# Proposal For ASC 25

Team Name: `[Team Name]`

Team Member 1
Team Member 2
Team Member 3
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# Contents

# 1 Brief Background Description of Supercomputing Activities

## 1.1 Hardware and Software Platforms

Our university established a high-performance computational (HPC) cluster in 2025 to address the growing demands in scientific research and industrial applications. Here's an example of how to include technical specifications:

Table 1: Hardware Configuration of YSU HPC Cluster

| Item | Name | Configuration | Number |
|------|------|---------------|--------|
| Login Node | [Model] | CPU: [Specs] | 1 |
| Compute Node | [Model] | CPU: [Specs] | 10 |
| GPU Node | [Model] | GPU: [Specs] | 2 |

## 1.2 Example Code Block

Here's how to include code samples in the document:

Listing 1: HPL Performance Testing Script

```python
def test_hpl_performance(problem_size, block_size):
    """
    Test HPL performance with given parameters
    """
    results = []
    for size in problem_size:
        perf = run_hpl_benchmark(size, block_size)
        results.append((size, perf))
    return results
```

## 1.3 Example Figure

Example of including a figure with caption:

This is a placeholder for the performance graph

Figure 1: HPL Performance Scaling Analysis

# 2 Design of HPC System

## 2.1 Performance Analysis

Example of including mathematical equations:

$$R_{peak} = N_{cores} \times N_{flops/cycle} \times F_{clock} \tag{1}$$

Where:

- $N_{cores}$ is the total number of CPU cores

- $N_{flops/cycle}$ is the number of floating-point operations per cycle

- $F_{clock}$ is the clock frequency in Hz

# 3 Introduction to the University's Activities in Supercomputing

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## 5.3 Optimization for AlphaFold3 Inference

### 5.3.1 GPU Inference Optimization

### 5.3.2 CPU Inference Optimization

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## 5.4 RNA m5C Modification Site Detection and Performance Optimization Challenge

### 5.4.1 Workflow Description

### 5.4.2 m5C Sites File

### 5.4.3 Software Packaging

### 5.4.4 Performance Optimization

# 6   Additional Materials

# A  Additional Technical Details

## A.1  Configuration Files

Example of including configuration files:

Listing 2: HPL Configuration File

```
1  # Sample HPL.dat
2  HPL.out        output file name
3  6              device out (6=stdout,7=stderr,file)
4  1              # of problems sizes (N)
5  29000          Ns
6  1              # of NBs
7  256            NBs
8  0              PMAP process mapping (0=Row-,1=Column-major)
9  1              # of process grids (P x Q)
10 2              Ps
11 2              Qs
12 16.0           threshold
13 1              # of panel fact
14 2              PFACTs (0=left, 1=Crout, 2=Right)
```

# B  References

# References

[1]  Author, *Title of the Book*, Publisher, Year.