are in a data-driven world. The importance of the MLOps models is that they are vital to

streamline the maduration process of AI and ML projects within an organization.

The use of trained models has changed dramatically in the last decade, and now the policy of managing ML models like ‘black boxes’ that they held in the traditional operations is no longer sufficient. Models are updated and mantained. It’s therefore vital that the effort and time to deploy and maintain them are reduced as much as possible[1].

iv. MLOps pipeline

While there are several attempts to capture and describe MLOps, the one that is best known is the proposal of ToughWorks[5], which automates the life cycle of end-to-end Machine Learning applications. Collection, selection and preparation of data to be used in model training, in finding and selecting the most efficient model after testing and experimenting with different models, in developing and sending the selected model in production[4].

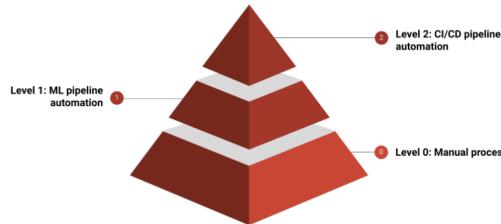


v. Maturity Levels

Depending on the level of automation of a MLOps system, it can be classified at a corresponding level. These levels were named by the community maturity levels. Although there is no universal maturity model, the two main ones were created by Google and Microsoft[4].

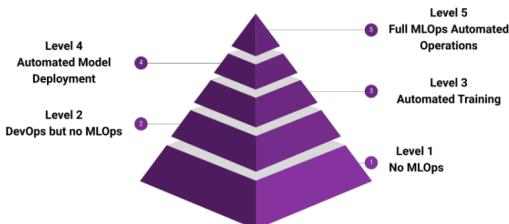
Google model consists of three levels[2].

- MLOps Level 0: Manual process.
- MLOps Level 1: ML pipeline automation.
- MLOps Level 2: CI/CD pipeline automation.



Microsoft model consists of five levels[3].

- MLOps Level 1: No MLOps.
- MLOps Level 2: DevOps but no MLOps.
- MLOps Level 3: Automated Training.
- MLOps Level 4: Automated Model Deployment.
- MLOps Level 5: Full MLOps Automated Operations.



III. CONCLUSIONS

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- [5] V. Stirbu L. Myllyaho T. Granlund, A. Kopponen and T. Mikkonen. Mlops challenges in multi-organization setup: Experiences from two real-world cases.