**Paper Experiment Reproduction Guide​**​

This document aims to assist reviewers in fully reproducing the experiments presented in our paper. The uploaded files include three components:

1. ​**​Code for all experiments​**​: Comparative experiments, parameter experiments, and ablation experiments.
2. ​**​JSON-formatted dataset​**​: The original MAT-format dataset was sourced from the public repository https://doi.org/10.11922/sciencedb.01552. To facilitate C++ compatibility, we converted it to JSON format.
3. ​**​JSON library​**​: The open-source library nlohmann/single\_include is included for C++ JSON operations.

**​​General Configuration Instructions​​**

1. Place the JSON library in the same directory as the code files.
2. Modify the dataset path (line 26) and result-saving path (line 27) in each code file to match your local environment.

**​​Experiment Reproduction Steps​​**

​**​1. Comparative Experiments (Chapter 4)​**​

* ​**​Parameter Settings​**​:
  + l\_count (number of learners): Default = 100 (full dataset). For specific cases in Table 4, adjust to l\_count=3 or l\_count=4 as annotated.
  + count\_m (termination condition): Modify this parameter for the experiments in Section 4.3.
* ​**​Convergence Curves​**​: The code automatically generates fitness values of the best path every 100 iterations.

​**​2. Parameter Experiments​**​

* ​**​Section 5.1.1 (Learning Path Length)​**​: Adjust the initial path length parameter start\_len\_weight (line 29).
* ​**​Section 5.1.2 (Memory Table Size)​**​: Modify the memory table length parameter memory\_size (line 256).
* ​**​Section 5.1.3 (Weight Parameters)​**​: Adjust the weight coefficients (line 53).

​**​3. Ablation Experiments (Section 5.2)​**​

* Execute the code directly without parameter changes.
* Switch between different case files to reproduce ablation scenarios.

**​​Output Specifications​​**

1. ​**​Console Output​**​: Displays the optimal learning path and corresponding fitness value for each run.
2. ​**​Result Files​**​: Automatically saved in JSON format (including paths and fitness values).
3. ​**​Pre-saved Data​**​: Original experimental results from the paper are provided in each experiment folder for reference.

​**​Note​**​: All referenced line numbers correspond to the current code version. If editor auto-formatting alters line numbering, locate parameters by their variable names.