

# 1 Introduction

## 2 Distributed Systems

Characteristics from an distributed system: When we speak about an distributed system, there's a list of things that we need to think of, in order to understand the main characteristics that they share in computational terms. Without further abuse, the main characteristics that more explain the nature of an distributed system are:

Concurrency, this stands for a system that can handle multiple processes that run simultaneously, this of course in different machines that in an certain time align with each other to reach an common goal.

Scalability, relatively to this precise characteristic, we know that if we have an distributed network, we must ensure that in an certain way we can scale the system. This scalability can either be vertical(hardware) or either horizontal(number of instances), which has the goal of increasing the performance of an certain system.

Fault-tolerant, this is much of importance, because in some distributed systems it becomes incommensurable to not have counter-measures to faults. This faults could either be:

Transient faults, it occurs when there is an temporary fault that occurs due to a sudden and brief disruption in the system.

Intermittent faults, which occurs sporadically and unpredictably, making them difficult to diagnose and detect.

Partial Faults, this one occurs when an partial part of the components fails, but the system still works without that failure of the component.

Byzantine Faults, finally it occurs when an component behaves maliciously or incorrectly, this are the most severe and complex faults in an distributed system. There are more faults but those are what we as a group think are more relevant.

Coming back to the characteristics of an distributed system we also have transparency, which stands for an user not having the capability of knowing which processes are involved in an distributed system that he is interacting with.

Heterogeneity, an distributed system may have different resources, being heterogeneous, means that it can have different pieces and still give the same importance for each of them and possibly don't even know their importance

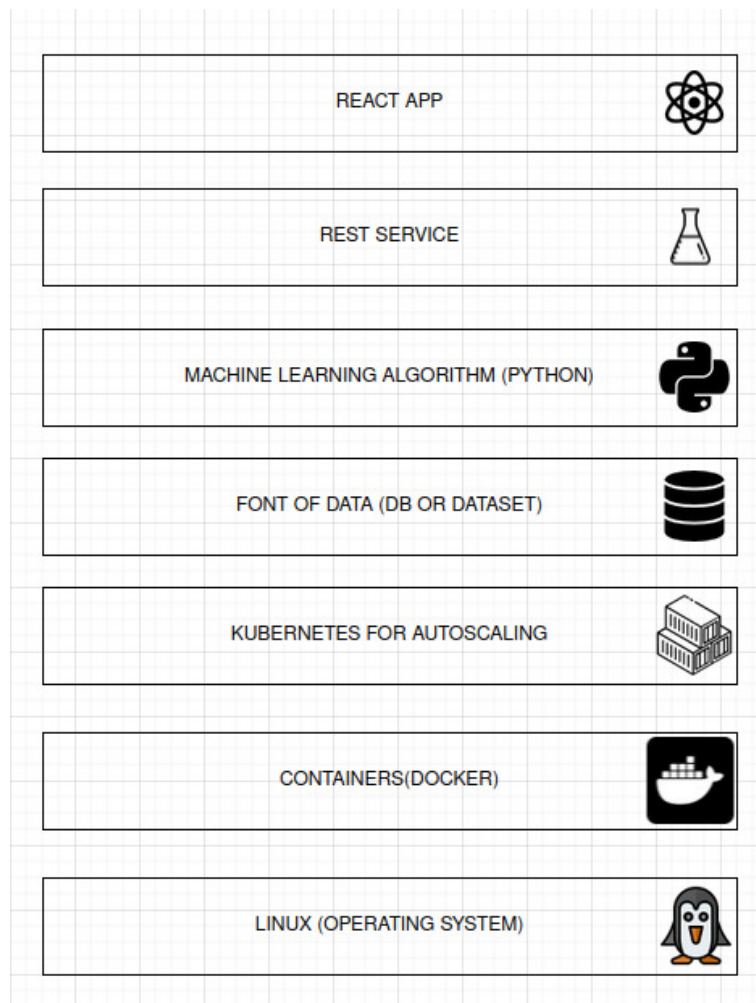


Figure 1: Arquitetura de camadas

and magnitude.

Resource sharing, an distributed system allows users to share resources, shuch as data, processing power, etc...

There are a lot of characteristics, and every characteristic may have an specific naming for an more specific situation, but those are the main characteristics and they do represent well how should an distributed system behave.

### **3 Information System**

### **4 Architecture**

Why is architecture important?

An architecture in distributed system's can be very much of an increment of value, because:

It ensures that good practises are followed, what we mean by this is that by thinking more about how an system could be contructed, we will try to understand which details we need to think off, in order to have an more well designed distributed system.

It is tought, according to previous experiences of more influent people, because when we search uppon what could be the best to our idealization of system, we end up reading books and articles of more experienced people experiences and workovers.

We will not invent the wheels in some cases, this means that you may found some patterns for your architecture that you can follow and still be sure that the system will acomplish what you want to acomplish. What you may not found in one pattern, you can find in an composite of patters, by mixing them. Also, you can always take out ideas from them and use what you think is more advantegous for your system.

Finally, you will have a more robustness system, because by thinking and planning the system out will ensure that most of the cases will be tought and eventually take cared of.