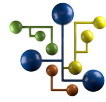


Formação Inteligência Artificial



Deep Learning Frameworks



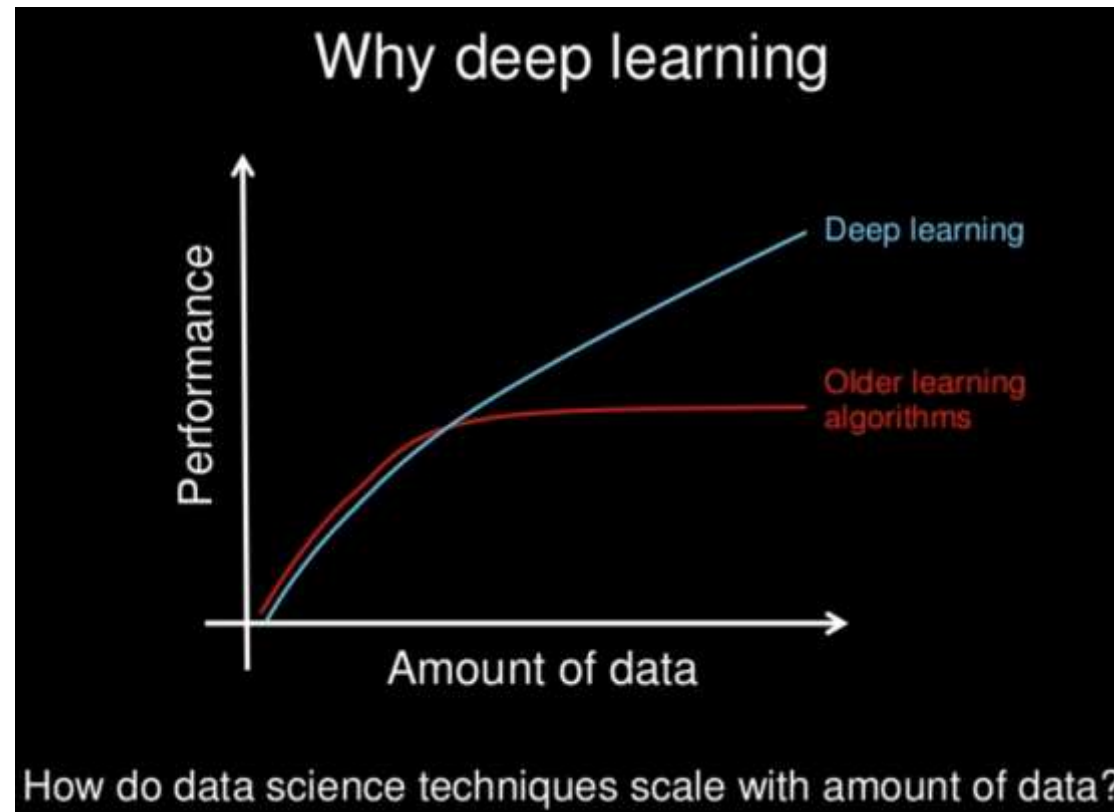
Deep Learning





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.**

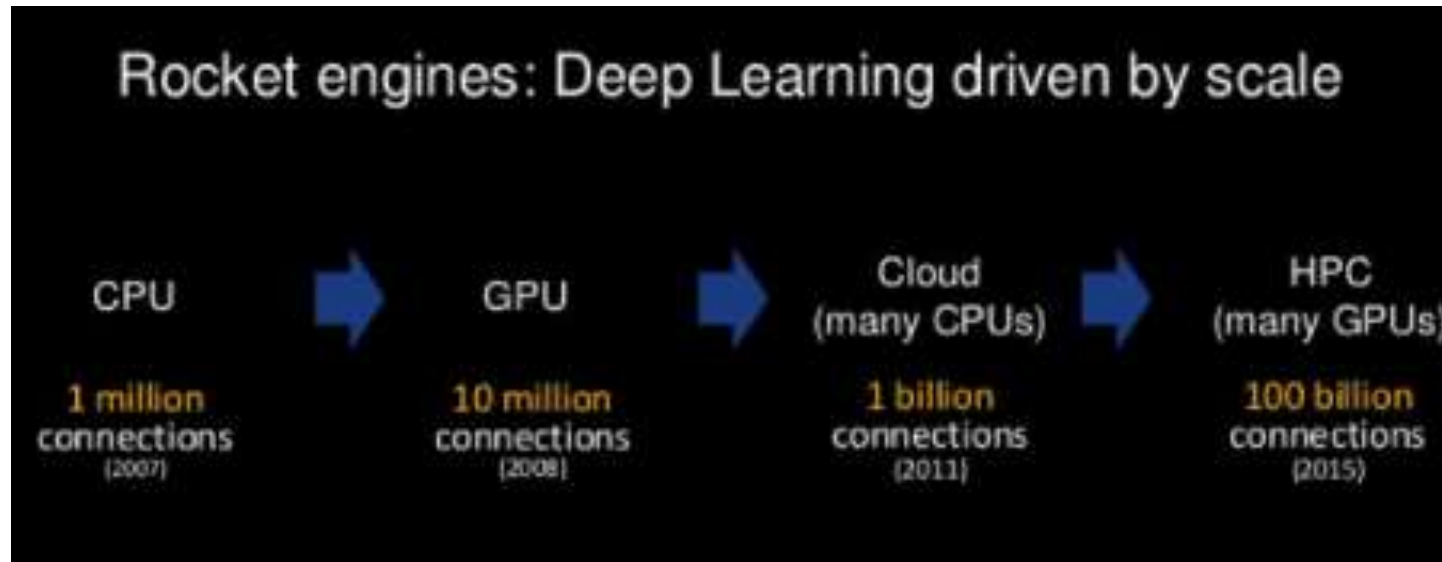


Deep Learning



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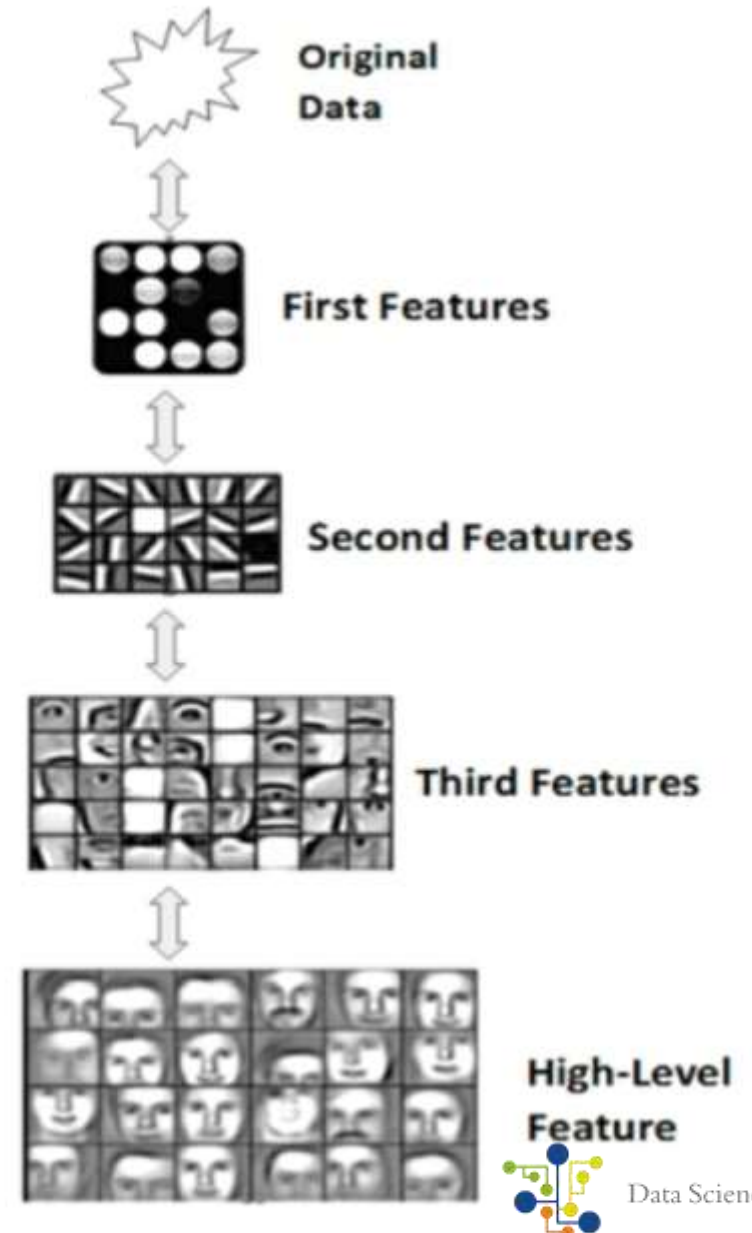


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Outra razão é certamente a crescente facilidade de encontrar conjuntos de dados cada vez mais numerosos sobre os quais treinar um sistema.



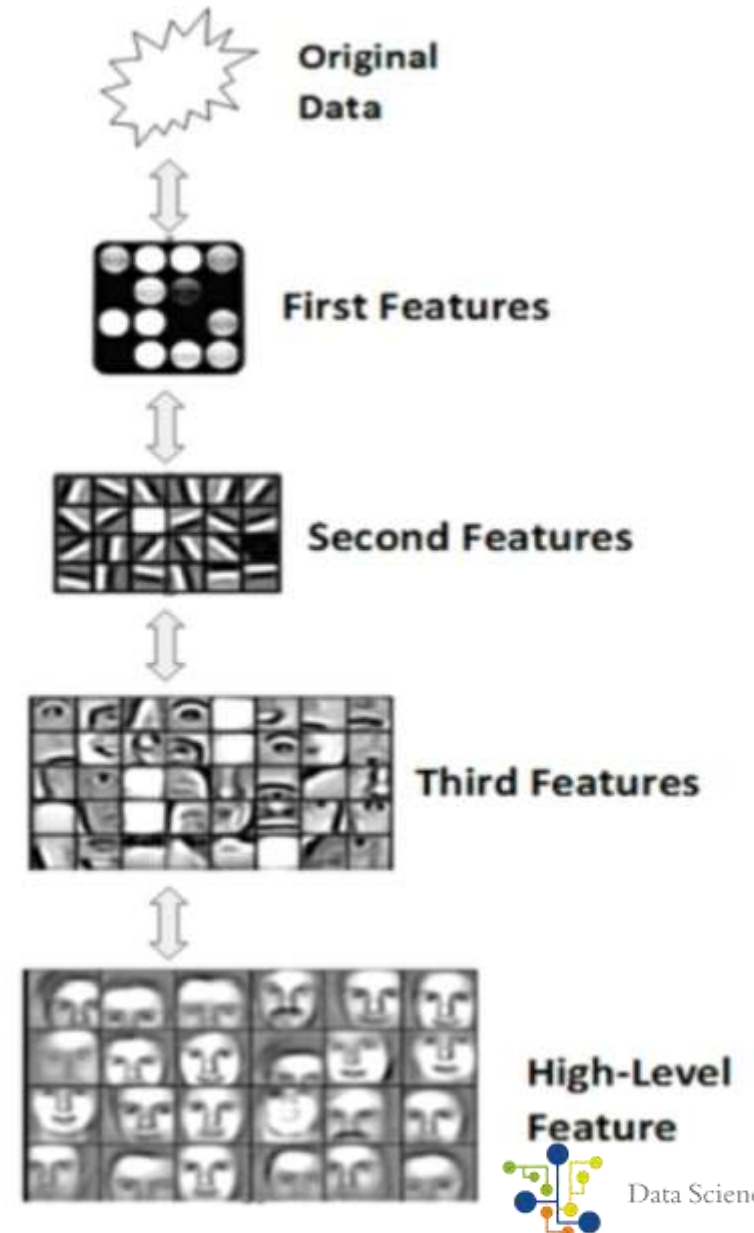
Deep Learning



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



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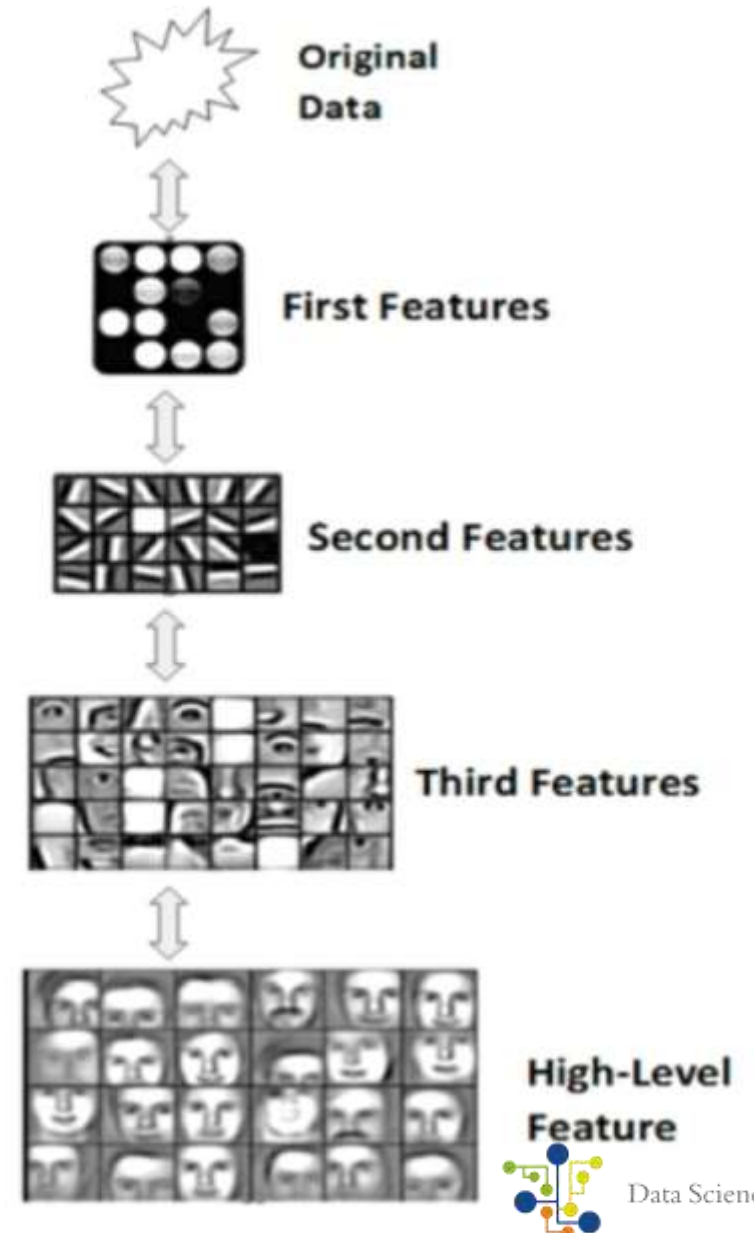
Deep Learning



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



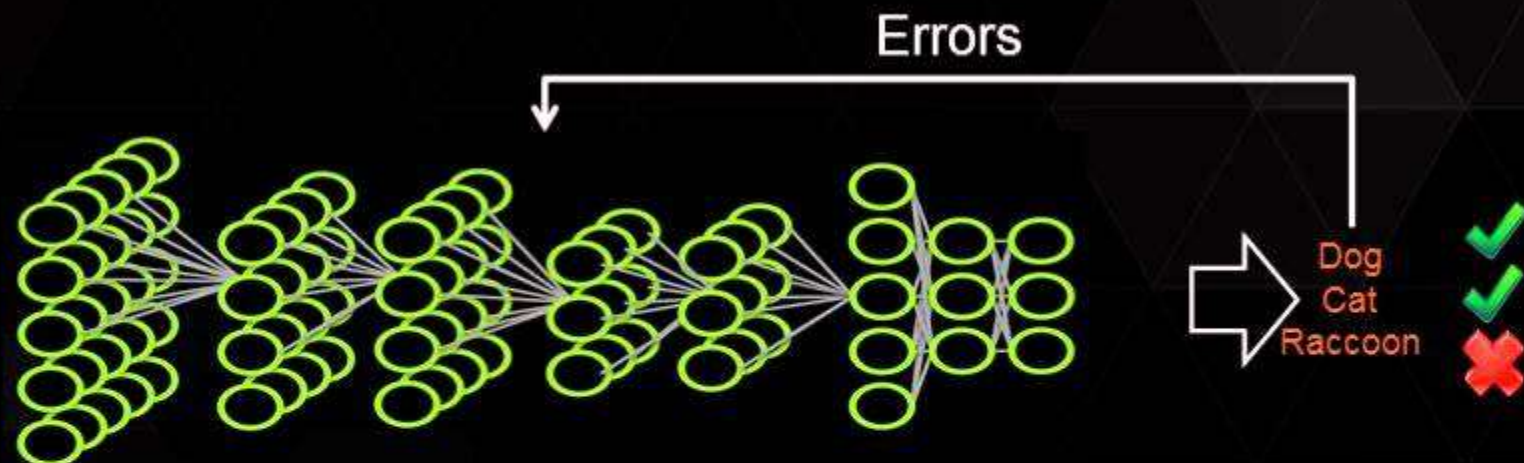
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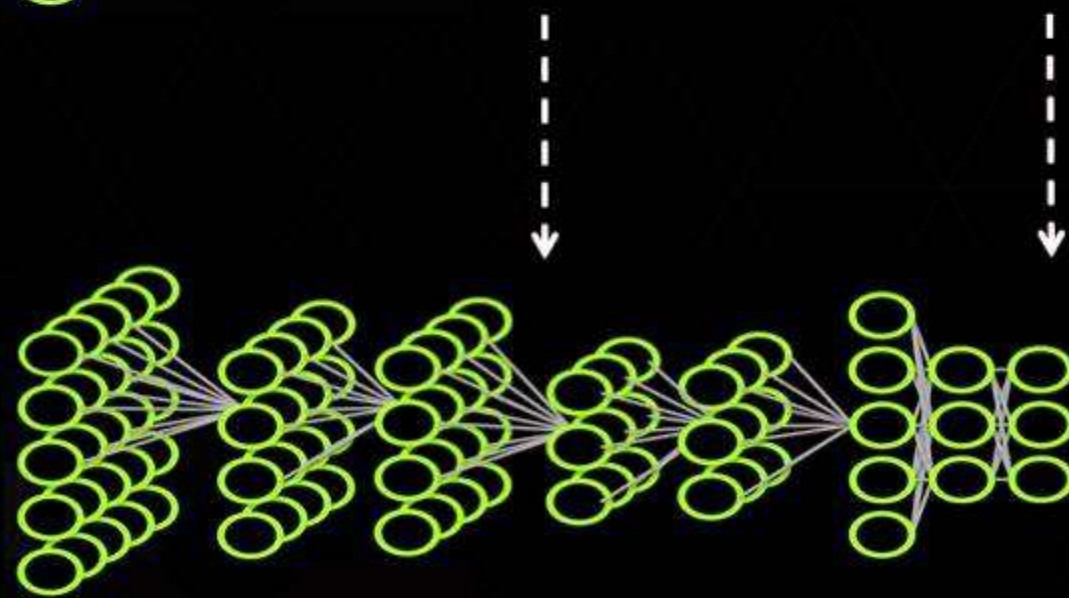
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DEEP LEARNING APPROACH

Train:



Deploy:

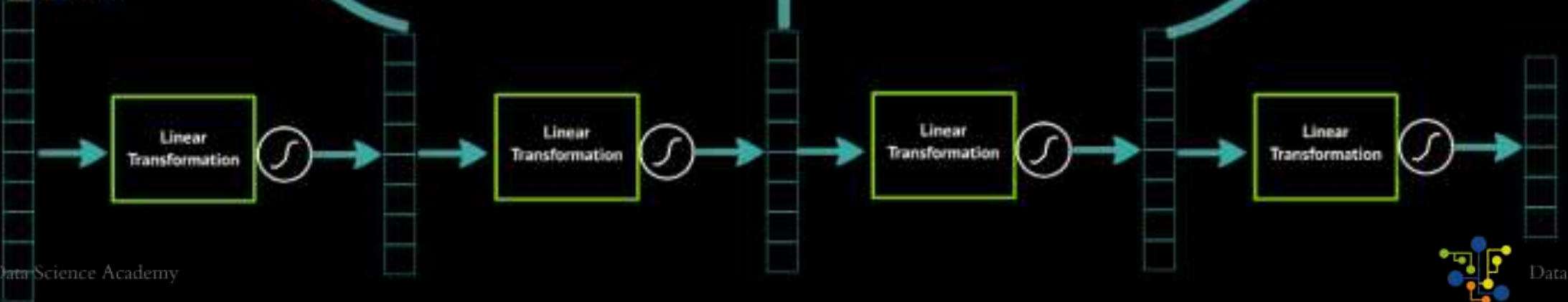
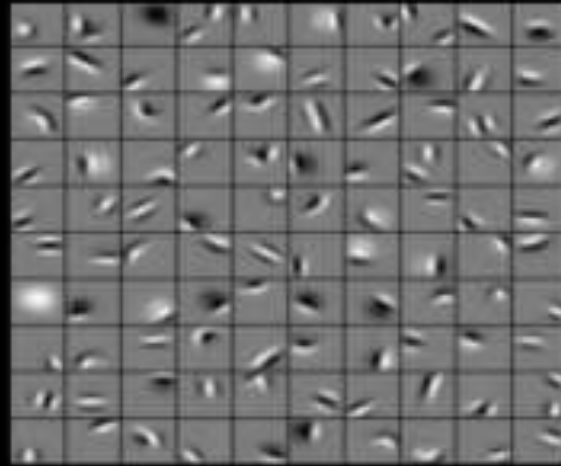


Deep learning learns layers of features



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Convolutional
Neural Networks

Recurrent Neural
Networks



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GPU Computing

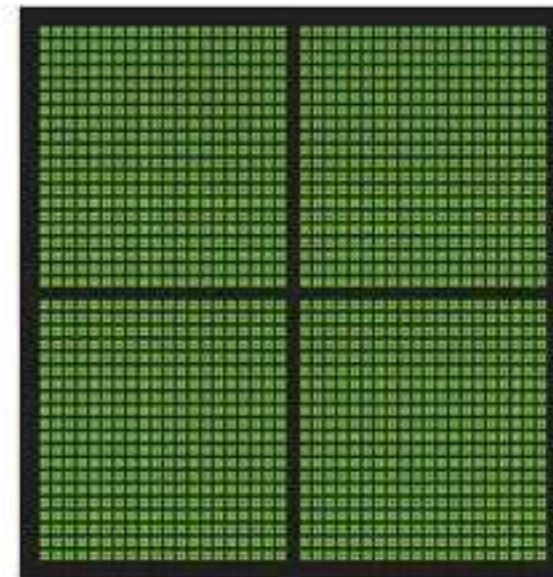


GPU Computing

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



CPU
MULTIPLE CORES



GPU
THOUSANDS OF CORES

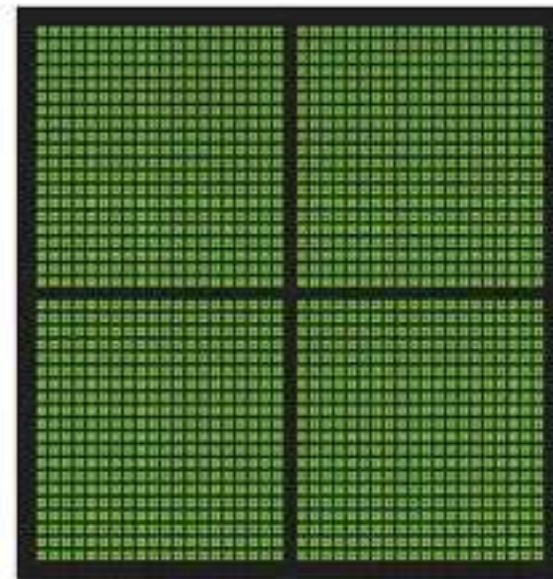




Um mesmo software pode ser muito mais veloz sendo processado em uma GPU que em uma CPU e tudo isso com custo e utilização de energia menores.



CPU
MULTIPLE CORES



GPU
THOUSANDS OF CORES

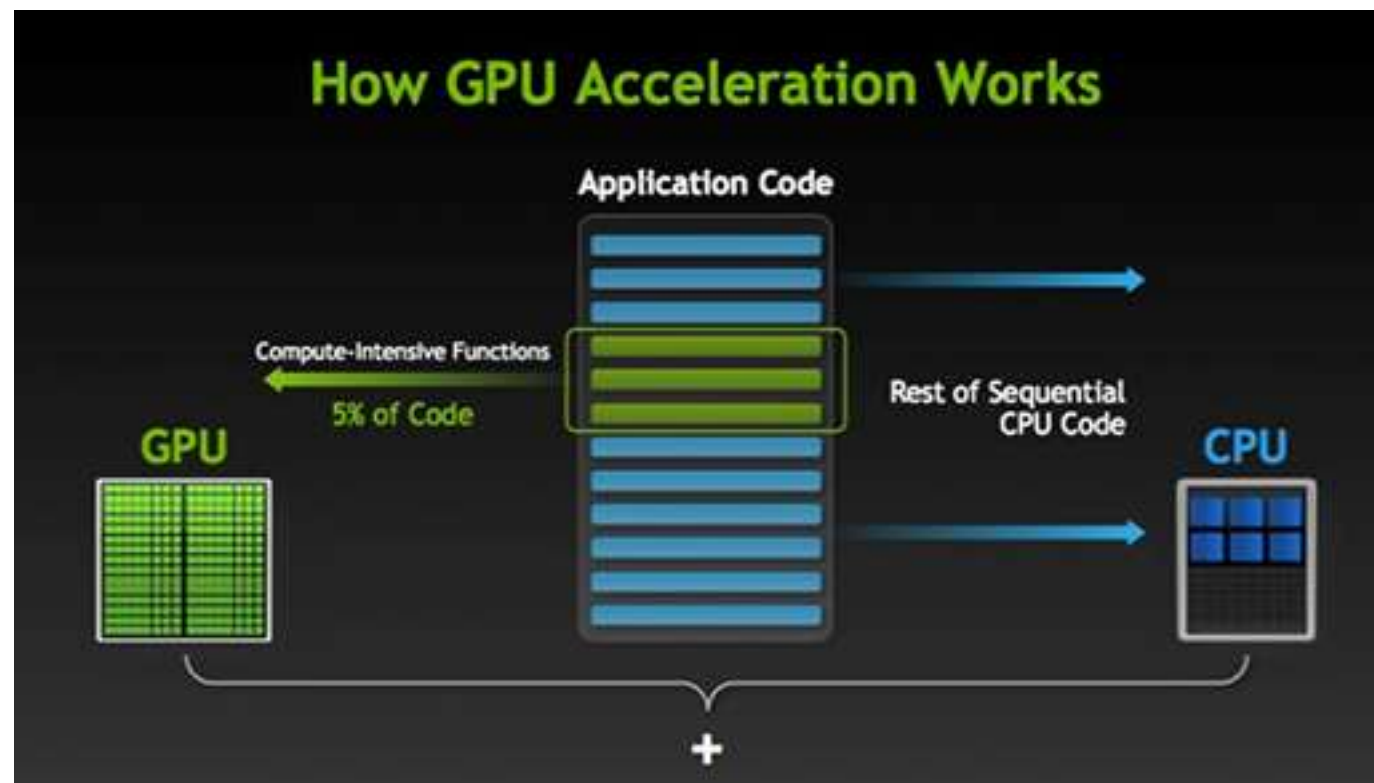
GPGPU COMPUTING

GPGPU - General-purpose computing on graphic processing units



GPGPU - General-purpose computing on graphic processing units





GPU Computing



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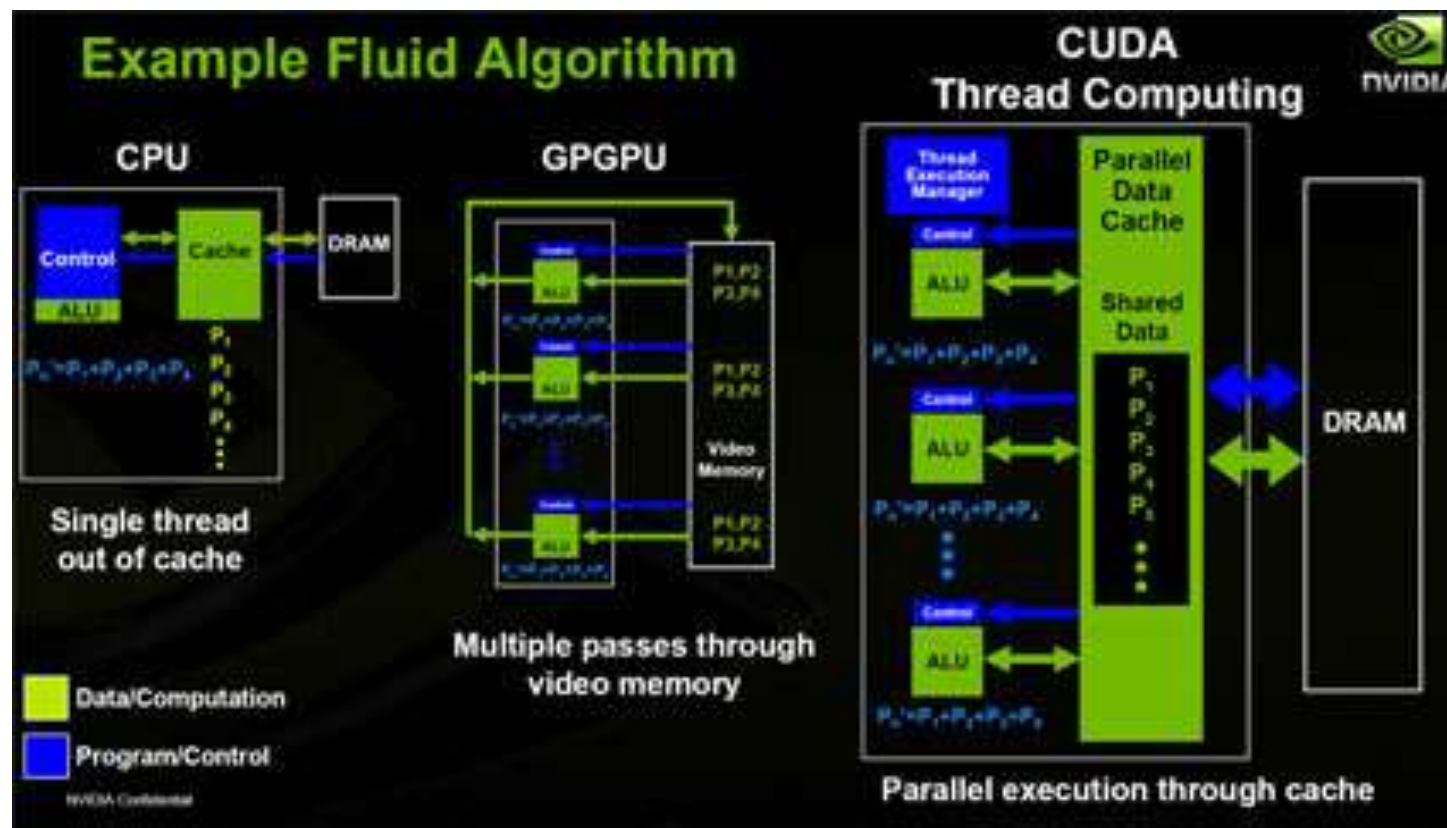
Arquitetura CUDA

Arquitetura CUDA



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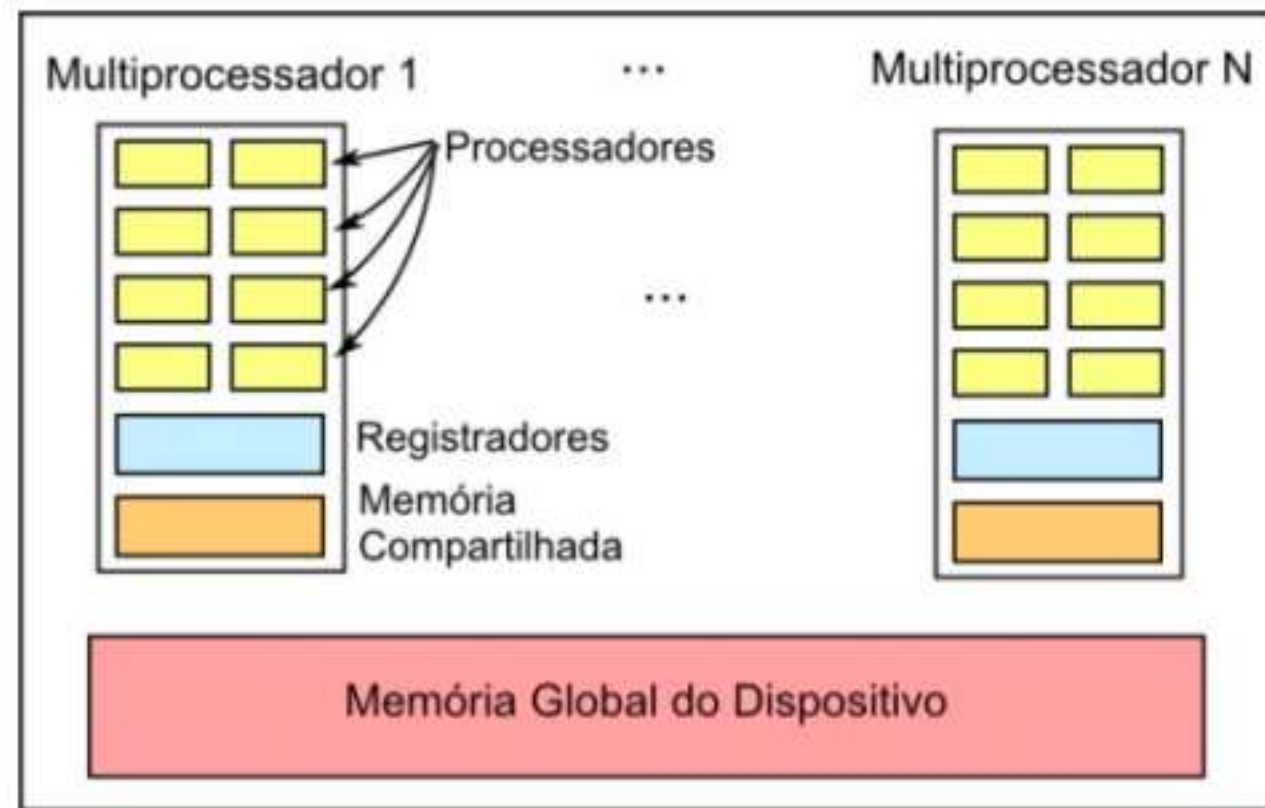


Arquitetura CUDA



CUDA

Compute Unified Device Architecture

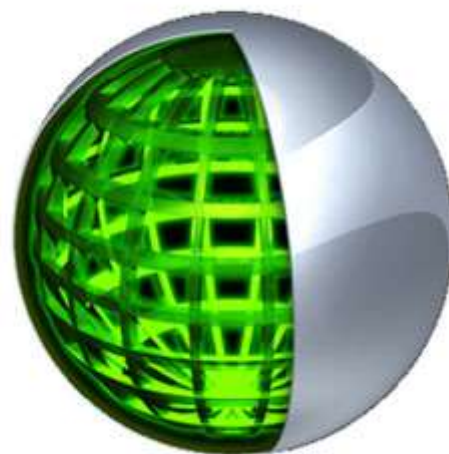




Arquitetura CUDA

CUDA

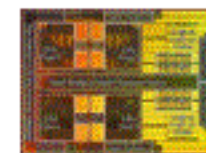
Compute Unified Device Architecture



NVIDIA®
Nsight™



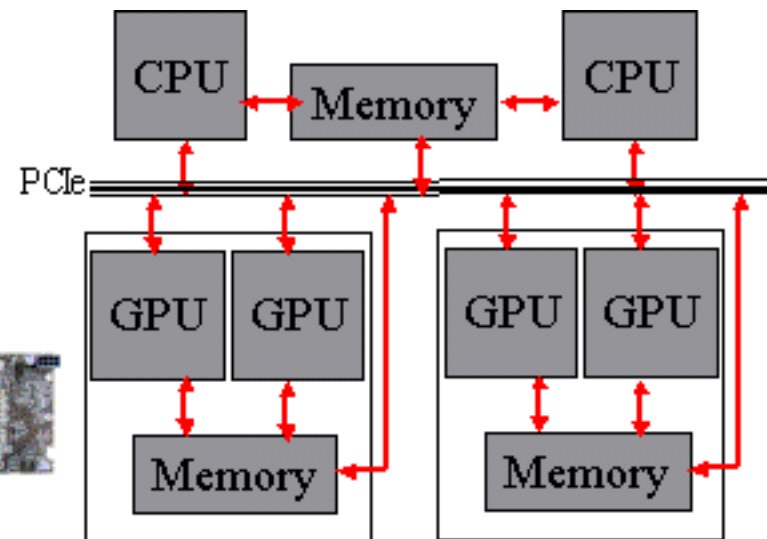
CUDA Compute Unified Device Architecture



2 x 4 cores

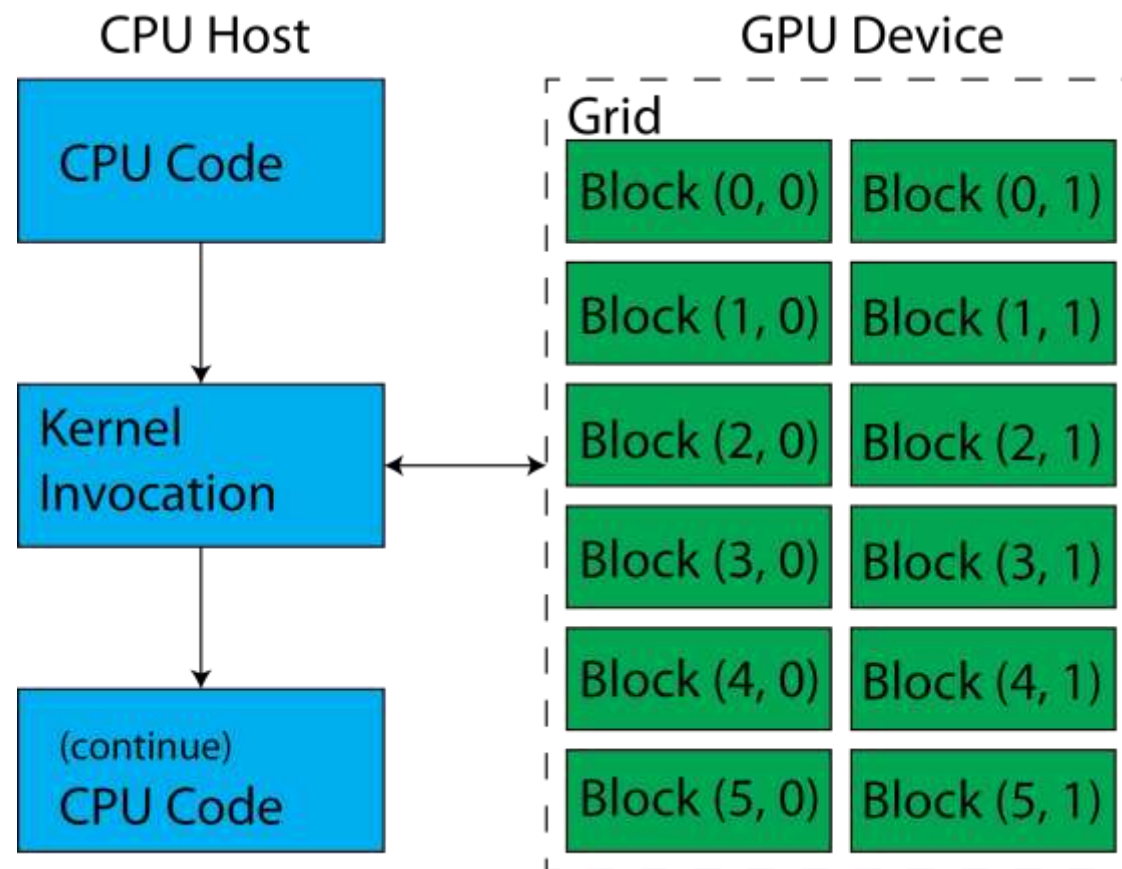


2 x 1,600 cores



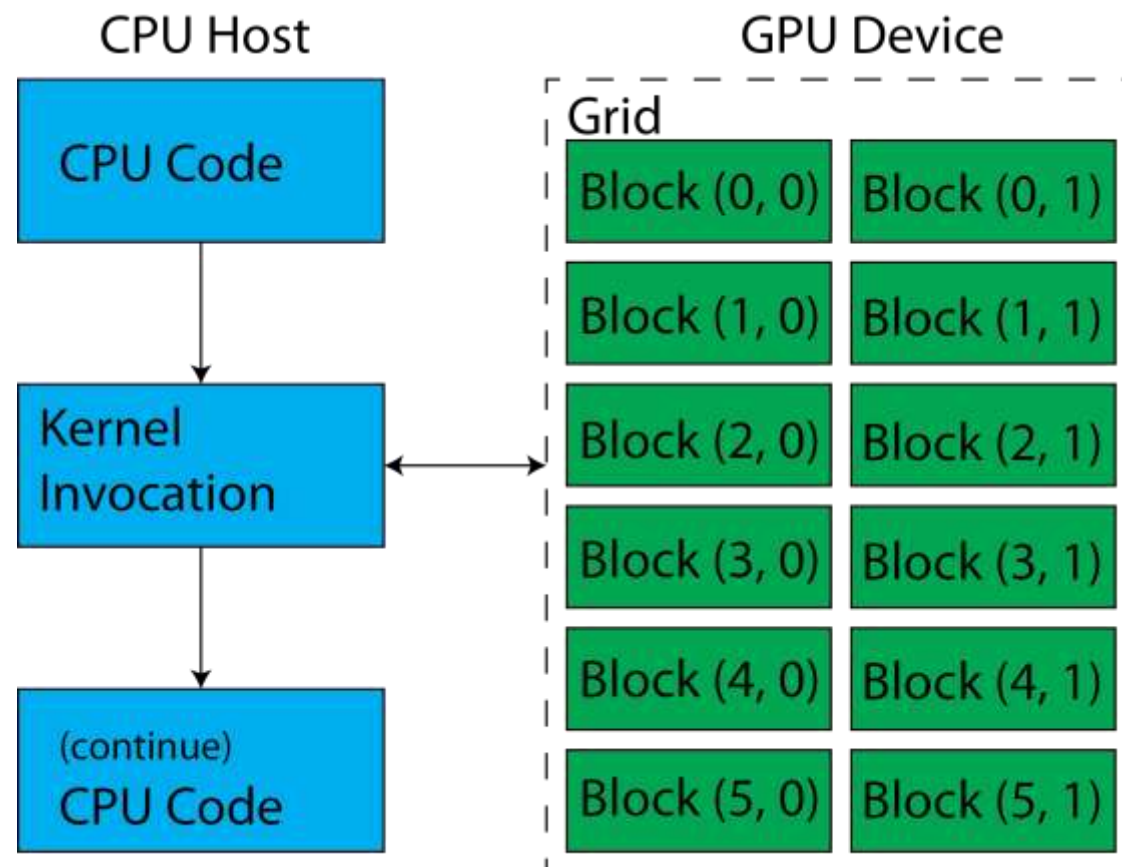


CUDA Compute Unified Device Architecture





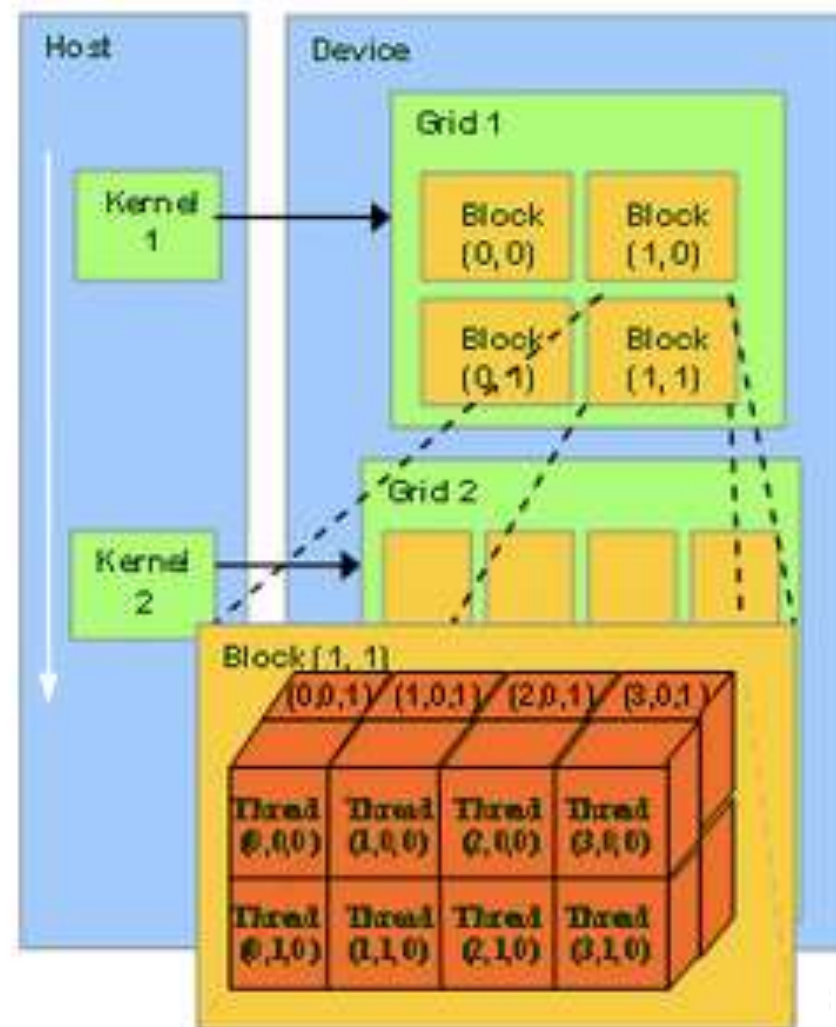
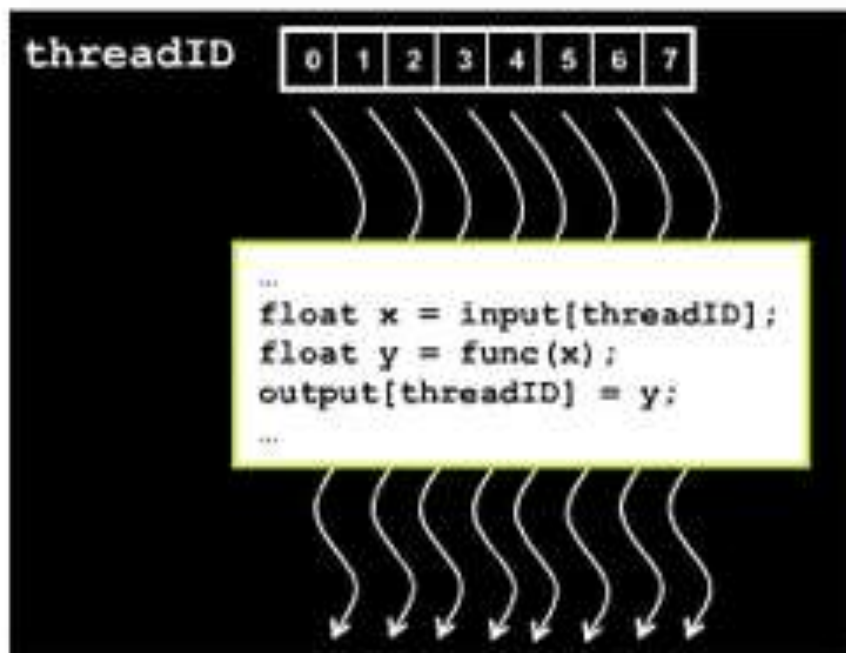
CUDA Compute Unified Device Architecture



Modelo de Programação em GPU

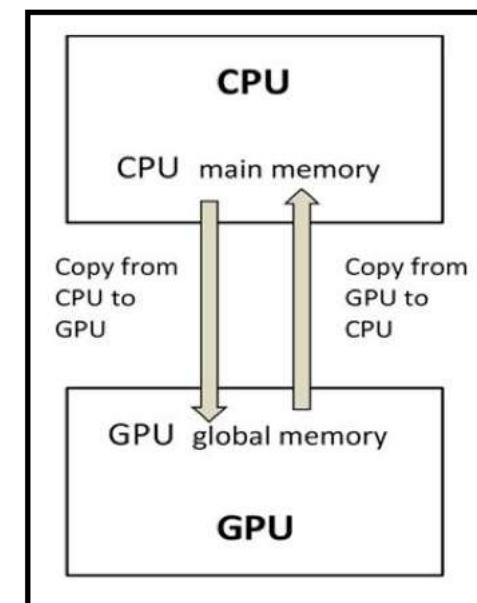
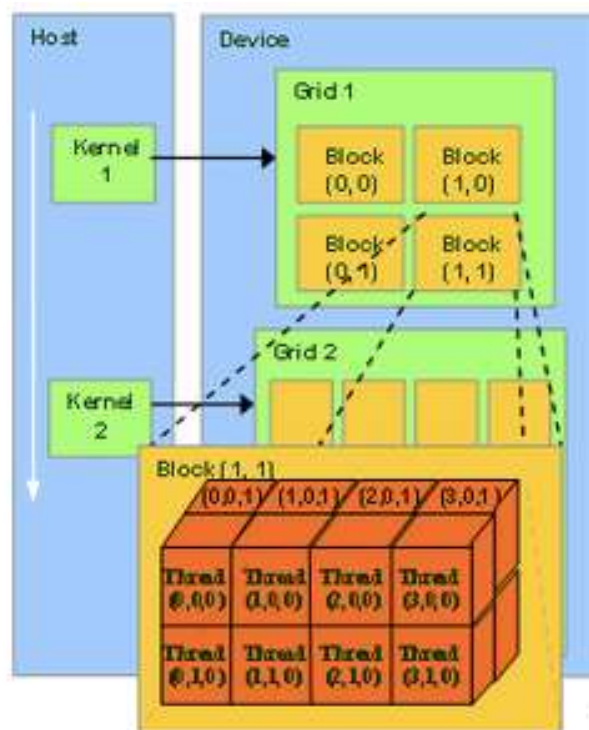
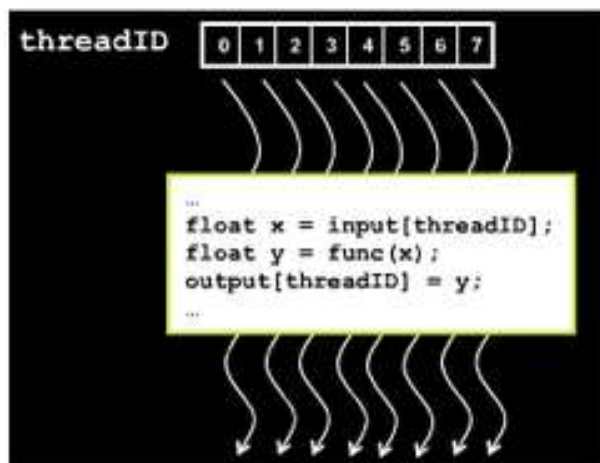


Modelo de Programação em GPU





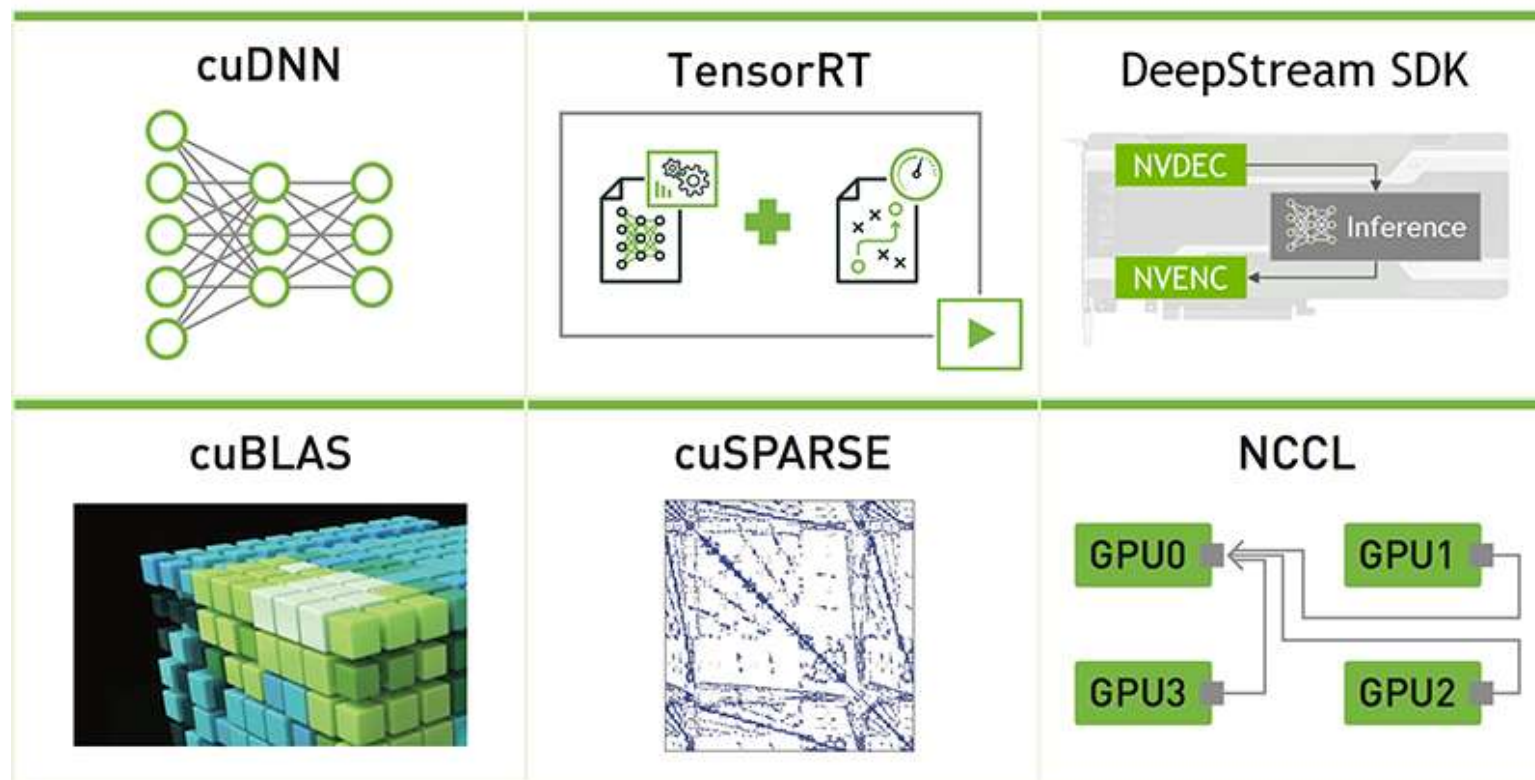
Modelo de Programação em GPU





Modelo de Programação em GPU

Nvidia SDK





Modelo de Programação em GPU

Deep Learning Primitives

Sparse Matrix Operations

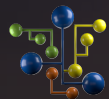
Deep Learning Inference Engine

Multi-GPU Communications

Deep Learning for Video
Analytics

Linear Algebra





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Obrigado



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