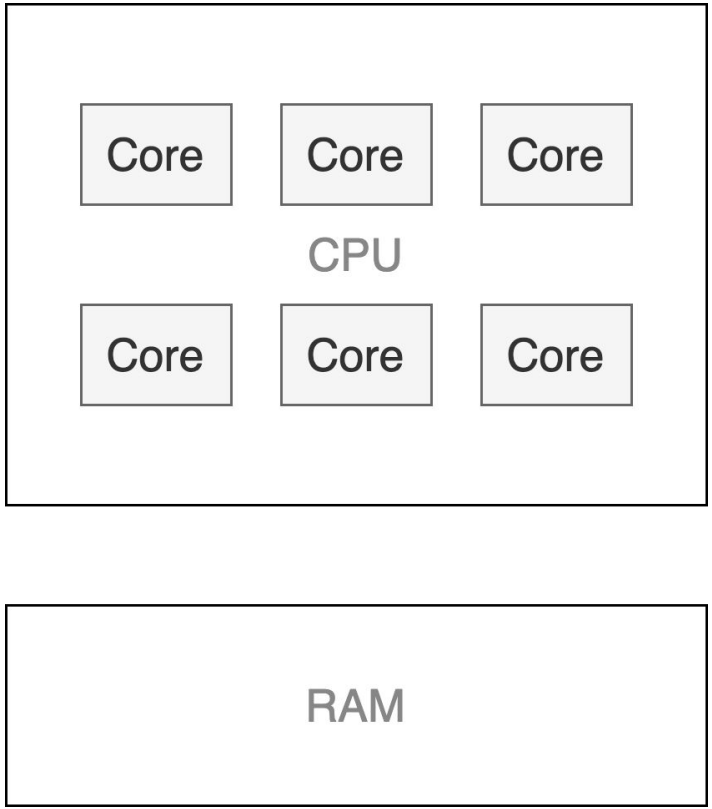
AWS Setup

Cloud Resources

Performance: Hardware

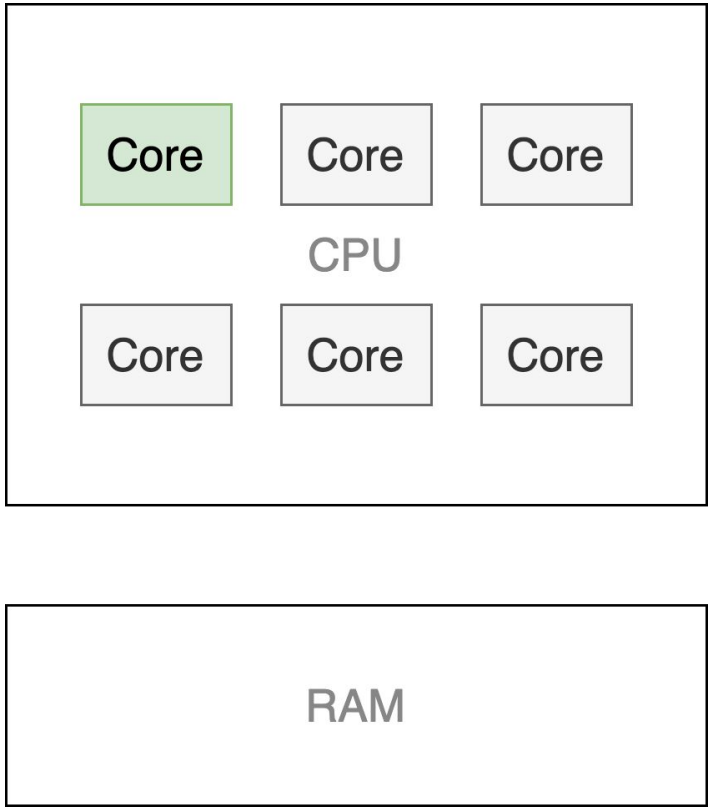
- Desktop CPUs
  - Frequency = 2-4 GHz
  - Cores = 1-12
  - RAM = 8-64GB
- Cloud CPUs
  - Frequency = 2-4 GHz
  - Cores = 1-96
  - RAM = 1-1024GB



Performance: Single-Process

Process 1: Python

- Thread 1: Interpreter
  - Running your Python code

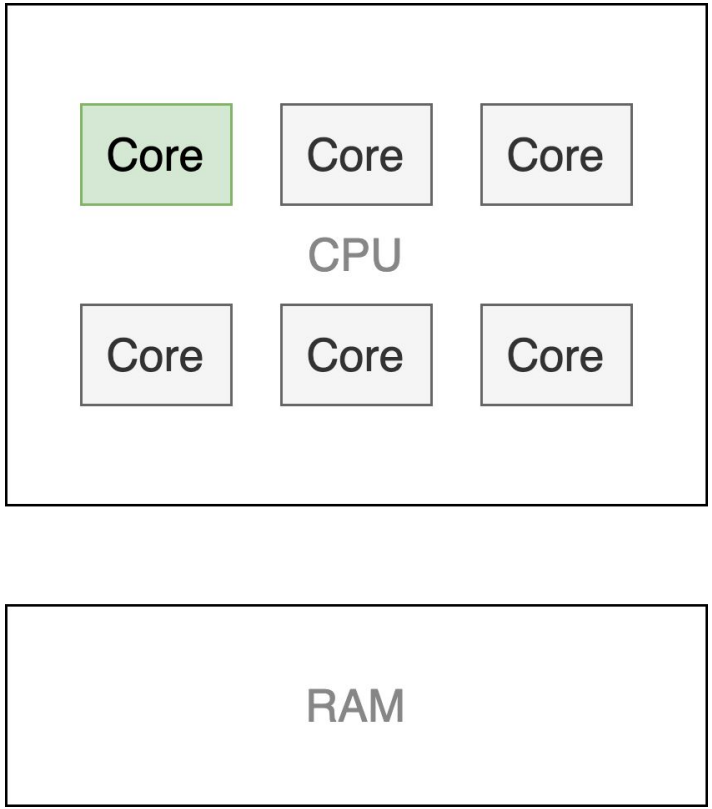


Performance: Single-Process

Process 1: Python

- Thread 1: Interpreter
  - Running your Python code

- Thread 2: NumPy/Tensorflow - C code
- Thread 3: NumPy/Tensorflow - C code
- Thread 4: NumPy/Tensorflow - C code
- Thread 5: NumPy/Tensorflow - C code
- Thread 6: NumPy/Tensorflow - C code
- Thread 7: NumPy/Tensorflow - C code



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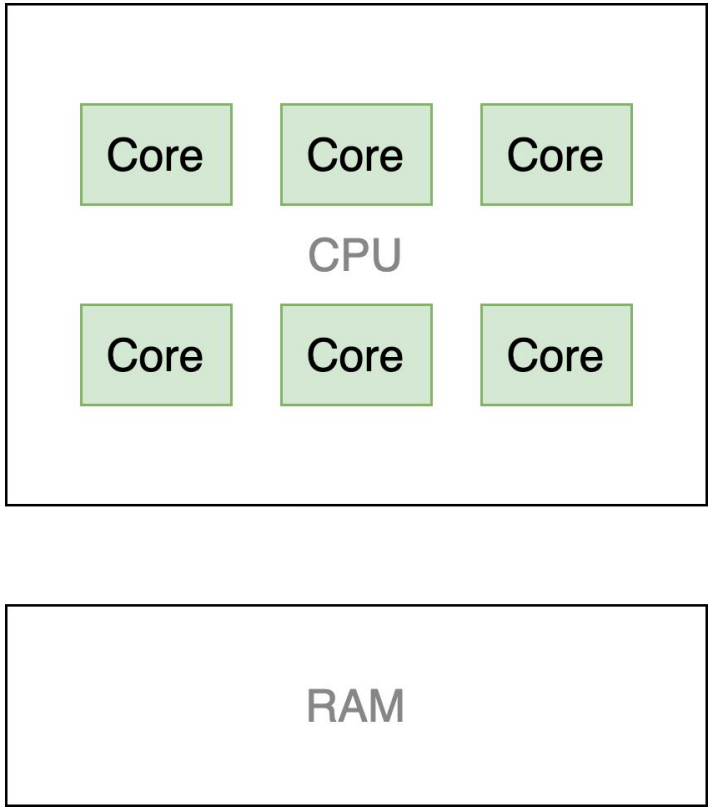


Performance: Multi-Process

Process 1:

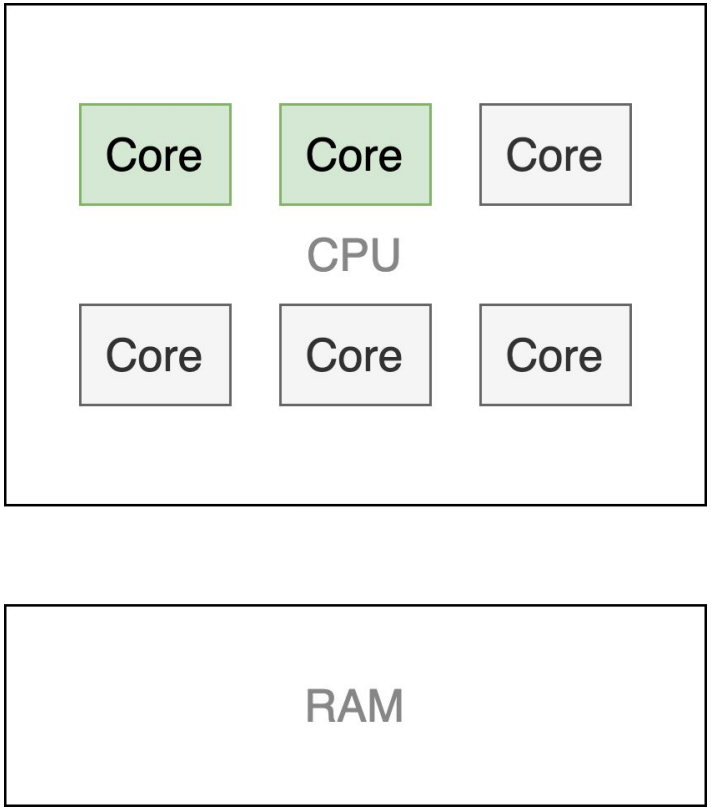
- Thread 1: Python Interpreter

Process 2:

- Thread 1: Python Interpreter

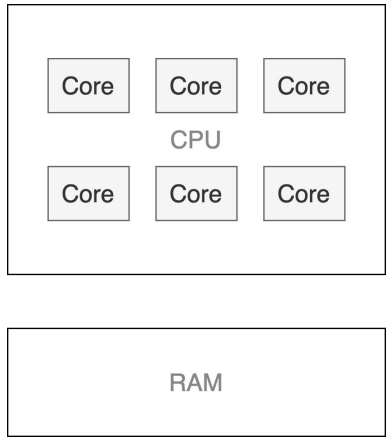
Examples:

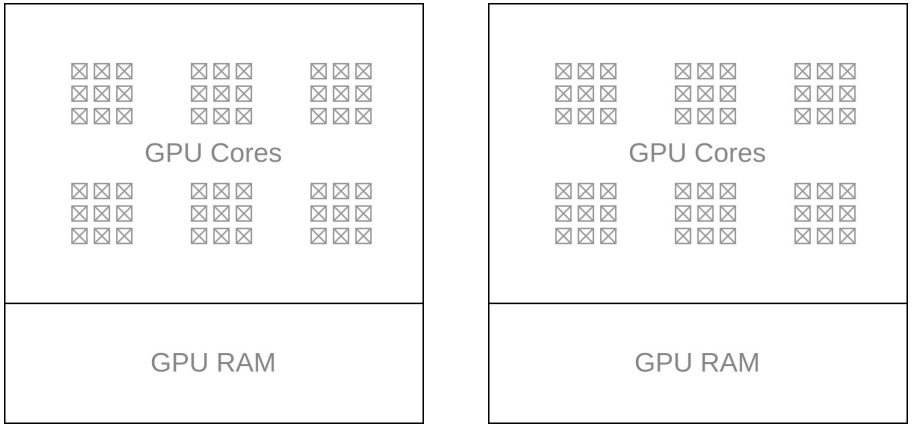
- Jupyter notebooks / kernels
- Scikit-Learn (via Joblib)
- Tsfresh
- Dask



Performance: GPU

- Desktop GPUs
  - Frequency = 1-2 GHz
  - Cores = 1000 - 2000
  - RAM = 6-24GB
  - Support for multiple GPUs
- Cloud GPUs
  - Frequency = 1-2 GHz
  - Cores = 3000 - 5000
  - RAM = 12-16GB
  - Support for multiple GPUs





AWS Budget

Region	Instance	CPU Cores	CPU RAM	GPU RAM	Price / hour	Hours	Cost
Oregon	ml.t3.xlarge	4	16	0	$0.20	60	$12.00
Oregon	ml.p2.xlarge	4	61	12	$1.13	40	$45.00
Region	**Storage**		Price / GB / mo	**GB**	**months**		**Cost**
Oregon	ml.gp3		$0.14	100	$1.50		21
						Costs	$78.00
						+ 25% buffer	$19.50
						Final	$97.50

AWS Budget Alerts

- Evaluated once per 8-12 hours
- Daily = $10
  - 0%
  - 25%
  - 50%
  - 100%
- Total = $100
  - 0%
  - 25%
  - 50%
  - 75%
  - 90%
  - 100%
- Email sent to student and Danylo

AWS Demo

URL: https://danylo-ucla.signin.aws.amazon.com/console
User: test-a
Password: very-secret-password