a) Description:

The supplementary file contains datasets used in the experiments in the **"Scalable Scheduling of Semiconductor Packaging Facilities Using Deep Reinforcement Learning**".

There are 4 files (*jobTypes, machineTypes, setupTime, and operationTypes*) to describe the configuration of the manufacturing system considered in the paper. The datasets 1-20 in the experiments are presented in the *problem*.

b) Format:

Text (.txt) and Excel (.xlsx)

c) Environment:

The files can be viewed on all platforms with a text viewer.

d) Major Component Descriptions:

jobTypes, *machineTypes*, *setupTime*, and *operationTypes* describe the manufacturing system for die attach and wire bonding stages in semiconductor packaging facilities. The problem instances used in the experiments are presented in *problem.* The attributes are separated using tabs as the delimiter. The details of files are described as follows:

jobTypes

jobTypeId: index of the job type

jobTypeName: name of the job type

operationTypeSequence: sequence of operation type indexes

machineTypes

machineTypeId: index of the machine type

machineTypeName: name of the machine type

setupTime

machineTypeId: machine type index of the machine where the setup change occurs

isJobTypeSame: boolean value indicating whether two consecutive jobs have the same job type

isOperationTypeSame: boolean value indicating whether two consecutive jobs have the same operation type

SetupTime: time (in minutes) required to change setup status of the machine

operationTypes

operationTypeId: index of the operation type

operationTypeName: name of the operation type

machineTypeId: index of machine type on which the operation type can be processed

processingTime: processing time (in minutes) of the operation

problem

dataset_index: index of the dataset

problem_index: index of the scheduling problem in the dataset. For each of datasets 1, 2, 3, and 4, problems are used as follows:

- training: problem 1

- validation: problems 2-30

ProductionRequirement: production requirements for each job type. It is separated by commas for the production requirement of each job type, and is represented as follows: "jobTypeName_the production requirement of the job type"

MachineSetting: initial setup status of the problem instance. It is separated by commas for the machine name with initial setup status of the machine, and is represented as follows: "machineTypeName_machineIndex_operationTypeName".

e) Detailed Set-up Instructions:

1) Download the compressed file and extract the file into a directory on your hard disk.

2) Locate and open the file you want to access, the detail of each file is presented in **d) Major Component descriptions**.

f) Detailed Execution Instructions

All dataset can be opened with text file reading applications. For example, notepad, wordpad, MS word, and EditPlus can be used to open these files.

g) Output Description

Opening dataset files brings up text, whose attributes are separated with tabs.

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