



**POLITECNICO
DI TORINO**

Recap Computer Architectures (02LSEOV)

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I Period - 2017/2018

6 ottobre 2017

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Acknowledgments

Questo breve riepilogo non ha alcuno scopo se non quello di agevolare lo studio di me stesso, se vi fosse di aiuto siete liberi di usarlo.

Le fonti su cui mi sono basato sono quelle relative al corso offerto (**Computer Architectures (02LSEOV)**) dal Politecnico di Torino durante l'anno accademico 2017/2018.

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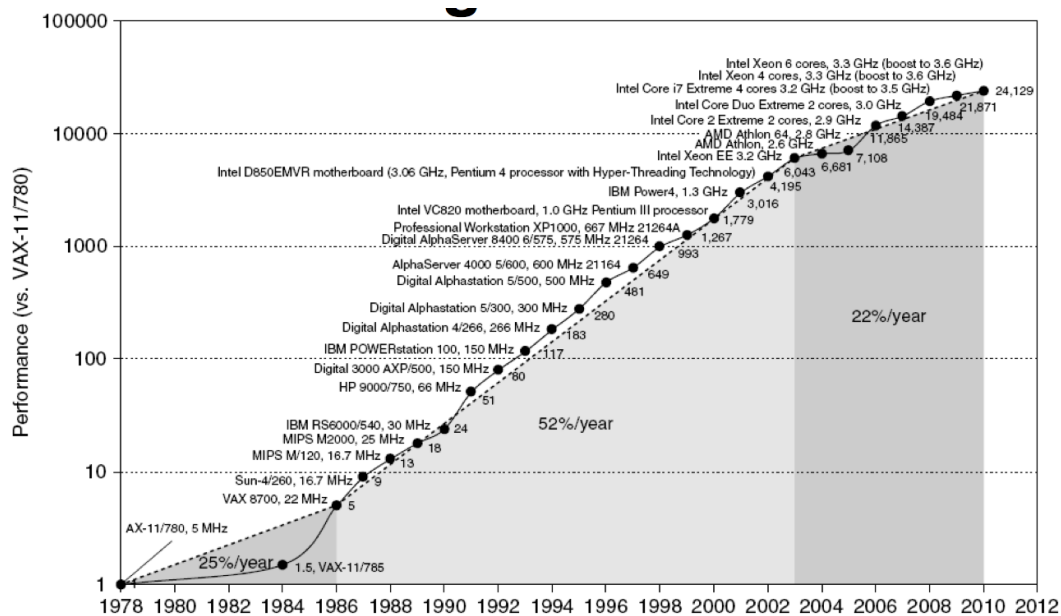
1 Introduction Computer Design

1.1 Computer Evolution

The first general-purpose computer was created in the late 40s. What now we can buy for 500\$ is equivalent (performance) to what could be bought for about \$1M in 85'.

During the years the performance growth was not linear, as you can see in figure 1.1, during the first 10 years the annual increase was around 25-30%/year, from the late 80s to the 2000 the growth is increased around 50%/year and, in the last few years it decrease to the 22%. Why this change during the increase?

The manufacturers have found a lot of physical problem related to the creation



of new products, this problem are mainly related to:

- Power-Issue.
- Lower instruction-level parallelism.
- Unchanged memory latency.

in fact, since 2004, the major industry have changed the conceptual ways to desing processors, switching from single to multi-core architectures. We can say that, in anytime, this growth is incredible an is due to improvements in technology, microprocessor architecture and software development.