

Computational Appendix – Algorithmic Legislators (GIQ)

Environment

Python \geq 3.10 (tested 3.13). Packages: see `requirements.txt`.

Install:

```
pip install -r requirements.txt
```

Determinism and Seeds

Global seed via `set_random_seed(seed)`; main runs: `seed=42`. Offline mode; no external API calls required.

Reproduction Steps

1) Run complete pipeline:

```
python run_complete_analysis_GIQ.py
```

Outputs: `results_GIQ_SOTA.csv`, `summary_statistics_GIQ.csv`, `table1_main_results.csv`, figures (HTML+PNG), `pareto_frontier_GIQ.csv`, `findings_summary.txt`.

2) Optional supplements:

```
python run_complete_analysis_GIQ.py --supp-dense
python run_complete_analysis_GIQ.py --supp-dense-analyze
python run_complete_analysis_GIQ.py --supp-do
python run_complete_analysis_GIQ.py --supp-factorial
```

Notes on Figures

Static PNGs are written directly by plotting functions ($\text{scale} \times 2$) to avoid truncation; interactive HTML copies live in `submission/supplementary`.

Hardware & Runtime (indicative)

CPU: 4 cores; RAM: 8–16 GB; runtime: \sim 10–20 minutes for main pipeline.