



Intro to HPC  
for HLT

Introduction  
Basic commands  
Available software

Jobs  
PBS scripts

Tips  
Conclusions

# Introduction to the HPC for HLT

**Gus Hahn-Powell**  
hahnpowell@email.arizona.edu

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# Intro to HPC



# What is the HPC?

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■ HPC = High Performance Computing



# What is the HPC?

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- HPC = High Performance Computing
- Cluster of computers (supercomputer)



# What is the HPC?

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- HPC = High Performance Computing
- Cluster of computers (supercomputer)
- UA has **two** clusters



# What use the HPC?

- Large dataset (too large for your laptop)

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# What use the HPC?

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# What use the HPC?

- Large dataset (too large for your laptop)
- Long running computation
- Need to run many experiments/programs (batch computing)

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# What use the HPC?

- Large dataset (too large for your laptop)
- Long running computation
- Need to run many experiments/programs (batch computing)
- Parallelize your computation

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# What use the HPC?

- Large dataset (too large for your laptop)
- Long running computation
- Need to run many experiments/programs (batch computing)
- Parallelize your computation
- GPUs for machine learning

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# What use the HPC?

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- Large dataset (too large for your laptop)
- Long running computation
- Need to run many experiments/programs (batch computing)
- Parallelize your computation
- GPUs for machine learning
- It's free!\*



# What use the HPC?

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- Large dataset (too large for your laptop)
- Long running computation
- Need to run many experiments/programs (batch computing)
- Parallelize your computation
- GPUs for machine learning
- It's free!\*

## Documentation

- <http://hpc.arizona.edu>



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`https://ood.hpc.arizona.edu`



# Basic shell commands

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## Command

## Description

```
cd /path/to/dir
```

Move to the specified directory.

```
ls
```

List files in current directory (or specify a path).

```
mkdir -p /path/to/dir
```

Create the specified directory structure.

```
less filename.txt
```

Show contents of a file. Use arrow keys to scroll and `q` to exit (quit).



# Where to store stuff

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Location	Max Size	File Limits	Backups?
/extra/netid	200 GB	600 files/GB	no
~/home	15 GB	n/a	nightly
/tmp	varies	n/a	no



# Accessing preinstalled software

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---

```
[hahnpowell@login2 ~]$ singularity
```

---





# Accessing preinstalled software

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```
[hahnpowell@login2 ~]$ singularity
```

```
-bash: singularity: command not found
```



# Environment modules

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```
1 module load singularity/3/3.4.2
2 singularity --version
```

---



# Environment modules

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```
1 module load singularity/3/3.4.2
2 singularity --version
```

```
singularity version 3.4.2
```



# Modules: Common tasks

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*What modules are available?*

---

```
1 module avail
```

---

*What modules have been loaded?*

---

```
1 module list
```

---



# Modules: Common tasks

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*Save currently loaded modules for later use*

---

```
1 module save module-name-here
```

---

*Load saved modules*

---

```
1 module restore module-name-here
```

---



# Modules: Common tasks

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## Learn more

■ See `https://modules.readthedocs.io/`

# Tips

# Things to remember

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HEY!  
LISTEN!



- El Gato  $\neq$  Ocelote
  - Different OS version
  - Different hardware
  - ...



# Things to remember

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HEY!  
LISTEN!

■ El Gato  $\neq$  Ocelote

*Why might this be a concern?*

# Jobs



# Anatomy of a PBS script

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`https://github.com/ua-hlt-program/ua-hpc-recipes`  
`(dev branch)`

# Anatomy of a PBS script

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`https://github.com/ua-hlt-program/ua-hpc-recipes`  
  
(dev branch)

## Additional resources

- For GUI-based PBS script construction, check out the job composer

# Questions?



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