

Recitation 0G - Fundamentals of AWS

1. Basics of AWS
 - a. Regions, Budgets, Credits and Limits
2. **Using AWS EC2 Instances (Cloud VMs)**
 - a. **AMIs, instance types, security groups, SSH secrets and stopping/terminating.**
3. EC2 setup
 - a. Connecting to EC2s, how to SSH, setting up environments, EFS and EBS
4. Remote Notebook
 - a. VS Code and JupyterLab on remote systems

Some recommended EC2 Images (AMI) for deep learning

	AWS Deep Learning AMI (Ubuntu 18.04)	AWS Deep Learning Base AMI (Ubuntu 18.04)
Boot volume size	$\geq 100\text{GB}$	$\geq 60\text{GB}$
Includes	<ul style="list-style-type: none">• Drivers, CuDNN, CUDA• Anaconda environment<ul style="list-style-type: none">• Machine learning packages• Deep learning frameworks	<ul style="list-style-type: none">• Drivers, CuDNN, CUDA
Occupied boot volume space	88GB	42GB

Recommended AWS GPU Instances

- [Amazon EC2 P3 Instances](#) have up to 8 NVIDIA Tesla V100 GPUs.
- [Amazon EC2 P4 Instances](#) have up to 8 NVIDIA Tesla A100 GPUs.
- [Amazon EC2 G3 Instances](#) have up to 4 NVIDIA Tesla M60 GPUs.
- [Amazon EC2 G4 Instances](#) have up to 4 NVIDIA T4 GPUs.
- [Amazon EC2 G5 Instances](#) have up to 8 NVIDIA A10G GPUs.
- [Amazon EC2 G5g Instances](#) have Arm-based [AWS Graviton2 processors](#).

Recommended instance types

Type	vCores	RAM (GB)	GPU Spec	Additional Spec	Suitable for
t2.micro	1	1	-	Free tier available	Test only
c5.xlarge	4	8	-	-	Basic code development when GPU instances are not available
g4dn.xlarge	4	16	1 x Nvidia T4 16GB VRAM	125GB of additional ephemeral NVMe drive	Code development and model training
p3.2xlarge	8	61	1 x Nvidia Tesla V100 16GB VRAM	Expensive!	Accelerated training of large models

Where to store your keys?

For Windows:

- 'C:\Users\<username>\.ssh****.pem'

For Linux/Mac systems:

- '~\.ssh****.pem' where-
 - '~' represents your user folder, on Mac this corresponds to '/Users/<username>'

Stop/Terminate your instance

	Stop	Terminate
Similar to	Shutting down your computer	Throwing your computer into a trash crusher
Interruptions Action	Unaffected	Permanently Erased
Additional EBS Disks/EFS	Unaffected (Amazon is still charging you for the storage)	
Ephemeral drives	Permanently Erased	

On-demand vs Spot instances

	On-Demand Instance	Persistent Spot Instance	One-time Spot Instance
Spin up	Should always work	Subject to Spot capacity and price	Subject to Spot capacity and price
Interruptions Action	-	Stopped/Hibernated (EBS volume retained)	Terminated
Cost	Regular	80% Discounted	