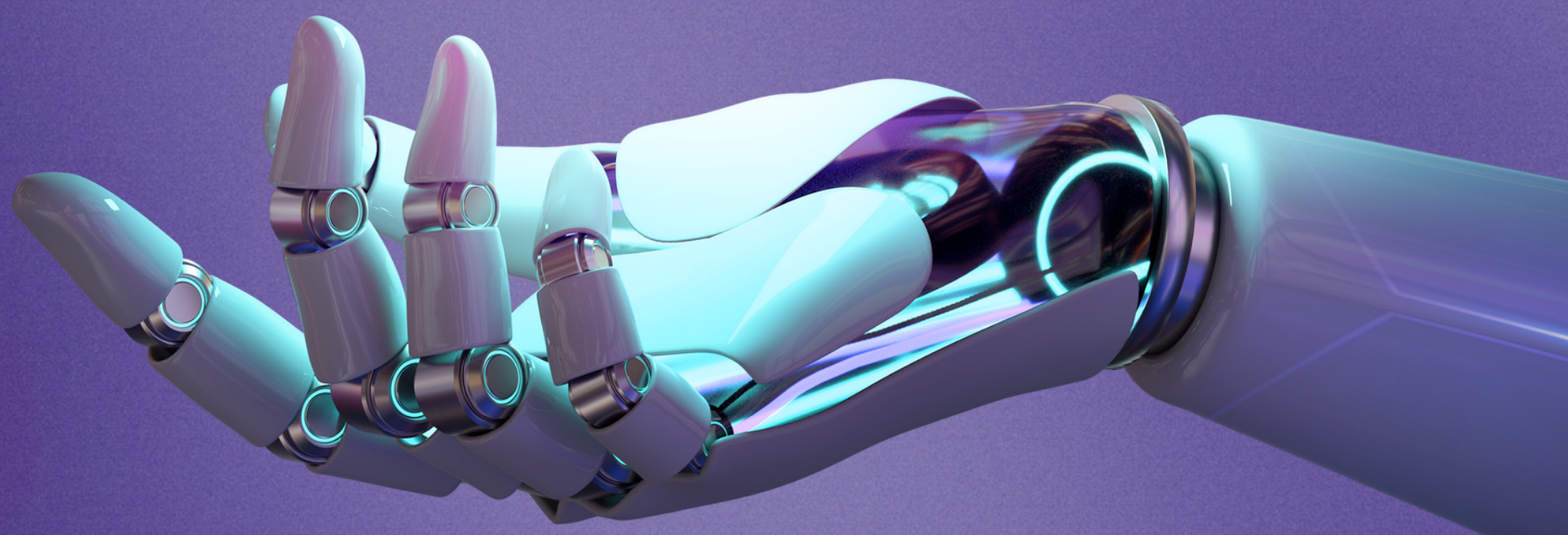
ABSTRACTION



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Abstraction is not just a word it is a world of interesting concepts. I'm sure you have seen or heard of it many times. Software engineering and computer science consider abstraction one of their most important concepts. Everybody praises its virtues and its power. However, it is not that easy to explain a precise and simple definition so we are going to a deep dive to understand it well. You can notice the definition of abstraction in lots of dictionaries such as: "The quality of dealing with ideas rather than events" or "An abstraction is a general idea rather than one relating to a particular object, person, or situation" we could summarize from here the idea of generalization and we confirmed as well that an abstraction is rather an idea than something real. It comes from the Latin (abstracts) it means "to draw away" in other word, to hide. So the three main properties is:

Hiding useless information, dealing with an idea representing the reality, generalizing a concept, idea versus reality. In short an abstraction will simplify a process or artifact by providing what really need, and hiding the useless details you don't care. Let's take some examples to clarify what we said. Look intensely to your washing machine what do you see? A bunch of buttons and knobs in order to wash whatever you want. Depending on your needs you will set a different washing program thanks to the washing machine interface. The interface is a buzz word in software engineering you don't need to know how the washing machine works internally for that interface will abstract, hide every detail of the real mechanism. Now that we defined what an abstraction is and what are its main properties, let see what are the abstractions available to us in our programming language. We know that data which is the information stored on a computer, and behaviors process the data and possibly transform it is called control flow is the essence of programming.

From that we can speak about two types of abstraction: first data abstraction, and second control flow abstraction. The first is meant to simplifying by hiding the complex memory management and behavioral mechanisms, providing general behaviors you can reuse everywhere, giving the power for developers to create new abstractions with Abstract Data Type. The second is by using functions to simplify and hide its internal mechanism, the function generalize a behavior it can be reused anywhere, the name of function does not exactly the reality it can describe what's inside, but it can be ambiguous sometimes, difficult to understand, or simply wrong. Both data abstraction and functions available in many languages not only OOP. Giving a descriptive name to set of instructions is a very convenient way to use and this the benefits of abstraction.