Aurela's Section: Senior Design I Documentation Early Status Report

As of right now, I began working with the AlgoTune benchmark suite inside OpenEvolve. Cloned the repository and installed all required Python dependencies inside the virtual environment. Created and activated the virtual environment to keep the dependencies contained. Did unit testing and baseline runs to verify the installation. I successfully ran initial tasks such as function˙minimization and produced results.

My current effort is focused on preparing and running AlgoTune tasks such as polynomial˙real, convolve2d˙full˙fill, and working on testing attention˙optimization to evaluate performance improvements.

Right now, my focus is on setting up and running OpenEvolve experiments within the AlgoTune benchmark suite. I cloned the repository, created and activated a virtual environment, and installed all required dependencies. I verified the installation by running unit tests and baseline examples.

My work so far has been directed toward understanding how OpenEvolve evolves algorithmic solutions across tasks, starting with smaller examples like function_minimization and moving toward more complex AlgoTune optimizations. I have been experimenting with the evaluation pipeline, including configuration files (.yaml), iteration counts, and checkpointing, to see how results are tracked and resumed.

The next step in my effort is to explore task-specific optimizations within AlgoTune (e.g., polynomial_real, convolve2d_full_fill, attention_optimization) and document the improvements OpenEvolve can discover compared to baseline implementations. This involves tuning configurations, running multi-iteration evolutions, and analyzing results in terms of correctness, speedup, and adaptability.

Ultimately, my current effort is about building a strong foundation with OpenEvolve so I can contribute to the larger optimization algorithm.

Evolution Summary

```
Evolution complete!
Best program metrics:
  runs_successfully: 1.0000
  value_score:       0.9418
  distance_score:    0.7566
  combined_score:    1.2148
```

Checkpoint Information

```
Latest checkpoint saved at:
examples/function_minimization/openevolve_output/checkpoints/checkpoint_100

To resume, use:
--checkpoint examples/function_minimization/openevolve_output/checkpoints/checkpoint_100
```