



Formação Inteligência Artificial



Deep Learning Frameworks



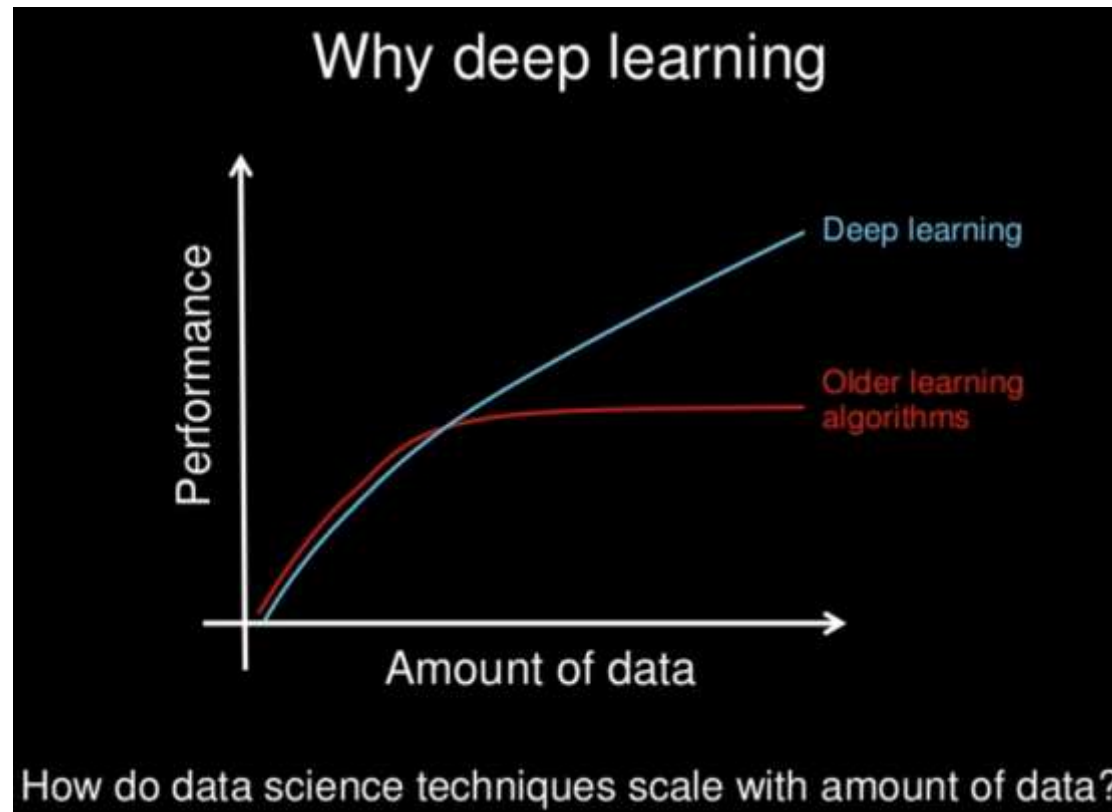
Deep Learning





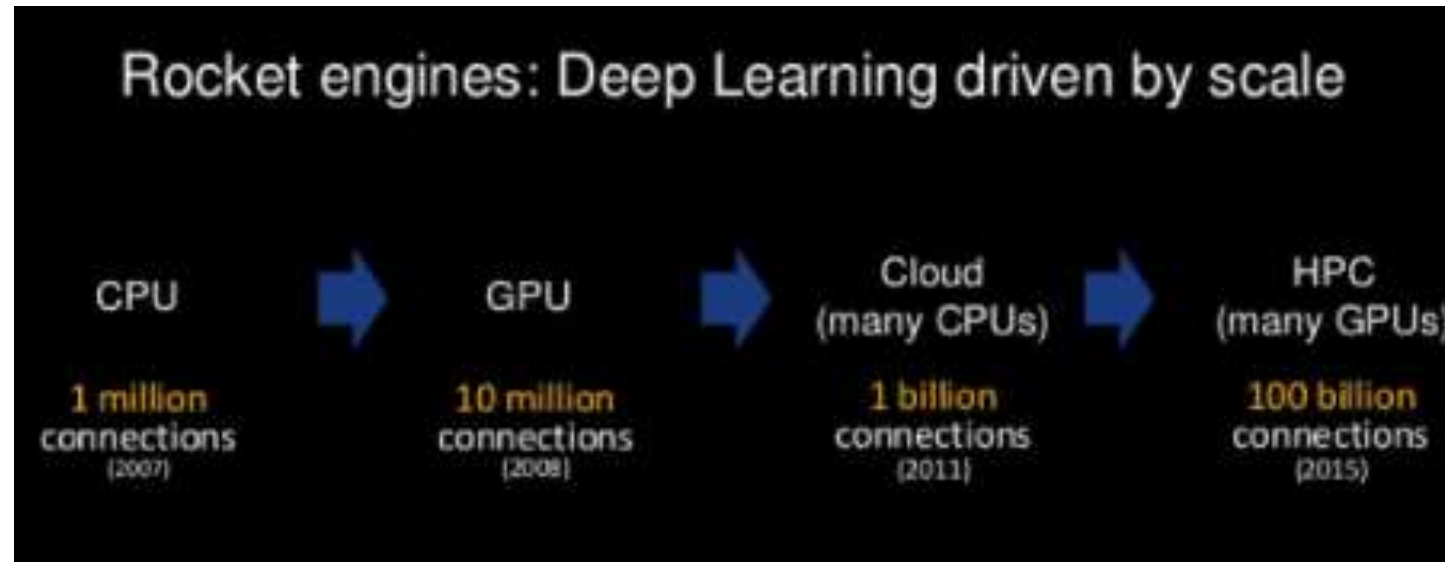
Deep Learning

Deep Learning é uma área de pesquisa em Aprendizagem de Máquina, que foi introduzida com o objetivo de aproximar Machine Learning de um de seus objetivos originais: **Inteligência Artificial.**





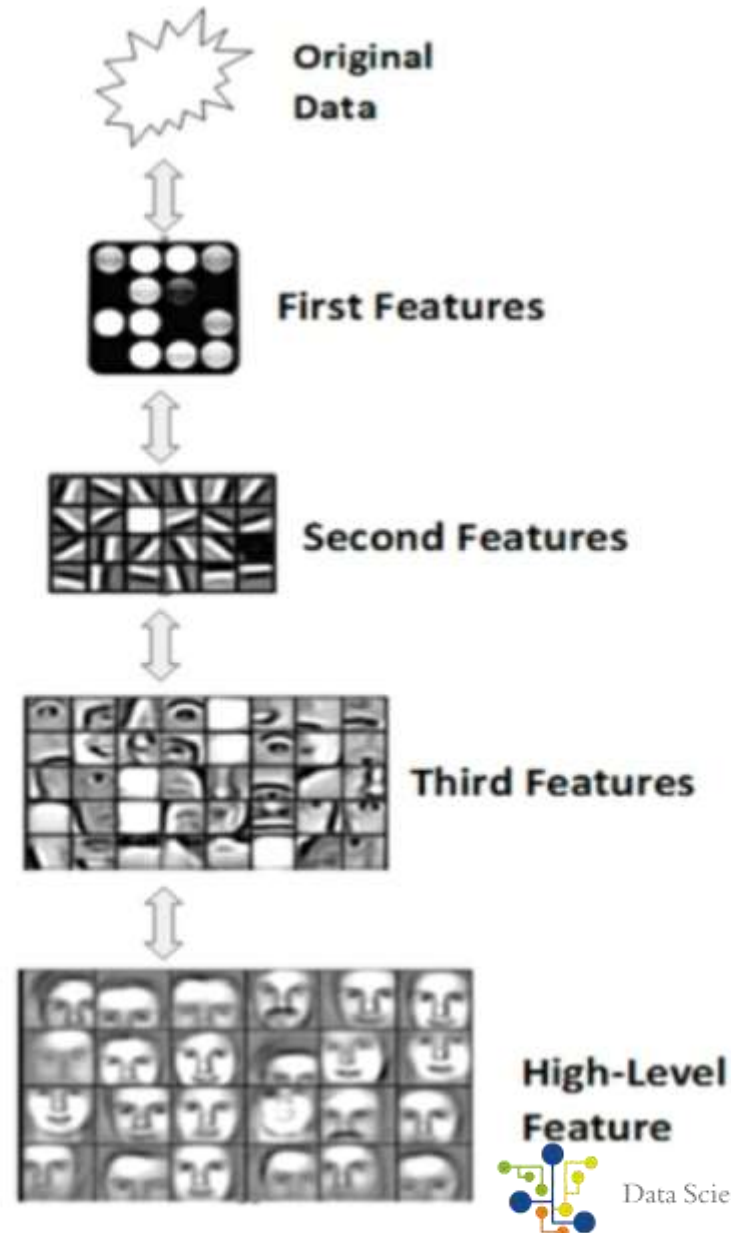
Deep Learning





Deep Learning

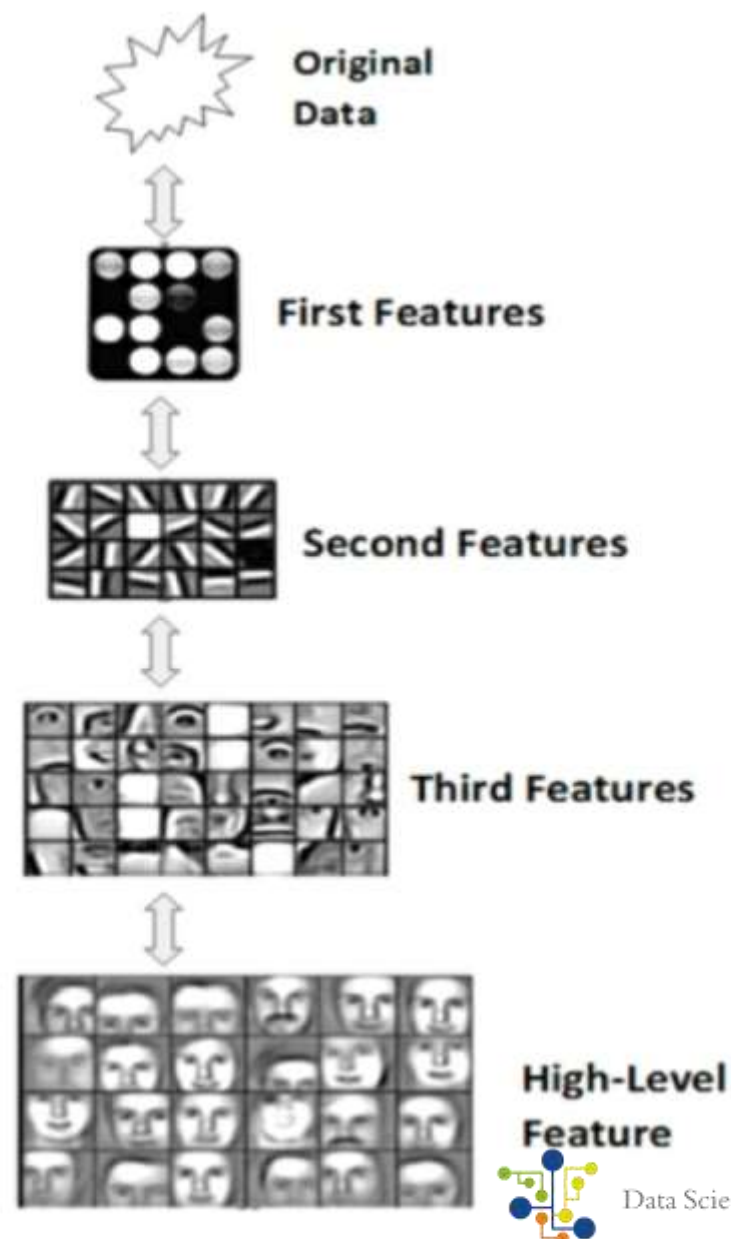
Outra razão é certamente a crescente facilidade de encontrar conjuntos de dados cada vez mais numerosos sobre os quais treinar um sistema.





Deep Learning

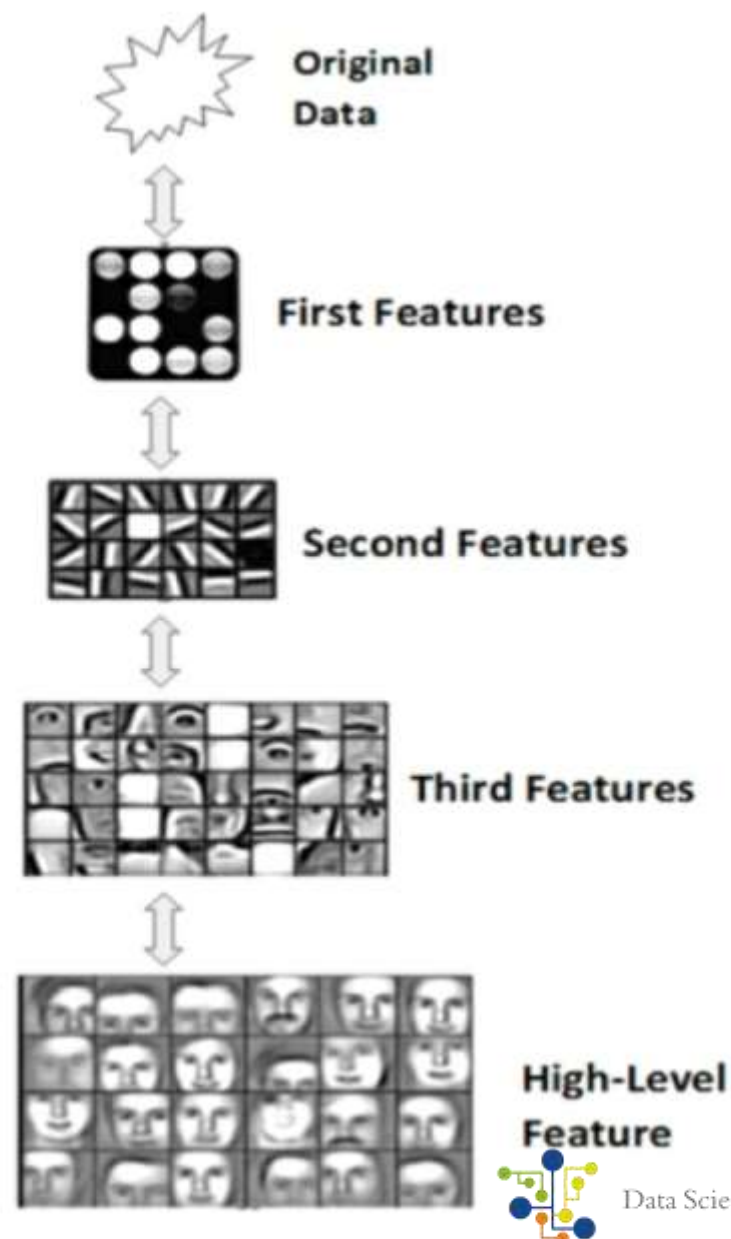
pixel --> edge --> texture --> motif --> part --> object





Deep Learning

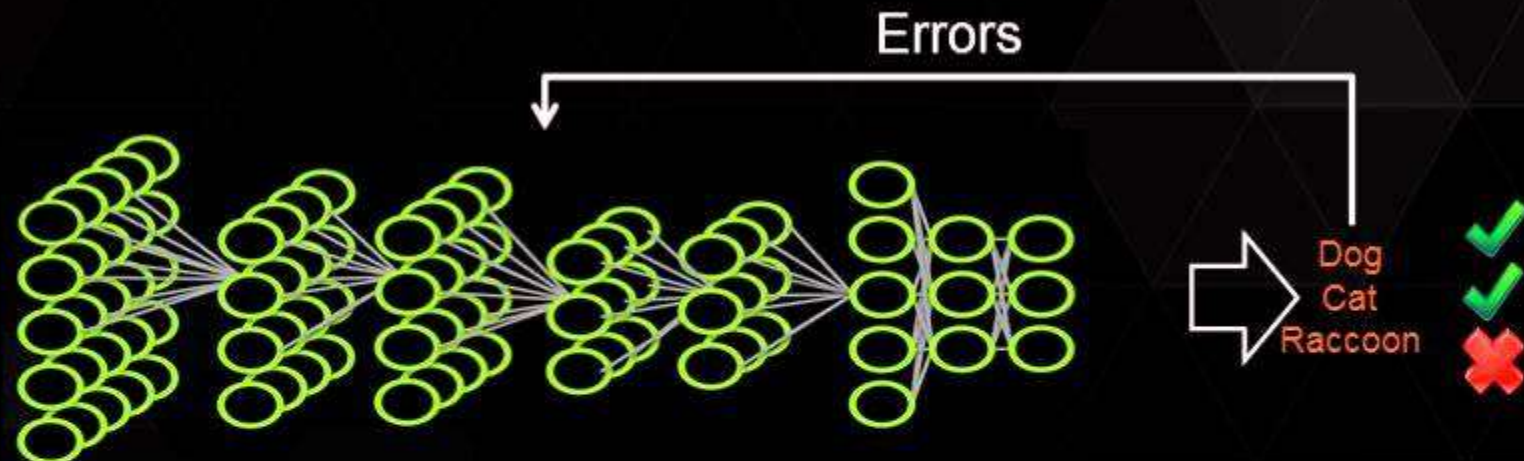
character --> word --> word group --> clause --> sentence --> story



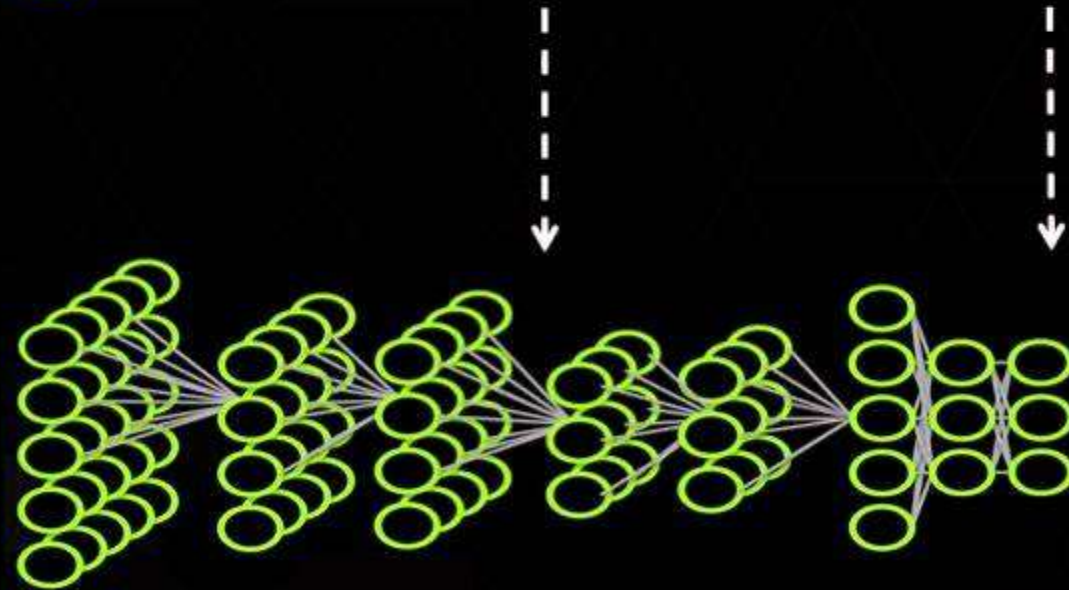
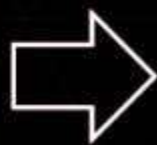


DEEP LEARNING APPROACH

Train:

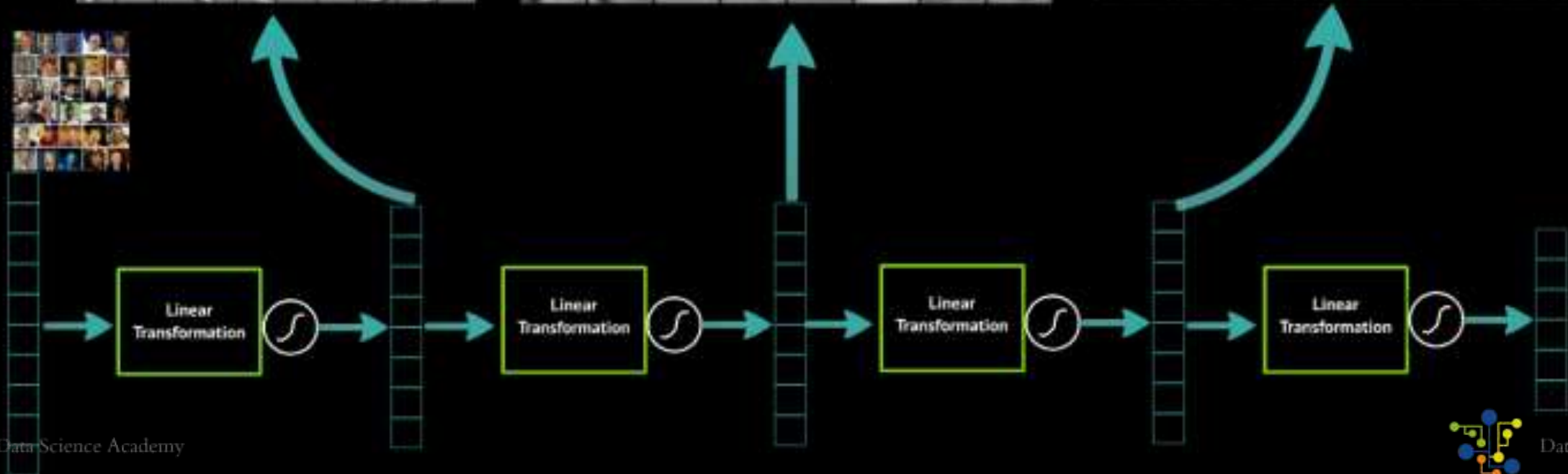
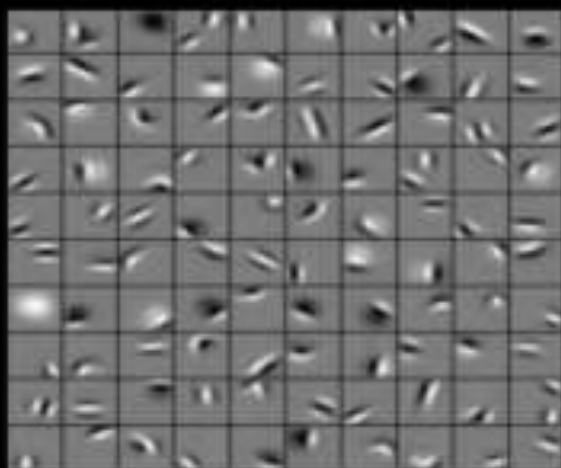


Deploy:





Deep Learning learns layers of features





Deep Learning

Convolutional
Neural Networks

Recurrent Neural
Networks



GPU Computing



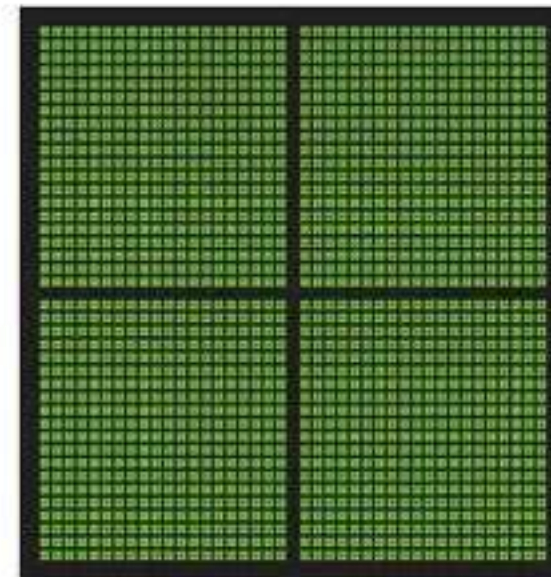


GPU Computing

GPU's são chips de computador que realizam cálculos matemáticos de forma veloz e paralelizada.



CPU
MULTIPLE CORES



GPU
THOUSANDS OF CORES



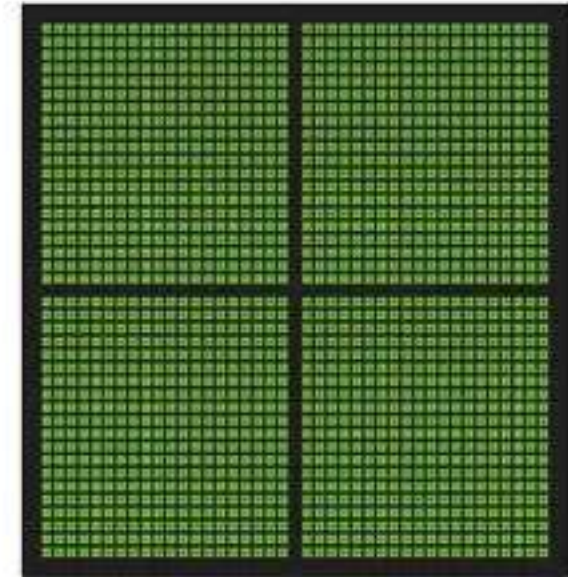


GPU Computing

Um mesmo software pode ser muito mais veloz sendo processado em uma GPU que em uma CPU e tudo isso com custo e utilização de energia menores.



CPU
MULTIPLE CORES



GPU
THOUSANDS OF CORES





GPU Computing

GPGPU COMPUTING

GPGPU - General-purpose computing on graphic processing units





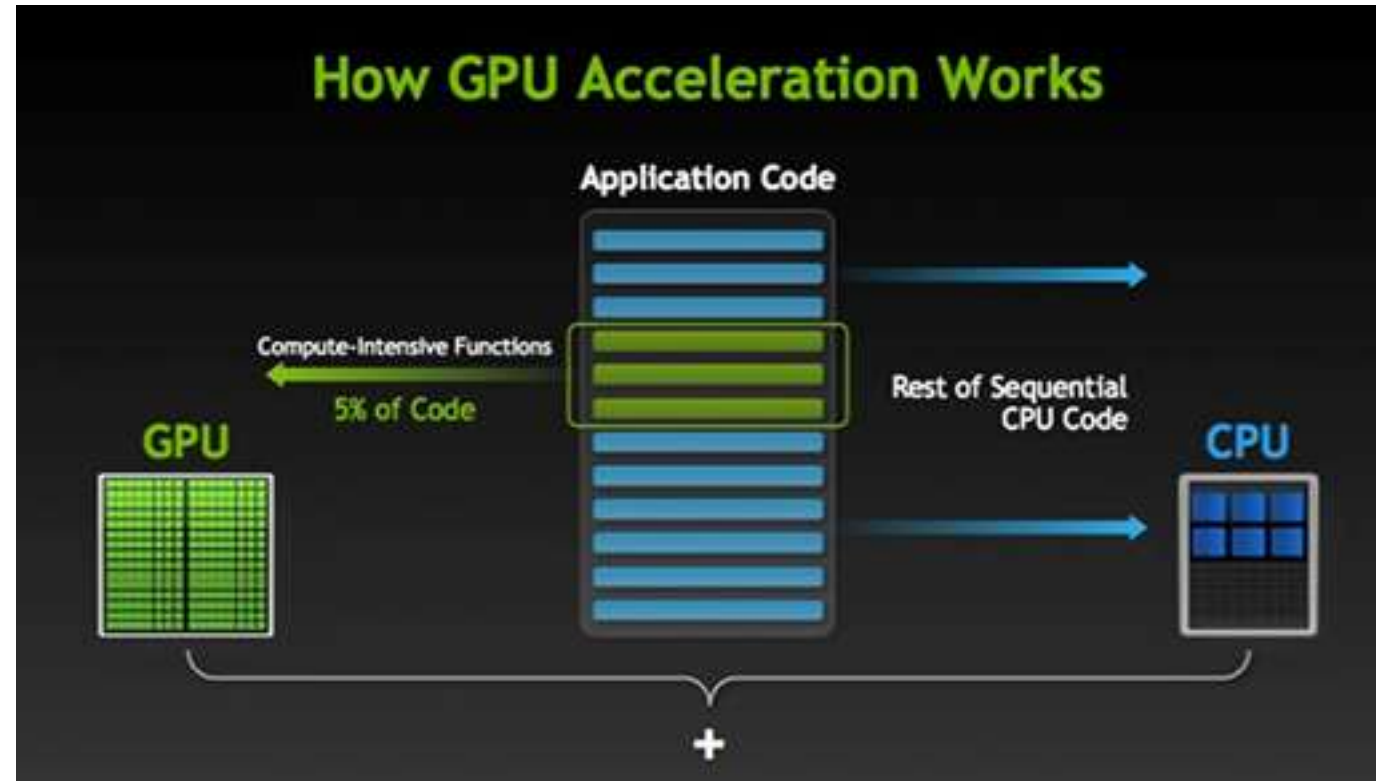
GPU Computing

GPGPU - General-purpose computing on graphic processing units



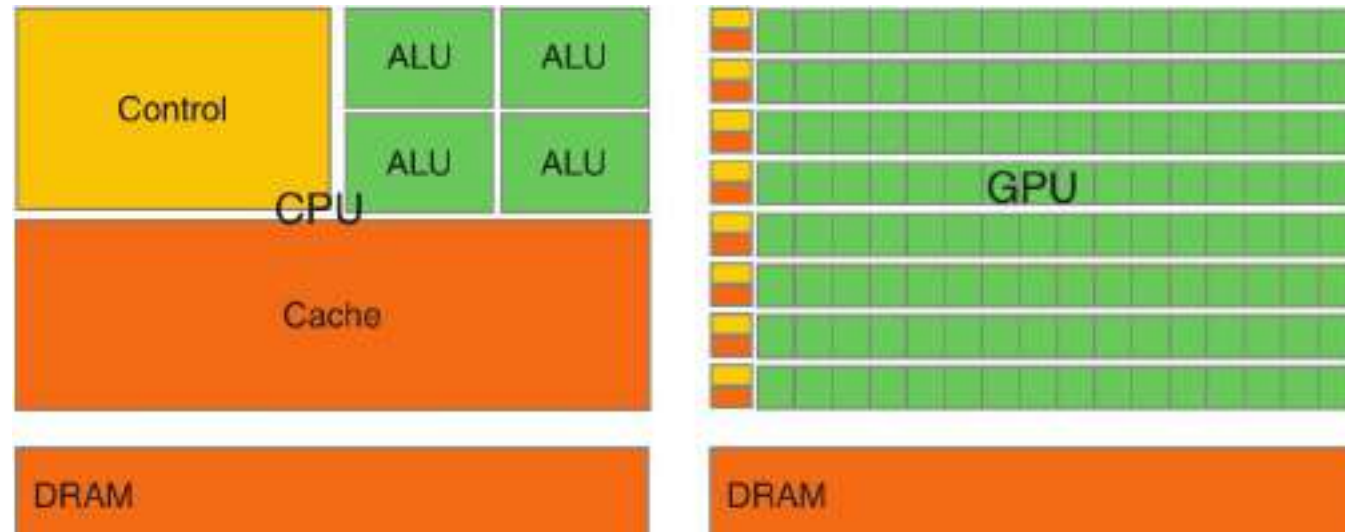


GPU Computing





GPU Computing





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Arquitetura CUDA



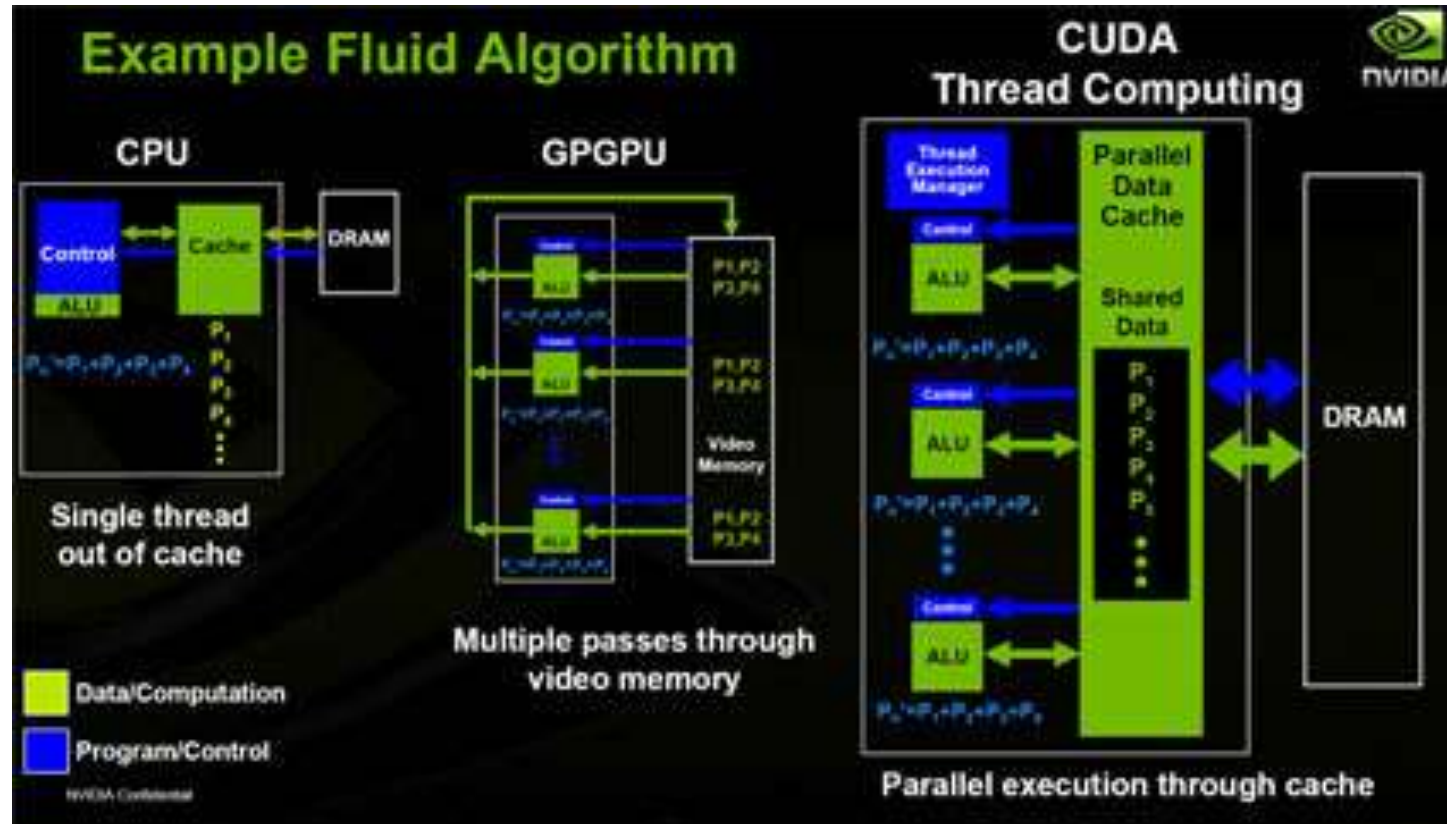
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Arquitetura CUDA





Arquitetura CUDA

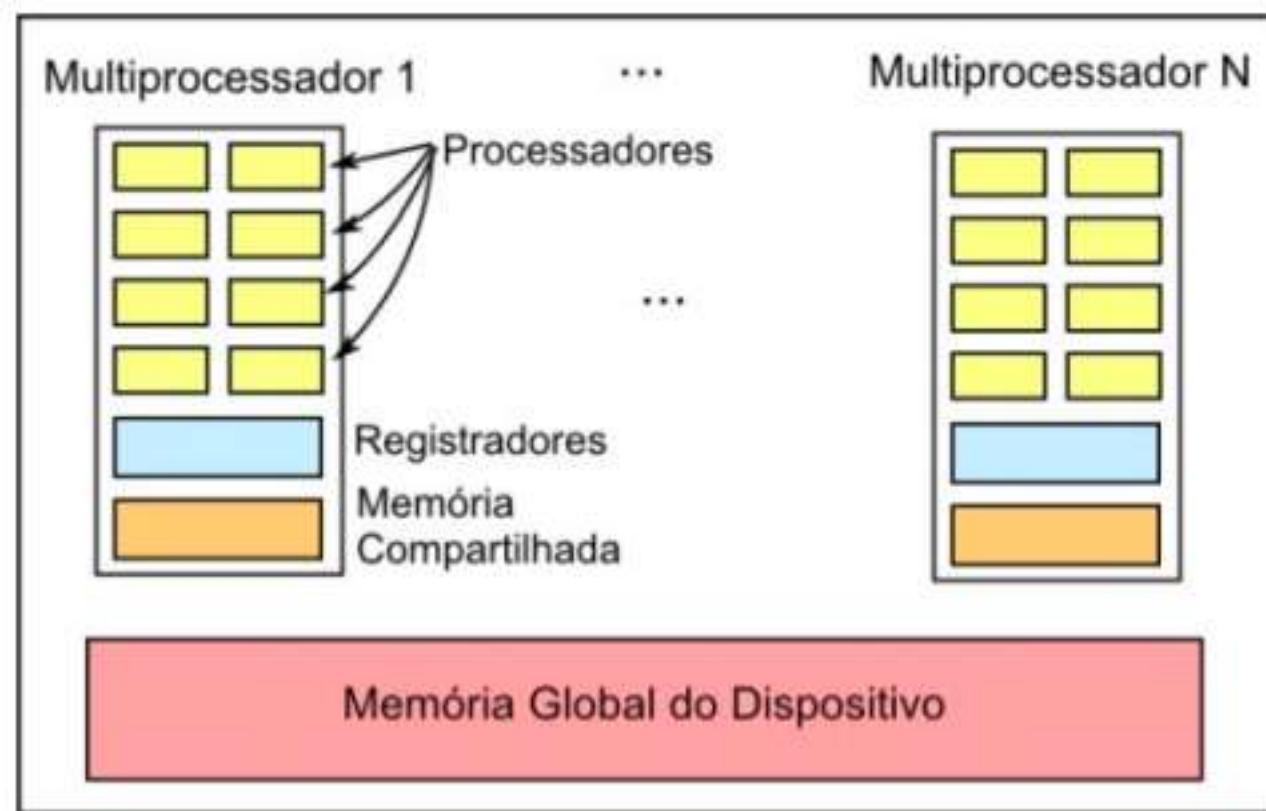




Arquitetura CUDA

CUDA

Compute Unified Device Architecture





Arquitetura CUDA

CUDA

Compute Unified Device Architecture

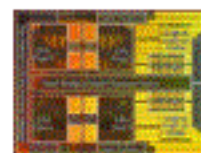


NVIDIA®
Nsight™

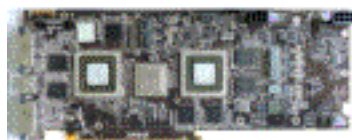


Arquitetura CUDA

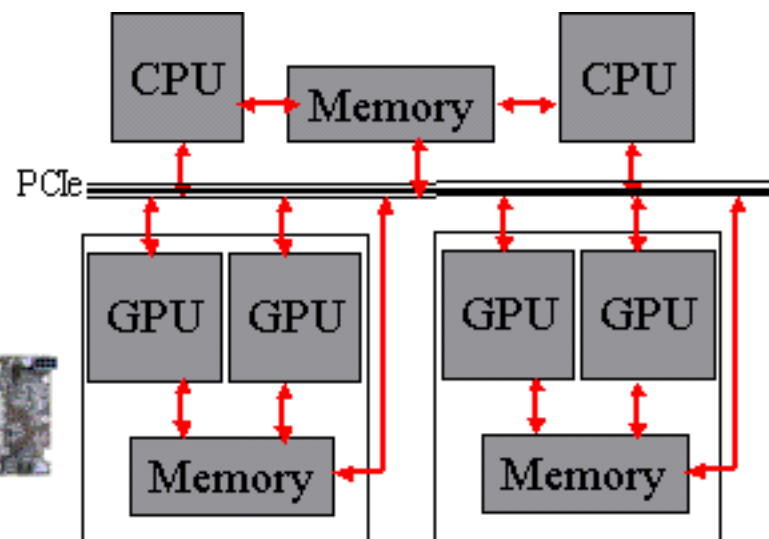
CUDA Compute Unified Device Architecture



2 x 4 cores



2 x 1,600 cores

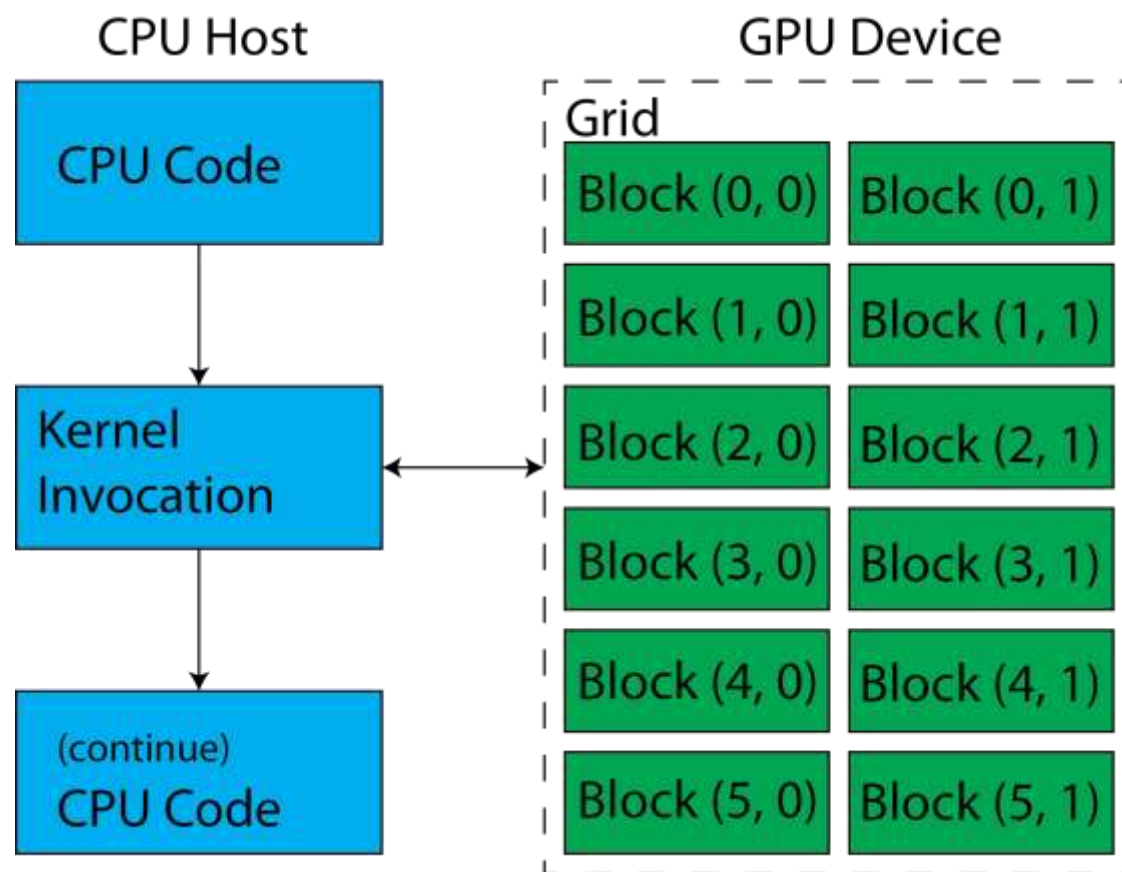




Arquitectura CUDA

CUDA

Compute Unified Device Architecture

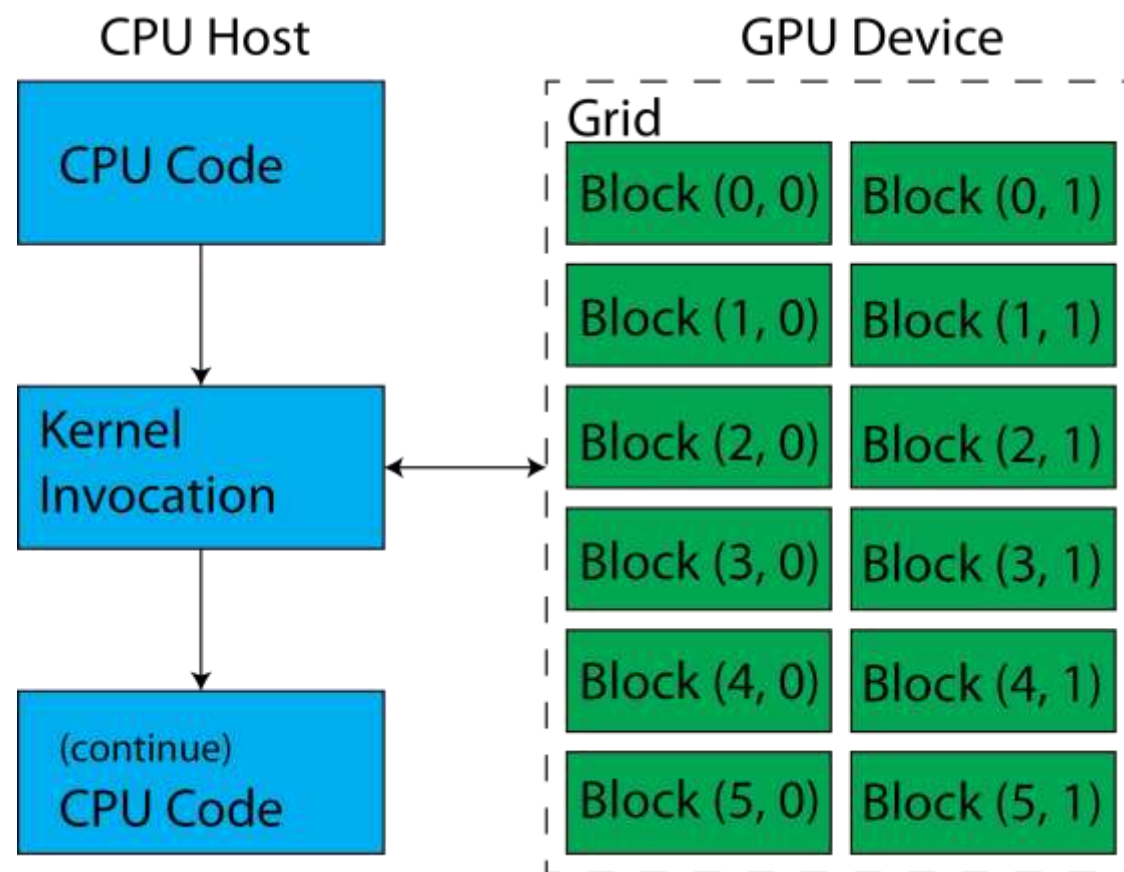




Arquitectura CUDA

CUDA

Compute Unified Device Architecture





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Modelo de Programação em GPU



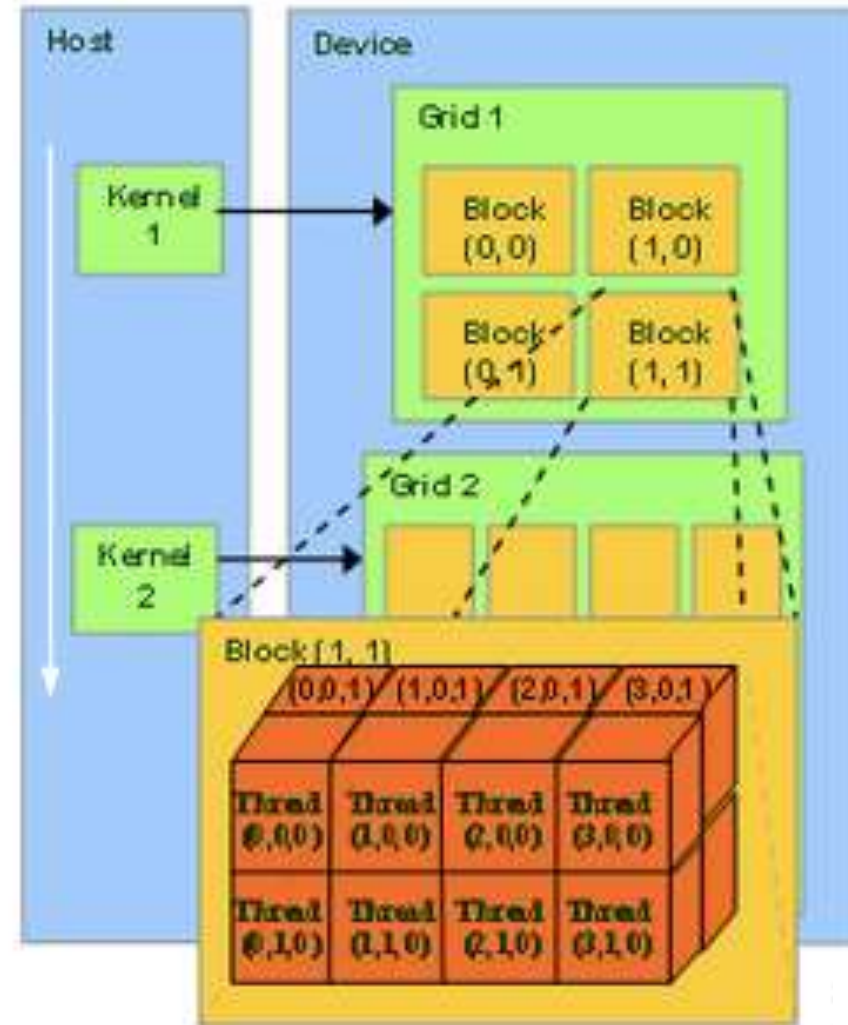
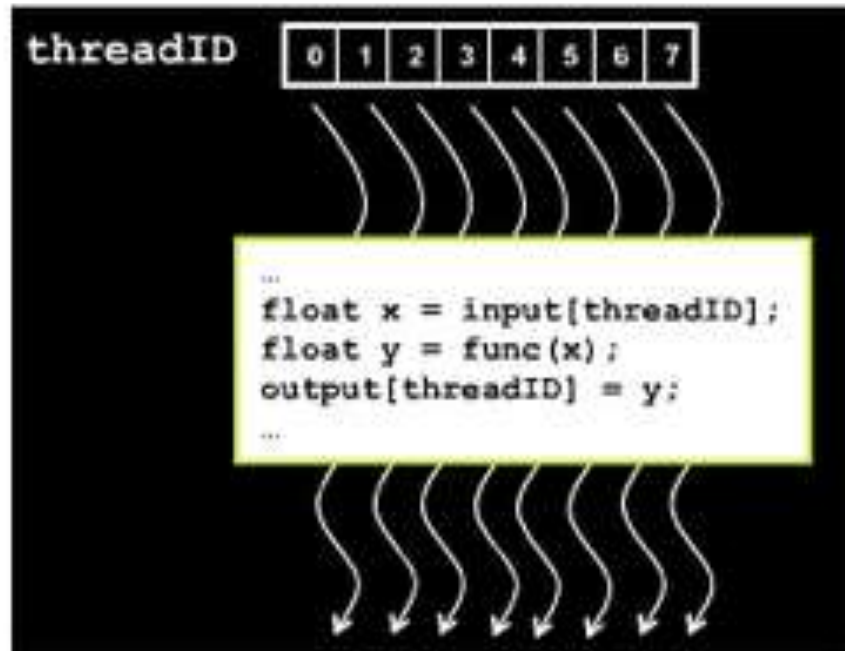
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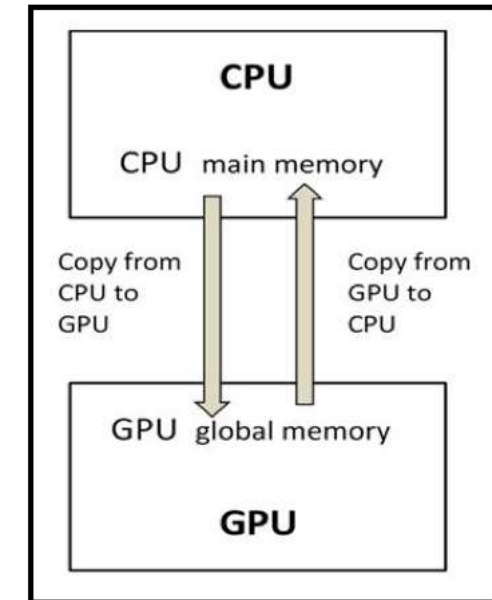
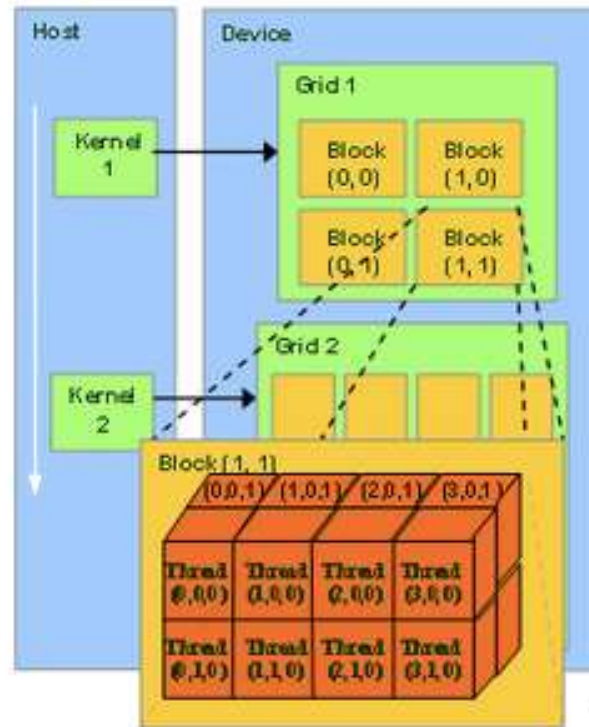
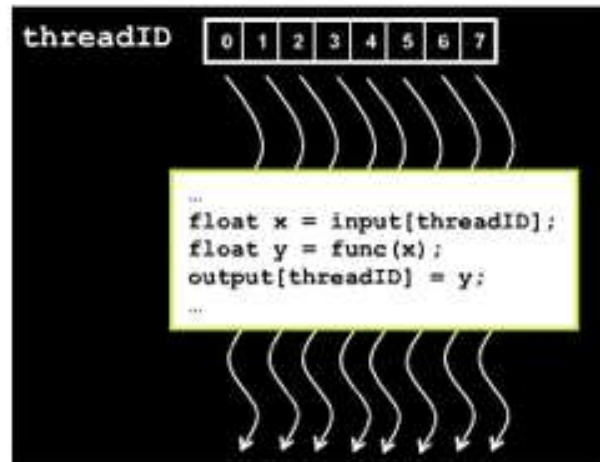


Modelo de Programação em GPU





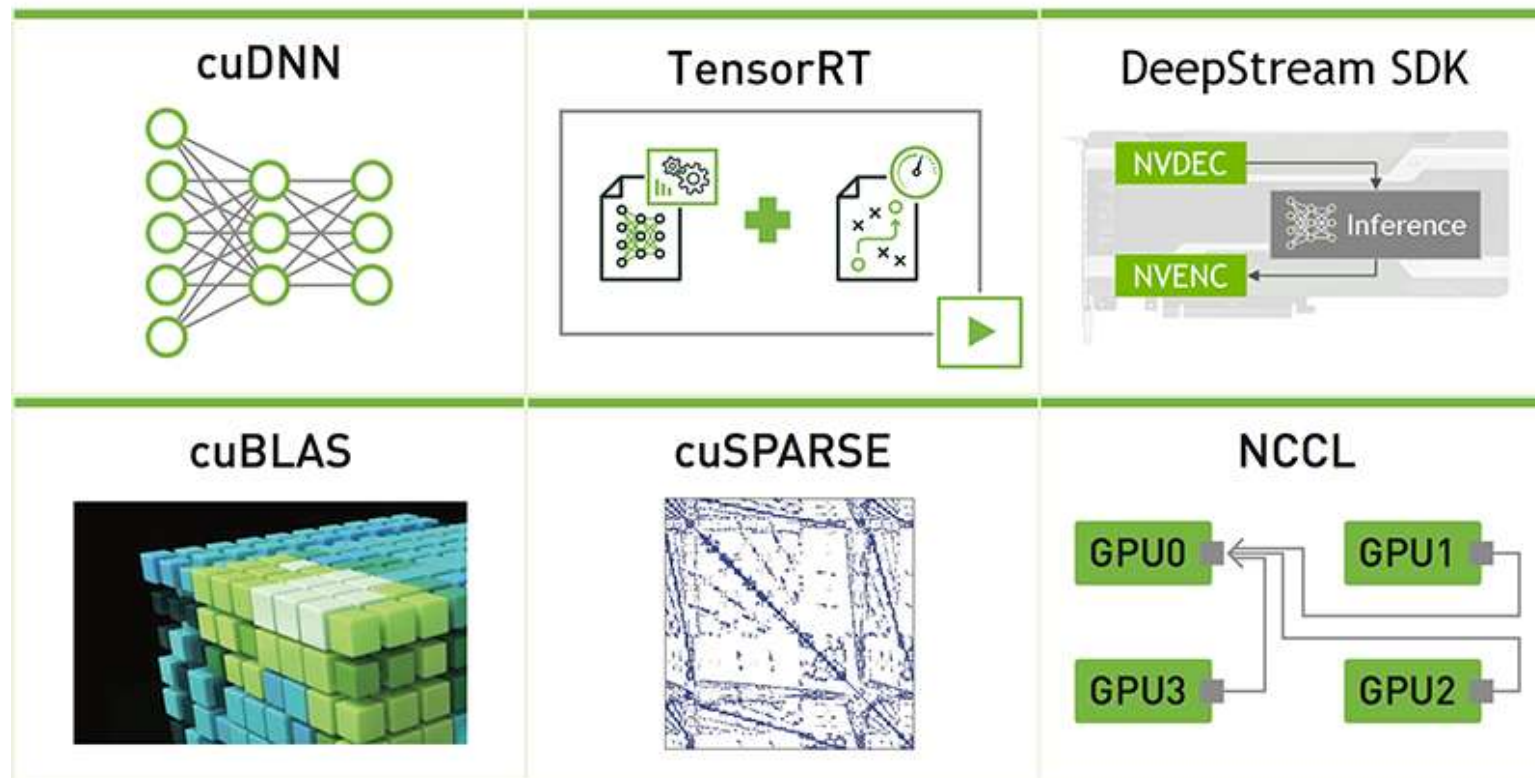
Modelo de Programação em GPU





Modelo de Programação em GPU

Nvidia SDK





Modelo de Programação em GPU

Deep Learning Primitives

Sparse Matrix Operations

Deep Learning Inference Engine

Multi-GPU Communications

Deep Learning for Video
Analytics

Linear Algebra





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Obrigado



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