HPRC Primer

Introduction to the Drona Composer

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High Performance Research Computing DIVISION OF RESEARCH

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Accessing the ACES Portal

- HPRC webpage: <u>hprc.tamu.edu</u>
- Aces portal shortcut: portal-aces.hprc.tamu.edu
- Requires an ACCESS ID!

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Accessing ACES via the Portal (ACCESS)

ALLOCATIONS SUPPORT OPERATIONS METRICS	Q = Login	
		If you had an XSEDE account, please enter your XSE username and password for ACCESS login.
ACCESS		ACCESS ID
Consent to Attribute Release	~	
TAMU ACES ACCESS OIDC requests access to the following information. If you do not approve this request, do not proceed. • Your CILogon user identifier • Your name • Your email address		ACCESS Password
Your username and attiliation from your identity provider		LOGIN
elect an identity Provider		
ACCESS CI (XSEDE)	• •	
Romember this selection 😧		Register for an ACCESS ID
		Forgot your password?
		Need Help?
Select the Identity Provider appropriate for your account.		Log-in using your ACCES

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The Drona Composer

• A framework to assist you with generating and creating jobs



DRONA COMPOSER - JOB SUBMISSION MADE EASY



DEMO: create generic job and submit

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Hands on Activity - 5 minutes

- 1. Add the **DronaPrimer** env using the import functionality
- 2. Check the environment dropdown again and see **DronaPrimer** in the list of environments
- 3. Optionally, using the OOD Files app or using the shell, inspect the contents of directory **\$SCRATCH/drona_composer/environments/DronaPrimer**



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Case Study: Adapting the DronaPrimer environment

DronaPrimer: Simple workflow that compiles a provided source file and then runs it using given number of tasks and cpus-per-task. We will modify the environment as follows

- 1. Add extra dropdown element in schema.json
 - Dropdown has optimizations O0,O1, O2, O3
 - Update template.txt to add the compiler flag placeholder
- 2. Add warning when tasks*cpus exceeds max cpus per node
- 3. Adjust number of cpus to make it fit on single node
- 4. Add a README file to the preview

1. Conditional fields

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```
"useMPI": {
   "type": "checkbox",
  "label": "Use MPI",
  "value": "Yes"
   . . .
},
"mpiVersion": {
  "type": "select",
  "name": "mpiVersion"
   . . .
},
"mpiTasks": {
  "type": "number",
   "name": "mpiTasks",
  "condition": "useMPI.Yes && mpiVersion.openmpi"
},
```

- 1. Conditional fields
- 2. Dynamic Elements

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```
"account": {
    "type": "dynamicSelect",
    "label": "Project Account",
    "name": "account",
    "retriever": "list_accounts.sh"
},
```

- 1. Conditional fields
- 2. Dynamic Elements
- 3. Drona Job History

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D	Name	Location	Environment	Date	Actions
008736	DronaPrimerTest2	drona composer/runs/DronaPrim	DronaPrimer	2025-04-03 13:52:38	Actions -
008734	DronaPrimerTest	drona composer/runs/DronaPrim	DronaPrimer	2025-04-03 13:48:45	Rerun Recreate
1/A	AlphaFold_run	drona composer/runs/AlphaFold	AlphaFold	2025-04-03 13:39:18	Actions •
N/A	ML_training	drona composer/runs/ML training	Generic	2025-04-03 13:35:31	Actions •
V/A	molecular_dynamics	drona composer/runs/molecular	Generic	2025-04-03 13:34:48	Actions •
008710	fluid_dynamics_simula	drona composer/runs/fluid_dyna	Generic	2025-04-03 13:34:16	Actions •

- 1. Conditional fields
- 2. Dynamic Elements
- 3. Drona Job History

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🚇 dor-hprc-drona-environments 💷		🗴 Edit Pins 👻 💿 Watch 1
🐉 main 🔹 🐉 1 Branch 🛇 0 Tags	Q Go to file	Add file 👻 <> Code 👻
pennings-tamu Update metadata.json		1 · 3 days ago 🕚 40 Commits
🖿 .github	Add support for environments without manifest.yml	file 2 months ago
Aces	Updated Generic env ACES	last month
Faster	Update metadata	2 months ago
Generic-ACES	Updated Generic env ACES	last month
Generic-FASTER	Update metadata	2 months ago

4. Environment Repository (In the works)

manifest.yml:

name: "Matlab" description: "Matlab" category: "Scientific" version: "1.0.0" author: "HPRC"

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- 1. Conditional fields
- 2. Dynamic Elements
- 3. Drona Job History

Environments	IPUTutorial	~ +		
	IPU Tutorial PEARC25 Welcome to the IPU tutorial organized by HPRC This tutorial will consist of a number of traning modules, where you will learn how to port PyTorch code to run on IPUs. You can use the Dropdown to select the next module.			
Module	- Choose an option -	~		
	Setup training materials			
	Run Tensorflow on IPU			
Cautions: Job files will executite existing fil	Run PopTorch on IPU			
Cautions: Job files will exerusite existing file				
Cautions: Job files will overwrite existing file	Porting PyTorch on IPU			
A Cautions: Job files will overwrite existing file	Porting PyTorch on IPU Porting Tensorflow on IPU			

- 4. Environment Repository (In the works)
- 5. HTML Elements (In the works)

Drona Preview

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Continued Learning

HPRC YouTube

HPRC Homepage

ACES Quick Start Guide

ACES Portal (ACCESS users)

<u>help@hprc.tamu.edu</u>

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https://hprc.tamu.edu

HPRC Helpdesk:

help@hprc.tamu.edu Phone: 979-845-0219





<u>https://u.tamu.edu/hprc_shortcourse_survey</u>

Help us help you. Please include details in your request for support, such as, Cluster (ACES, FASTER, Grace, Launch), NetID (UserID), Job information (JobID(s), Location of your jobfile, input/output files, Application, Module(s) loaded, Error messages, etc), and Steps you have taken, so we can reproduce the problem.



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Thank you.

Any questions? <u>u.tamu.edu/hprc_shortcourse_survey</u>

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