Blocks World for Teams (BW4T)

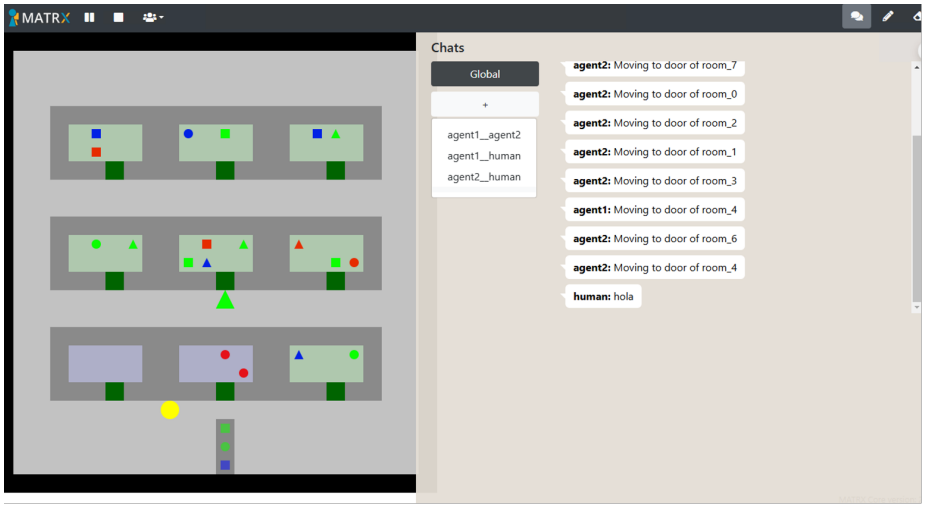

Figure 1: BW4T environment

Blocks World for Teams (**BW4T**) is a testbed EIS environment for team coordination. BW4T allows for games with human-human, agent-agent and human-agent teams of variable sizes. The goal is to jointly deliver a sequence of colored blocks in a particular order as fast as possible. A complicating factor is that the players cannot see each other. (source).

The environments works in all Operating Systems as long as it allows to run Python.

Installation

1. Install python 3.10

For macOS, you can install Python 3.10 using Homebrew with the following command:

```
brew install python@3.10
```

For Windows, you can download the installer from the official website.

For Ubuntu, you can install Python 3.10 using the following commands:

```
sudo apt update
sudo apt install python3.10
```

Test if the installation was successful by running the following command:

```
python --version
```

2. Download the BW4T environment from here or clone the repository with the following command:

```
git clone https://github.com/rsverhagen94/TU-Delft-Collaborative-AI-Trust
```

3. Create a virtual environment with the following command:

```
python -m venv bw4tenv
```

or you also specify the exact python version with the following command:

```
/opt/homebrew/bin/python3.10 -m venv bw4tenv
```

Activate the virtual environment with the following command:

```
source bw4tenv/bin/activate
```

For Windows, you can activate the virtual environment with the following command:

```
bw4tenv\Scripts\activate
```

to deactivate the virtual environment, run the following command:

```
deactivate
```

4. Install the required packages with the following command:

```
pip install -r requirements.txt
```

Make sure to install `matrx==2.1.2` and replace the `state.py` file ("TU-Delft-Collaborative-AI-Trust_x/venv_py310/lib/python3.10/site-packages/matrx/agents/agent_utils/state.py") with the one provided in the repository (this file).

5. Run the BW4T environment with the following command:

```
python main.py
```

6. Open the browser and go to the following URL http://localhost:3000/ to play the game. At the end of the game the logs are saved in `TU-Delft-Collaborative-AI-Trust_x/world_1` directory as timestamped csv files.

7. In-depth overview of the game can be found at https://tracinsy.ewi.tudelft.nl/pubtrac/BW4T-Matrx-CollaborativeAI/wiki. The game setup and algorithms can be changed by modifying the files

- `main.py`: set specific game settings
- `BW4TWorld.py` (TU-Delft-Collaborative-AI-Trust/bw4t/BW4TWorld.py): to change the appearance and the properties of the blocks
- `BW4THumanBrain.py` (TU-Delft-Collaborative-AI-Trust/bw4t/BW4THumanBrain.py): to change the human player's behavior
- `BW4TAgentBrain.py` (TU-Delft-Collaborative-AI-Trust/bw4t/BW4TAgentBrain.py): to change the agent's behavior