

# Manual

To run a complete evaluation across all datasets with default parameters:

```
python main.py
```

You can customize the experiment parameters directly from the command line:

```
# Run with custom parameters
```

```
python main.py --trials 10 --population 30 --generations 50
```

```
# Run on a specific dataset only
```

```
python main.py --dataset processed_adult --trials 5
```

To test additional datasets:

- Add your dataset to the dataset/ directory
- Train and save a DNN model in the DNN/ directory
- Update the configuration in main.py:

```
# Add new dataset
```

```
file_paths.append('your_dataset_name')
```

```
targets.append('target_column_name')
```

```
sensitive_columns_list.append(['sensitive_attr1', 'sensitive_attr2'])
```

## Generated Outputs

The tool produces several outputs in the results/ directory:

1. **Summary Table** (summary\_comparison.csv):
  - Dataset names
  - Median IDI ratios for both approaches
  - Improvement percentages
  - Statistical significance
2. **Simplified Comparison** (simplified\_comparison.png):
  - Bar chart showing improvements
  - Scatter plot comparing IDI ratios
  - Color-coding for statistical significance
3. **Comprehensive Visualizations** (comprehensive\_comparison\_\*.png):
  - Box plots of IDI ratios, runtime, and efficiency
  - Paired trial comparisons
  - Performance over time
  - Distribution of differences