

MICHIGAN STATE
UNIVERSITY

Alpha Presentation

Simplifying High Performance Computing

The Capstone Experience

Team Michigan State University HPCC

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From Students...
...to Professionals

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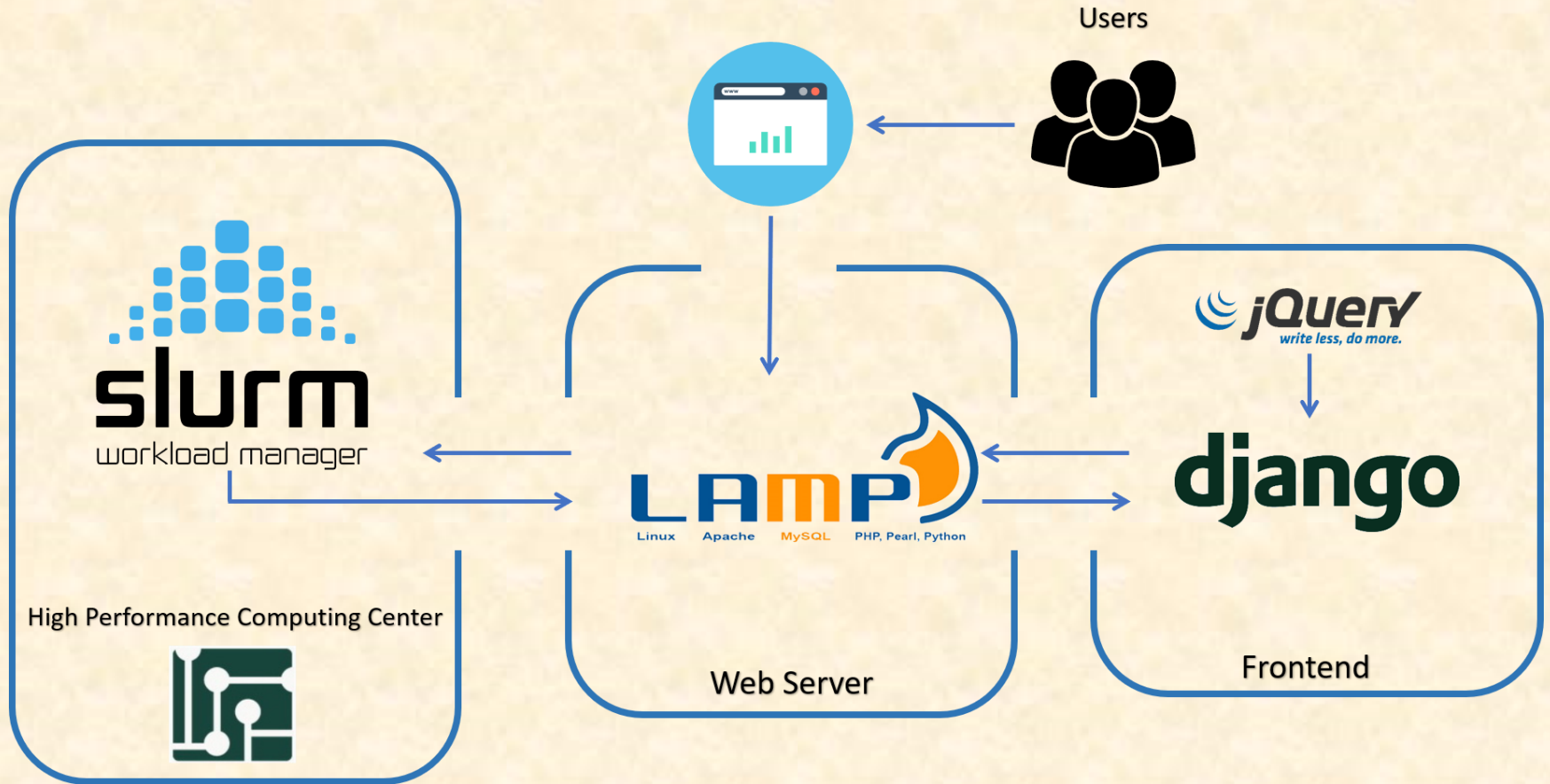
Spring 2019

Project Overview

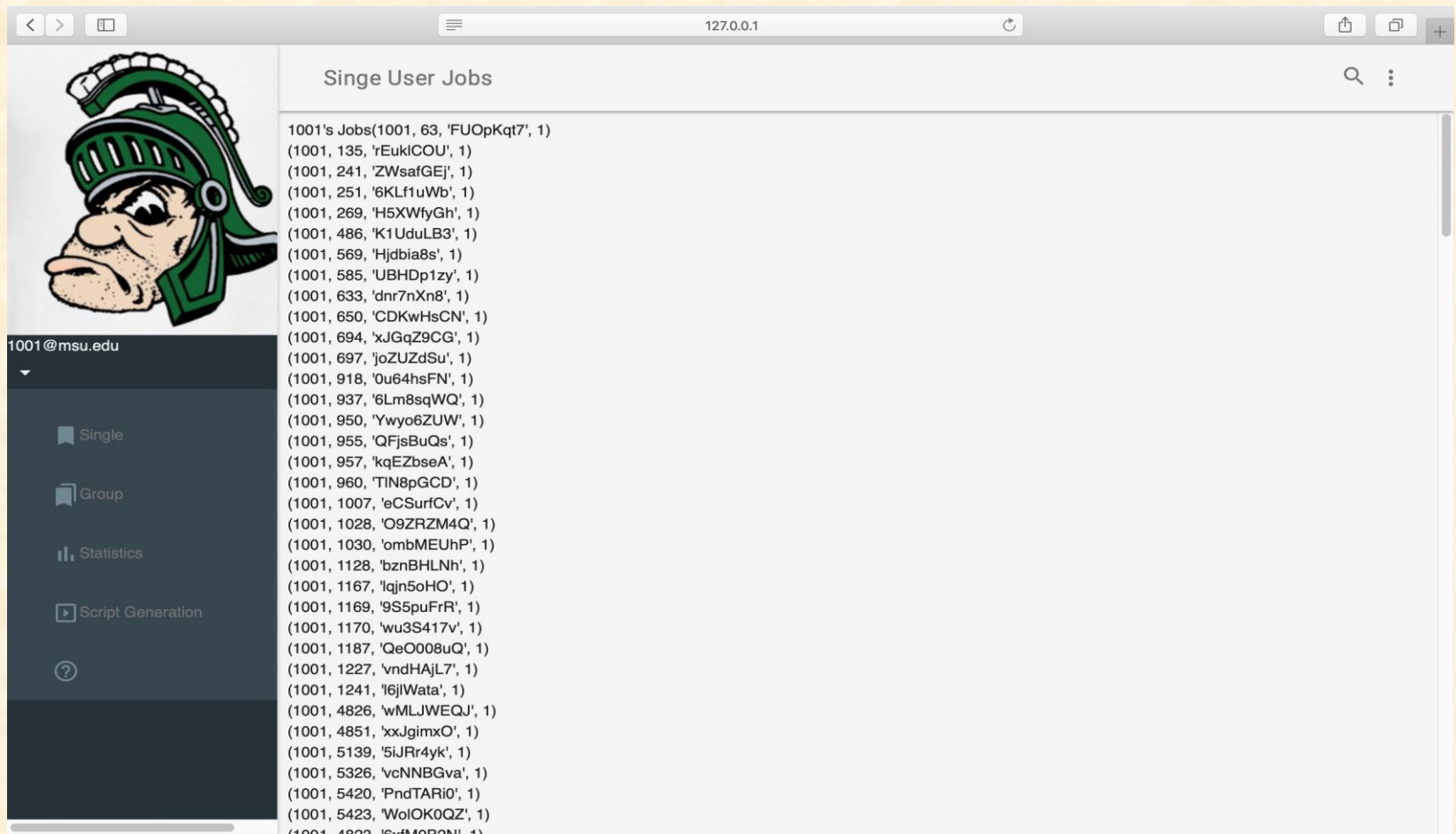
- Simplifies the Process of Using the HPCC
- Works Through a Simple Web App
- Provides Script Generation
- Job Monitoring
- Job Statistics
- Job Submission
- Etc...



System Architecture



Single User Jobs



The screenshot shows a web application interface. At the top, there's a browser window with the address bar showing '127.0.0.1'. The page title is 'Single User Jobs'. On the left, there's a sidebar with a logo of a person in a green helmet and a list of navigation options: 'Single', 'Group', 'Statistics', 'Script Generation', and a help icon. The main content area displays a list of jobs, each represented by a tuple of values: (job_id, user_id, job_name, priority). The jobs are listed in descending order of job_id.

1001's Jobs(1001, 63, 'FUOpKqt7', 1)

(1001, 135, 'rEuklCOU', 1)

(1001, 241, 'ZWsafGEj', 1)

(1001, 251, '6KLf1uWb', 1)

(1001, 269, 'H5XWfyGh', 1)

(1001, 486, 'K1UduLB3', 1)

(1001, 569, 'Hjdbia8s', 1)

(1001, 585, 'UBHDp1zy', 1)

(1001, 633, 'dnr7nXn8', 1)

(1001, 650, 'CDKwHsCN', 1)

(1001, 694, 'xJGqZ9CG', 1)

(1001, 697, 'JoZUZdSu', 1)

(1001, 918, 'Ou64hsFN', 1)

(1001, 937, '6Lm8sqWQ', 1)

(1001, 950, 'Ywyo6ZUW', 1)

(1001, 955, 'QFjsBuQs', 1)

(1001, 957, 'kqEZbseA', 1)

(1001, 960, 'TIN8pGCD', 1)

(1001, 1007, 'eCSurfCv', 1)

(1001, 1028, 'O9ZRZM4Q', 1)

(1001, 1030, 'ombMEUhP', 1)

(1001, 1128, 'bznBHLNh', 1)

(1001, 1167, 'lqjn5oHO', 1)

(1001, 1169, '9S5puFrR', 1)

(1001, 1170, 'wu3S417v', 1)

(1001, 1187, 'QeO008uQ', 1)

(1001, 1227, 'vndHAJL7', 1)

(1001, 1241, 'l6jIWata', 1)

(1001, 4826, 'wMLJWEQJ', 1)

(1001, 4851, 'xxJgimxO', 1)

(1001, 5139, 'SiJRr4yk', 1)

(1001, 5326, 'vcNNBGva', 1)

(1001, 5420, 'PndTARi0', 1)

(1001, 5423, 'WolOK0QZ', 1)

(1001, 5423, 'WolOK0QZ', 1)



Group User Jobs

MSU HPCC - Mozilla Firefox

127.0.0.1:8000/jobs/group/

MSU HPCC

Created for Capstone Spring 2019

[Single Group Statistics Script Generation](#)
[help_outlineHelp](#)

user01's Group Jobs

job_db_inx	mod_time	job_name	id_job	id_user	id_group	kill_requid	mem_req	nodeлист	nodes_alloc	node_inx	state	timelimit	time_submit	time_eligible	time_start	time_end	time_suspended	work_dir
55	1550172365	fAcQcgv	29	1000	0	-1	9223372036854776308	c2	1	1	3	7200	1550172364	1550172364	1550172365	1550172365	0	/tmp
171	1550172366	ihIZDYoy	88	1000	0	-1	9223372036854776308	c2	1	1	3	7200	1550172365	1550172365	1550172365	1550172365	0	/tmp
445	1550172388	3QsBvIBV	225	1000	0	-1	9223372036854776308	c3	1	2	3	7200	1550172388	1550172388	1550172388	1550172388	0	/tmp
461	1550172442	MJMJobo	235	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172426	1550172426	1550172427	1550172442	0	/tmp
500	1550172507	soKdoBll	274	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172426	1550172426	1550172427	1550172506	0	/tmp
531	1550172551	QVazRkL9	305	1000	0	-1	9223372036854776308	c1	1	0	3	7200	1550172427	1550172427	1550172536	1550172551	0	/tmp
559	1550172593	frAsq3C6	333	1000	0	-1	9223372036854776308	e9	1	8	3	7200	1550172427	1550172427	1550172578	1550172593	0	/tmp
575	1550172624	zdu1BYbK	349	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172427	1550172427	1550172605	1550172624	0	/tmp
696	1550172798	rPdAvDWT	470	1000	0	-1	9223372036854776308	c10	1	9	3	7200	1550172429	1550172429	1550172786	1550172798	0	/tmp
701	1550172816	9uZnPmpO	475	1000	0	-1	9223372036854776308	c1	1	0	3	7200	1550172429	1550172429	1550172798	1550172816	0	/tmp
724	1550172845	Y0sasPJU	498	1000	0	-1	9223372036854776308	c1	1	0	3	7200	1550172429	1550172429	1550172830	1550172845	0	/tmp
741	1550172872	Nlkje1B	515	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172429	1550172429	1550172858	1550172872	0	/tmp
769	1550172915	668FLBHL	543	1000	0	-1	9223372036854776308	c6	1	5	3	7200	1550172429	1550172429	1550172899	1550172915	0	/tmp
770	1550172914	8z9Ks4IE	544	1000	0	-1	9223372036854776308	c9	1	8	3	7200	1550172429	1550172429	1550172899	1550172914	0	/tmp
853	1550173045	E25vChZ4	627	1000	0	-1	9223372036854776308	c2	1	1	3	7200	1550172430	1550172430	1550173026	1550173044	0	/tmp
891	1550173099	bcITJ205	665	1000	0	-1	9223372036854776308	c5	1	4	3	7200	1550172431	1550172431	1550173080	1550173098	0	/tmp
998	1550173262	ITXjis20	772	1000	0	-1	9223372036854776308	c1	1	0	3	7200	1550172432	1550172432	1550173244	1550173261	0	/tmp
999	1550173258	fgCLgx52	773	1000	0	-1	9223372036854776308	c10	1	9	3	7200	1550172432	1550172432	1550173245	1550173258	0	/tmp
1005	1550173268	UlvvPWfY	779	1000	0	-1	9223372036854776308	c8	1	7	3	7200	1550172432	1550172432	1550173255	1550173268	0	/tmp
1022	1550173298	zJBwZgdS	796	1000	0	-1	9223372036854776308	c5	1	4	3	7200	1550172432	1550172432	1550173279	1550173298	0	/tmp
1034	1550173309	oN0mZlAd	808	1000	0	-1	9223372036854776308	c6	1	5	3	7200	1550172433	1550172433	1550173298	1550173309	0	/tmp
1124	1550173448	RISepnuX	898	1000	0	-1	9223372036854776308	e9	1	8	3	7200	1550172434	1550172434	1550173431	1550173448	0	/tmp
1174	1550173524	ziPMeIj	948	1000	0	-1	9223372036854776308	c10	1	9	3	7200	1550172434	1550172434	1550173505	1550173523	0	/tmp
1198	1550173562	IGRCOp3l	972	1000	0	-1	9223372036854776308	c2	1	1	3	7200	1550172434	1550172434	1550173547	1550173562	0	/tmp
1255	1550173652	ck2Ychdh	1029	1000	0	-1	9223372036854776308	c3	1	2	3	7200	1550172435	1550172435	1550173638	1550173652	0	/tmp
1258	1550173657	UJtw3zRK	1032	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172435	1550172435	1550173640	1550173657	0	/tmp
1316	1550173745	d68grCAQ	1090	1000	0	-1	9223372036854776308	c5	1	4	3	7200	1550172436	1550172436	1550173730	1550173745	0	/tmp
1435	1550173919	s8SredGm	1209	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172437	1550172437	1550173905	1550173919	0	/tmp
1467	1550173968	wEXBt5vV	1241	1000	0	-1	9223372036854776308	e9	1	8	3	7200	1550172438	1550172438	1550173955	1550173968	0	/tmp
1481	1550173986	EdZ7Wbs9	1255	1000	0	-1	9223372036854776308	c8	1	7	3	7200	1550172438	1550172438	1550173974	1550173986	0	/tmp
1483	1550173992	KvF56vZv	1257	1000	0	-1	9223372036854776308	c10	1	9	3	7200	1550172438	1550172438	1550173975	1550173992	0	/tmp
1552	1550174091	IFxwAlb3	1326	1000	0	-1	9223372036854776308	e8	1	7	3	7200	1550172439	1550172439	1550174077	1550174091	0	/tmp
1645	1550174236	4utZPN7b	1419	1000	0	-1	9223372036854776308	c7	1	6	3	7200	1550172440	1550172440	1550174217	1550174236	0	/tmp
1651	1550174241	CPB3mzin	1425	1000	0	-1	9223372036854776308	c10	1	9	3	7200	1550172440	1550172440	1550174223	1550174241	0	/tmp
1665	1550174262	LJDTHsh	1439	1000	0	-1	9223372036854776308	e4	1	3	3	7200	1550172440	1550172440	1550174247	1550174262	0	/tmp
1692	1550174299	9uUVO3pQ	1466	1000	0	-1	9223372036854776308	c9	1	8	3	7200	1550172440	1550172440	1550174287	1550174299	0	/tmp
1693	1550174310	Qx3Lv1Vf	1467	1000	0	-1	9223372036854776308	c8	1	7	3	7200	1550172440	1550172440	1550174291	1550174310	0	/tmp

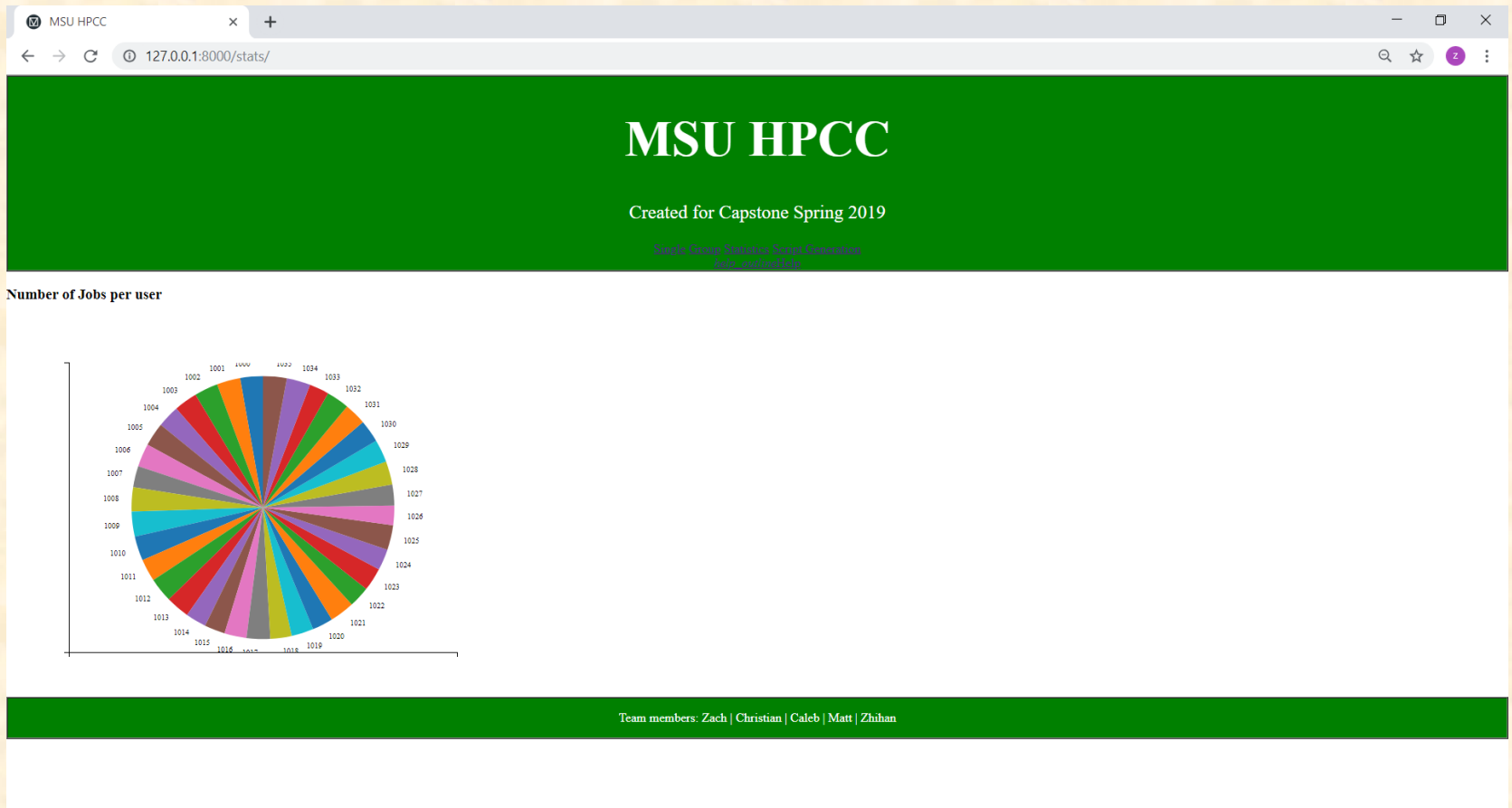


Admin Job Viewer

id_user	job_db_inx	job_name	cpus_req
1025	31	5H1YXNA	1
1025	59	iq8ipbwI	1
1025	67	9s4TZty	1
1025	103	FWWIDJPN	1
1025	245	EbxOpQ3m	1
1025	278	TOzMKK3p	1
1025	399	jFM9gKQR	1
1025	455	ZtkITZT1	1
1025	457	7zK4UaI	1
1025	536	CSOqCFpI	1
1025	623	dHvd2fH8	1
1025	675	pYJLS0L	1
1025	677	j98Jw0gj	1
1025	684	dVhdiLvNK	1
1025	715	EF6Z8nhH	1
1025	740	IjHTV70W	1
1025	753	z3uMwRrW	1
1025	761	LiKQY7IU	1
1025	818	jPA39sCa	1
1025	821	xA7teDKa	1
1025	830	8sZ5AVTk	1
1025	828	8DhFDdJS	1
1025	845	Yl1xrZsQ	1
1025	886	nxoSVckF	1
1025	917	ri7nv6z7	1
1025	945	sTmbCVWu	1
1025	990	dS7fgf40	1
1025	1044	avMUJoniO	1
1025	1069	VLzANswI	1
1025	1071	WZekGWdK	1
1025	1100	evps4zo7	1
1025	1103	jB0ADvrD	1
1025	1122	zQEoGtCw	1
1025	1145	8baZmqDa	1
1025	1149	hNTVeBEf	1
1025	1181	nAmD4mBG	1



Statistics



Bash Script Generator

MSU HPCC

127.0.0.1:8000/ScriptGen/get_name/

MSU HPCC

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Single Group Statistics Script Generation
[View Instructions](#)

Wall time:	10:00:00
Job name:	ML Task
CodeDirectory:	/CodePath/HPCC/
Nodes:	2
CPUs:	33
MemoryPerCPU:	2 Gb
Tasks:	2
ExecutableName:	Classifier.py

Submit

```
#!/bin/bash

##SBATCH Lines for Resource Request ##

#SBATCH --time=10:00:00
#SBATCH --nodes=2
#SBATCH --tasks=2
#SBATCH --mem-per-cpu=2 Gb
#SBATCH --job-name=ML Task
##Command Lines to Run ##

cd /CodePath/HPCC/
srun -n 2 Classifier.py
```

[Download Bash File](#)

Team members: Zach | Christian | Caleb | Matt | Zihan



What's left to do?

- Connect SlurmDBD
- Create Admin Tools
- Add More Job Stats
- Implement Access Control
- Groups
- Job Submission
- Etc



Questions?

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