HPC Optimization Process

STEP 1 - PROFILE

Identify where time is spent user *perf* or *g[rof*

Maesure before you optimize

STEP 2 - PARALLELIZE

Add OpenMP or MPI to divide tasks across core/nodes

Exploit both shared and distributed memory parallelism

STEP 3 - TUNE

Adjust communication, thread count, and cache usage

Use affinity setting and non-blocking communication

STEP 4 - VALIDATE

Check accuracy, scalability, and reproducibility.

Optimization means nothing without corrections