Application/Benchmark Duos: For a balanced division of labor, we split into specialized pairs.

### About Us:
We are Team Phoenix! We are six computer science students with diverse academic and personal backgrounds. Our experiences include outreach programs that promote STEM to underrepresented youths and fostering inclusion for Women and LGBTQ+ groups in CS. We come from diverse geographical and ethnic backgrounds, representing five states and four countries. We study seven of the eight CS concentrations Georgia Tech offers.

### Hardware and Software Configurations

<table>
<thead>
<tr>
<th>Hardware and Software Configurations</th>
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<tbody>
<tr>
<td><strong>HPL</strong></td>
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<tr>
<td>Planning to use NDv2 Series VMs</td>
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<tr>
<td>8 NVIDIA Tesla V100s</td>
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<td>Has NVLINK, high bandwidth connection between GPUs</td>
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### Application/Benchmark Preparation

**Georgia Tech Class on Student Cluster Competition:**
- Gained familiarity with HPC concepts
- Weekly meetings made sure we had constant engagement
- We get to know each other, and learn about each other's apps

**Competetion Strategy:**
- All Clusters based off CentOS 7 with updated compilers
- This is the default image, it will have the best compatibility with Azure Infiniband.
- Use PBS Batch Scheduler.
- Have cluster configurations for each app/benchmark finalized, and have necessary dependencies installed on each cluster before the competition.

**Budget Management:**
- Split budget 20% for benchmarks, 80% for applications. During the competition, we will try to move funds from benchmarks to apps whenever possible.
- Most benchmarks take little time to run if we saturate GPUs, and most applications take many cores and days to run.
- Using SKU costs, we can calculate cost per node-hour for each application. During the competition we can allocate nodes for apps on the fly, while staying under budget.

### Preparation Strategy:

**Application/Benchmark Preparation**
We will use PACE-ICE, a Georgia Tech HPC cluster, to tune applications. That way, we can use the majority of our Azure practice credits to tune benchmarks. Benchmarks are sensitive to hard ware and we want to minimize the costs of running benchmarks so we will tune those directly on Azure. Applications are sensitive to configurations, so we will use PACE-ICE to experiment with how input parameters affect performance. We can extrapolate from our observations during the competition. We have surveyed past SCC apps to prepare for the mystery app.

### Why We Will Succeed:

**University Support:** We have world class faculty helping us prepare.
- Dr. Richard Vuduc, Dr. Aaron Jeugdhani, Dr. Jeff Young, Will Powell
- Georgia Tech has a strong SC presence and past SCC experience.

**The Team:** We are talented and motivated to win.
- We are passionate about computer science
- 3 of us TA for core computer science courses
- 4 of us do undergraduate research
- All 6 of us have industry experience
- We have been working together since January

**Industry Support:**
- Penguin Computing supports Georgia Tech and PACE
- Intel and NVIDIA provide us with HPL binaries
- Industry connections help us prepare.