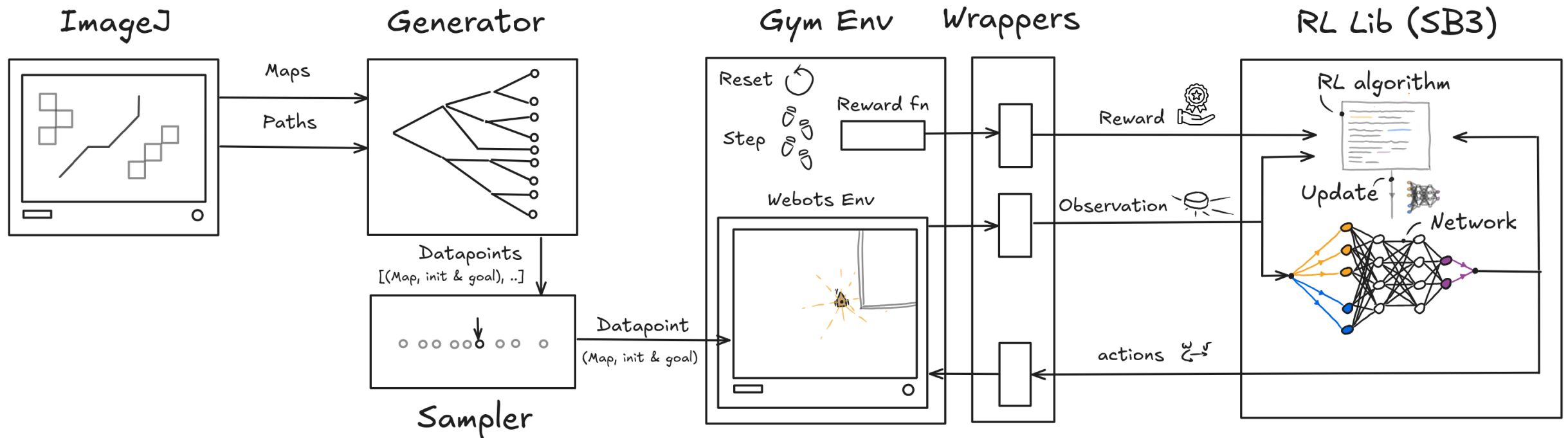


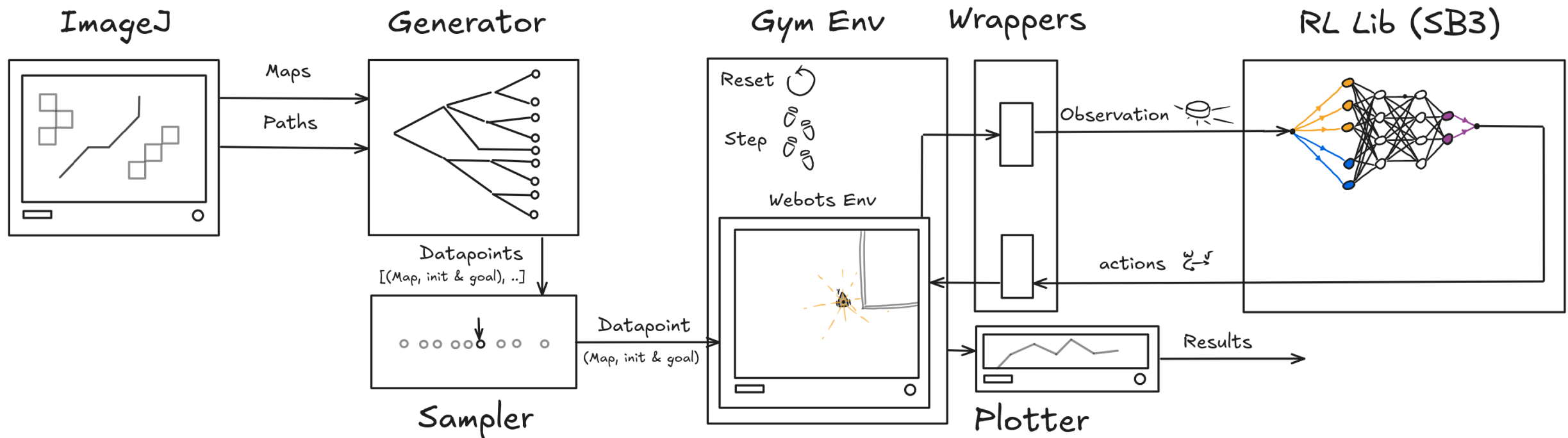
Implementation

Training Pipeline



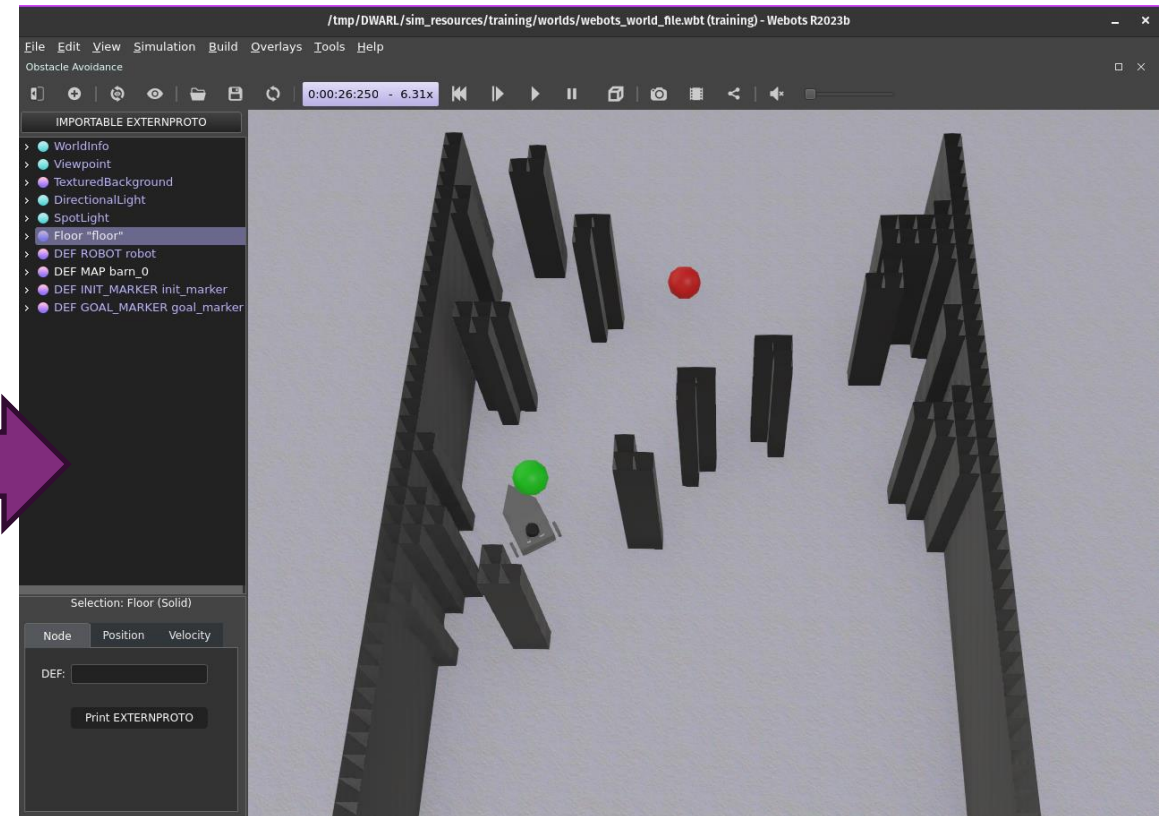
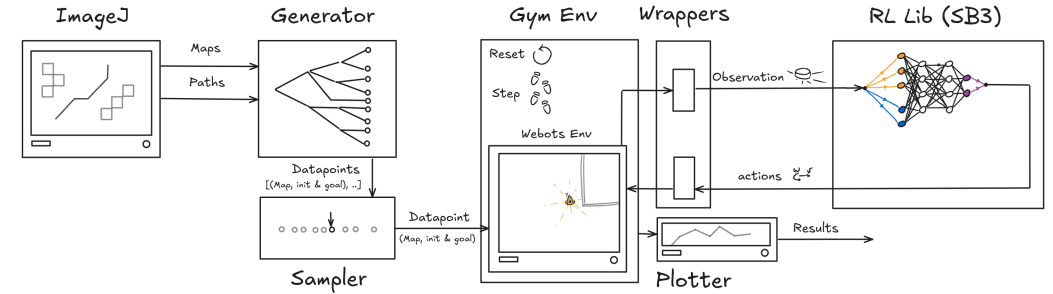
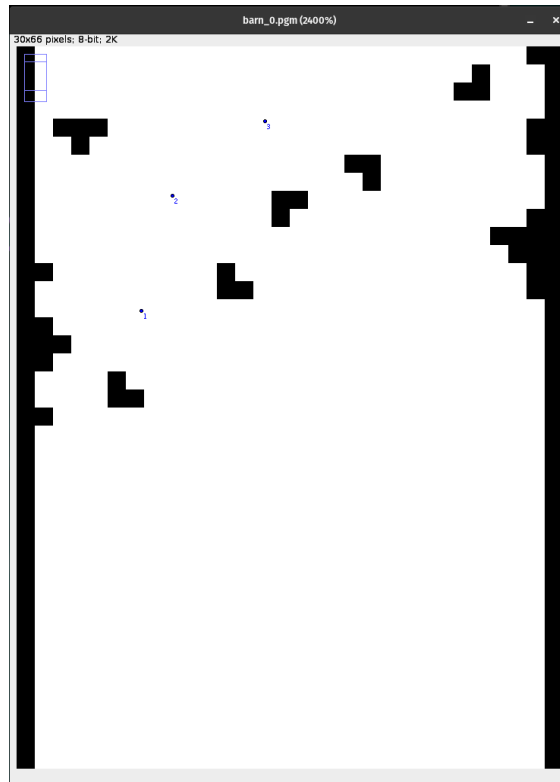
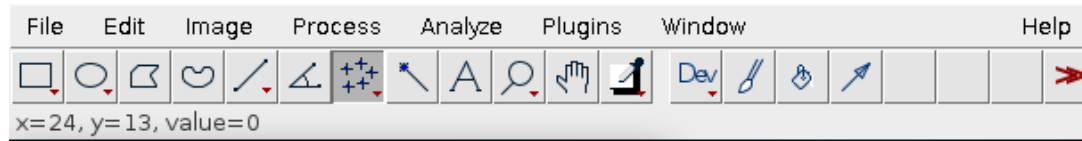
Implementation

Testing Pipeline



Implementation

ImageJ Map & Path Creation



Implementation

DWARL Repo Structure

```

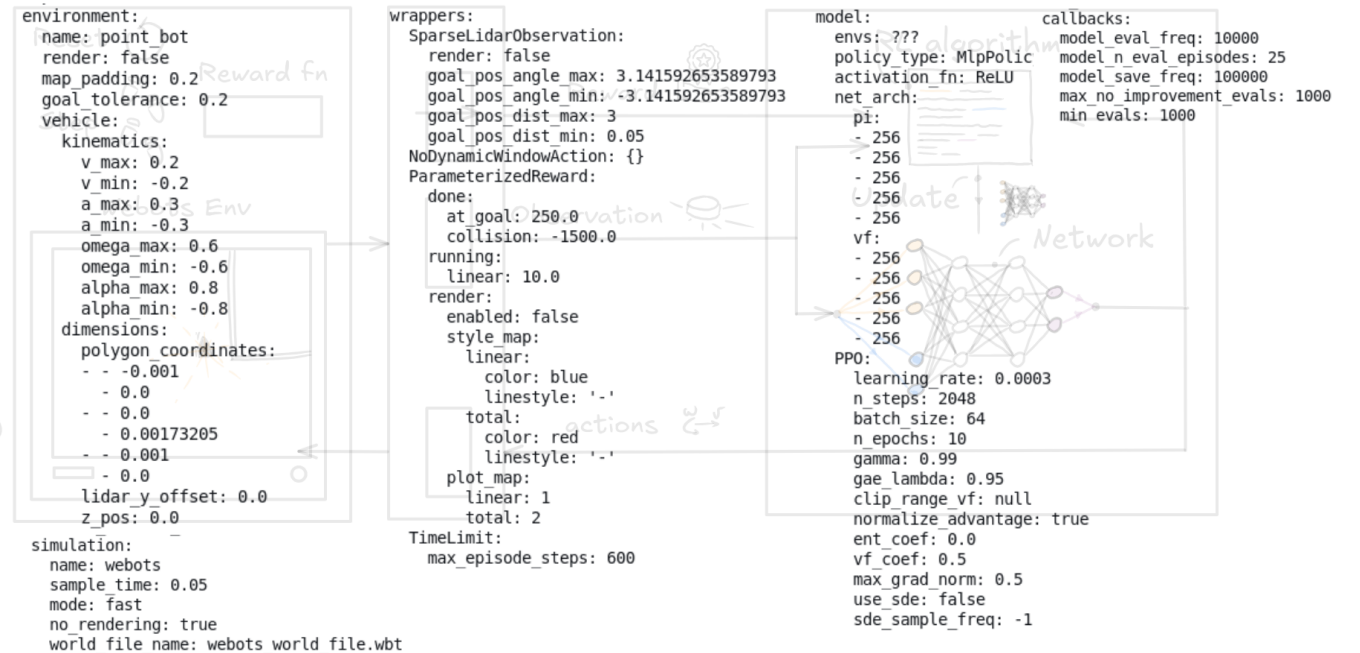
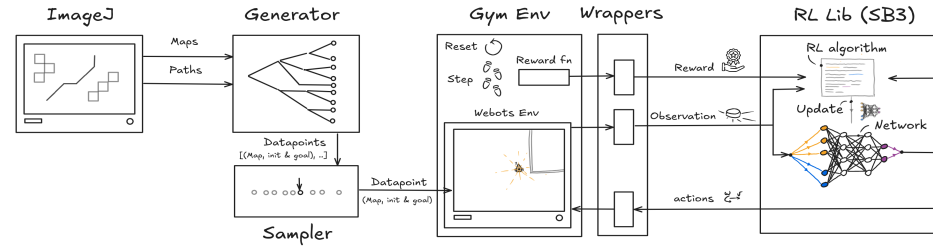
> config
✓ environments
  ✚ base_env.py
  ✚ webots_env.py
> outputs
✓ resources
  > map_name_lists
  > maps
  > paths
✓ protos
  > appearances
  > lidar
  > miscellaneous
  > robot
  > worlds
✓ scripts
  $ attach.bash
  $ killall_webots.bash
  $ run.bash
  $ setup_locally.bash
  $ setup.bash
  $ stop.bash
  $ sync_remote_outputs.bash

✓ utils
  ✚ data_generator.py
  ✚ data_loader.py
  ✚ data_set.py
  ✚ env_tools.py
  ✚ split_dataset.py
  ✚ test_tools.py
  ✚ train_tools.py
  ✚ webots_resource_generator.py
  ✚ wrapper_tools.py
> venv
✓ wrappers
  > __pycache__
  ✚ __init__.py
  ✚ command_velocity_action_wrapper.py
  ✚ no_dynamic_window_action_wrapper.py
  ✚ parameterized_reward.py
  ✚ sparse_lidar_observation_wrapper.py
  ✚ time_limit.py
  ✚ .gitignore
  ✚ Dockerfile
  ✚ load_results.py
  ⓘ README.md
  ≡ requirements.txt
  ✚ test.py
  ✚ train.py

```

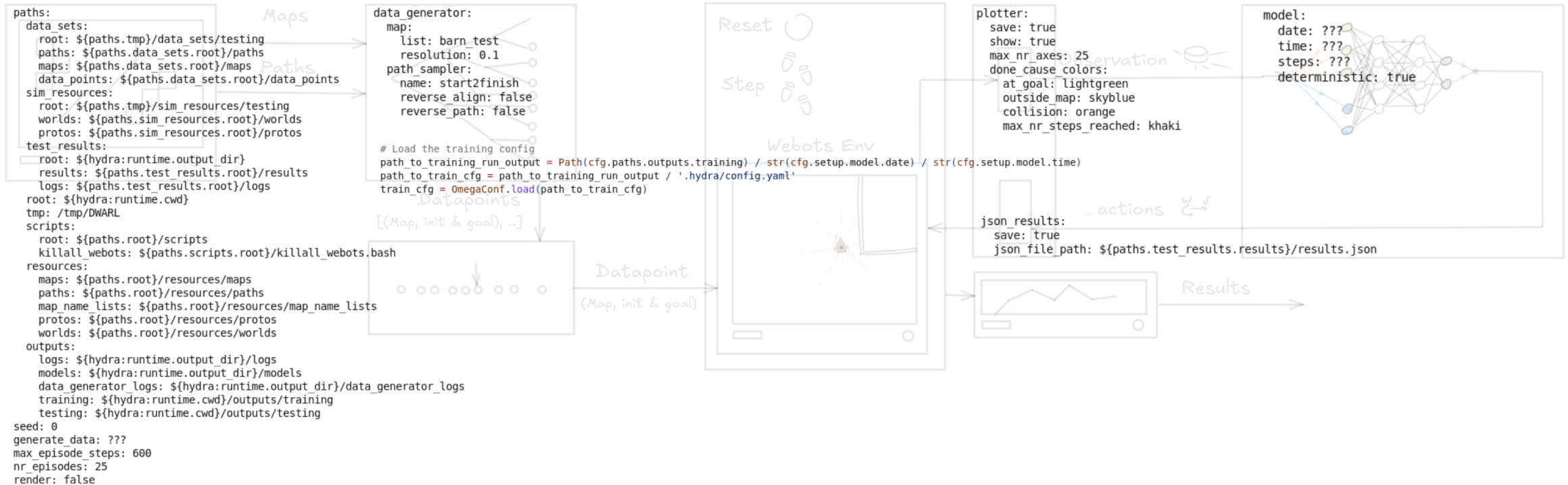
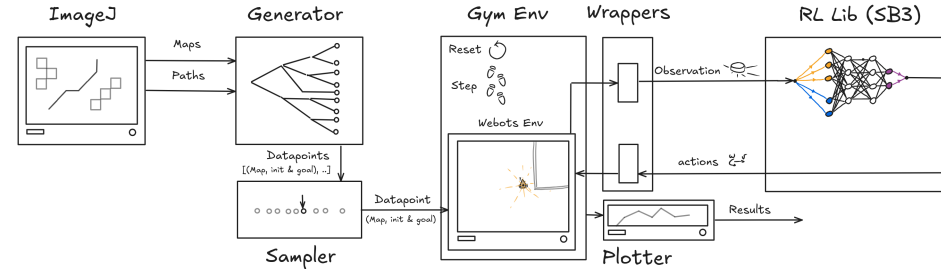
Implementation

Training Config



Implementation

Testing Config



Implementation

Hydra Configuration Management

```

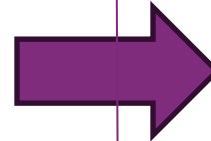
✓ config
  ✓ data_generator
    ✓ path_sampler
      ! all.yaml
      ! semi_random.yaml
      ! start2finish.yaml
      ! cindy_test.yaml
      ! cindy_train.yaml
    ✓ paths
      ! general_sys_paths.yaml
  ✓ setup
    ✓ environment
      ! cindy.yaml
      ! circle_bot.yaml
      ! ida.yaml
      ! point_bot.yaml
    ✓ model
      ! create_model.yaml
      ! load_model.yaml
  ✓ simulation
    ! webots.yaml
  ✓ wrappers
    ! command_velocity_action.yaml
    ! no_dynamic_window_action.yaml
    ! parameterized_reward.yaml
    ! sparse_lidar_observation.yaml
    ! time_limit.yaml
    ! create_setup.yaml
    ! load_setup.yaml
    ! test.yaml
    ! train.yaml
  
```

Input

- Command line argument
- Config files

Output

- File structure (datetime)
- Cfg object (allows using ".")
- Cfg file
- Hydra settings
- Command line overrides



```

✓ outputs
  ✓ testing
    > 2024-12-04
    > 2024-12-05
    > 2024-12-06
    > 2024-12-12
  ✓ training
    > 17-47-34
    > 2024-11-20
    > 2024-12-04
    > 2024-12-05
    > 2024-12-06
    ✓ 2025-03-19
      > 16-53-02
      > 16-54-21
      ✓ 17-01-11
        ✓ .hydra
          ! config.yaml
          ! hydra.yaml
          ! overrides.yaml
        > logs / PPO_0
        > models
        ≡ train.log
  
```