

# Metaheuristic Optimization Framework

This project consists of several algorithms for both single and multi-objective optimization. The framework and optimization algorithm code is located in `src` while the plotting code is located in the `plotting` folder.

## Installation

The project has been developed using the nightly branch of Rust, but with the exception of the built-in benchmarker it should work with the stable branch.

Install Rust using <https://www.rustup.rs/>

Build the project using `cargo build --release` or run it directly with `cargo run --release`.

## Run

The project comes with a CLI. Check the help output for a detailed list of all the options:

```
cargo run --release -- --help
```

Example: `cargo run --release -- -f uf3 zdt3 -p 100 moamo`

## Formatting

The code is formatted using [rustfmt \(https://github.com/rust-lang-nursery/rustfmt\)](https://github.com/rust-lang-nursery/rustfmt)

## Testing

Run tests using `cargo test`

Run benchmarks using `cargo bench -- --ignored` (requires nightly at the time of writing).

All benchmarks should be ignored to avoid contributing to coverage

## Plotting

Plots are generated using Python 3 with Matplotlib.

Data is read from `solutions.json` in the main directory. Generate solutions by using the Rust project.

## Installation

```
cd plotting
virtualenv -p python3 env
source env/bin/activate
pip install -r requirements.txt
python plot.py
```