

Replication Instructions for Experimental Results

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1. Environment Setup

- Ensure Python 3.8 or newer is installed.
- Install dependencies:

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

2. Data Preparation

- Ensure all dataset CSV files are placed in:

```
Datasets/
```

- Each dataset should include valid configuration columns and a performance metric in the last column.

3. Replicating Random Search Results

- Run:

```
python RandomMeanSD.py
```

- Outputs:

- Raw run data: `RS_RawRunData/`
- Summary: `RS_RawRunData/RS_summary_statistics.csv`

4. Replicating Genetic Algorithm (GA) Results

- Run:

```
python GAMeanSD.py
```

- Outputs:

- Raw run data: `GA_RawRunData/`
- Summary: `GA_RawRunData/GA_summary_statistics.csv`

5. Performing Statistical Analysis

- Run the Welch's t-test script:

```
python t-test.py
```

- Output: `Welch_ttest_results.csv` containing p-values, significance, and summary stats.

Expected Outputs

- `RS_summary_statistics.csv` and `GA_summary_statistics.csv`
- `Welch_ttest_results.csv`
- Raw per-run CSVs for each system in `RS_RawRunData/` and `GA_RawRunData/`