**MAJAN**

MAJAN is an extension of **AJAN** agent engineering tool to support SPARQL-BT-based **multiagent** **coordination** **into** **groups**.

MAJAN consists of **MAJAN Plugin** and **MAJAN** **Web** for AJAN Service and AJAN Editor, respectively. These extensions are integrated to AJAN and can be found in AJAN\_w\_MAJAN and AJAN\_Editor\_w\_MAJAN folders.

Moreover, MAJAN provides **postman collections** in “Postman Collections” folder to create and execute MAC use-cases easily.

Additionally, **MAJAN Web** supports **executing centrally running grouping algorithms** such as HDBSCAN to solve Clustering and BOSS to solve CSGP. Necessary configuration files for MAJAN Web and source code of algorithms are provided in Grouping Algorithms folder.

Furthermore, MAJAN provides template SPARQL-BTs in SPARQL-BTs-for-MAC to execute FIPA Request, CSGP and Clustering coordination protocols.

1. **Request Protocol** enables agents to exchange some information through coordination.
2. **CSGP Protocol** enables agents to coordinate themselves into coalitions (i.e. groups) by using BOSS, which is a CSGP solver algorithm. BOSS can be replaced with other CSGP solver algorithms easily in the respective BT.
3. **Clustering Protocol** enables agents to coordinate themselves into clusters (i.e. groups) by using HDBSCAN which is a Clustering solver algorithm. HDBSCAN can be replaced with other Clustering solver algorithms easily in the respective BT.

Finally, MAJAN is provided with a guideline document (MAJAN Guide-v1.2.pdf) which includes instructions to use MAJAN. As well as, it covers the ontology that is used in MAJAN.

Finally, MAJAN is provided with a guideline document which includes everything about MAJAN, starting from an overview, MAC ontology, agent communication, execution of MAC use-cases to evaluation of results. Moreover, it provides some extra tips for users which might be helpful while designing and executing a MAC use-case. Please refer to “MAJAN Guide.pdf” for more detailed information.