Algorithm 1 Our proposed ML-enhanced learning of automata (MELA) approach for systems with time-series inputs and outputs.

Input S: System under learning
Param δ: Sampling rate
Param Max_Depth: Maximum depth of decision trees
Param Sup_Th: Support threshold for range abstraction
Param Purity_Th: Confidence threshold for range abstraction
Output Aut: An automata abstracting the behaviour of S

```
1: TimeSeriesData = ∅;
2: do//Data Generation Loop
3:    Input=GenerateInput(S);
4:    Output=Execute(Input, S);
5:    TimeSeriesData = TimeSeriesData ∪ Input ∪ Output;
6: while (state coverage is improving)
7: Traces=CreateTraces(TimeSeriesData, δ);
8: Traces'=AbstractTraces(Traces, Max_Depth, Sup_Th, Conf_Th);
9: Aut=LearnAutomata(Traces');
10: return Aut;
```