



ROS 2 On the Browser with WebAssembly for Teaching Robotics

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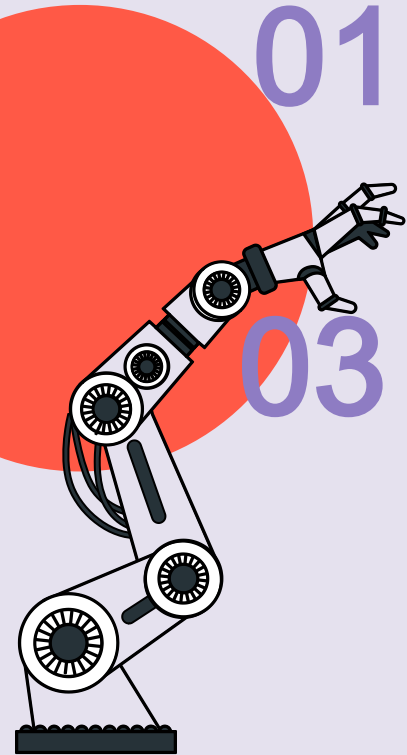
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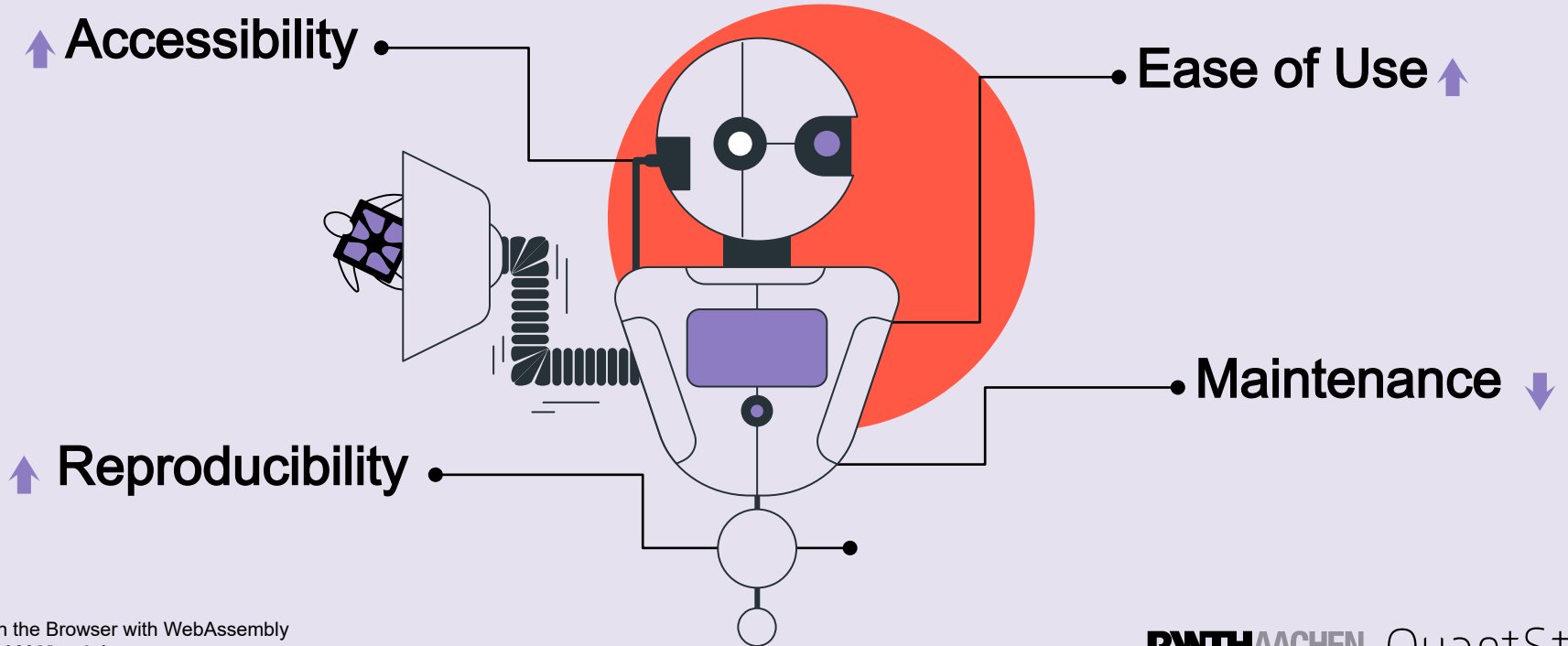


01

Introduction



Motivation



Target Scenario

- Robotics instructor
- Gait generation for a heptapod
- Simulation
- Shareable with students



02

Methodology



Middleware



ROS 2



Interface

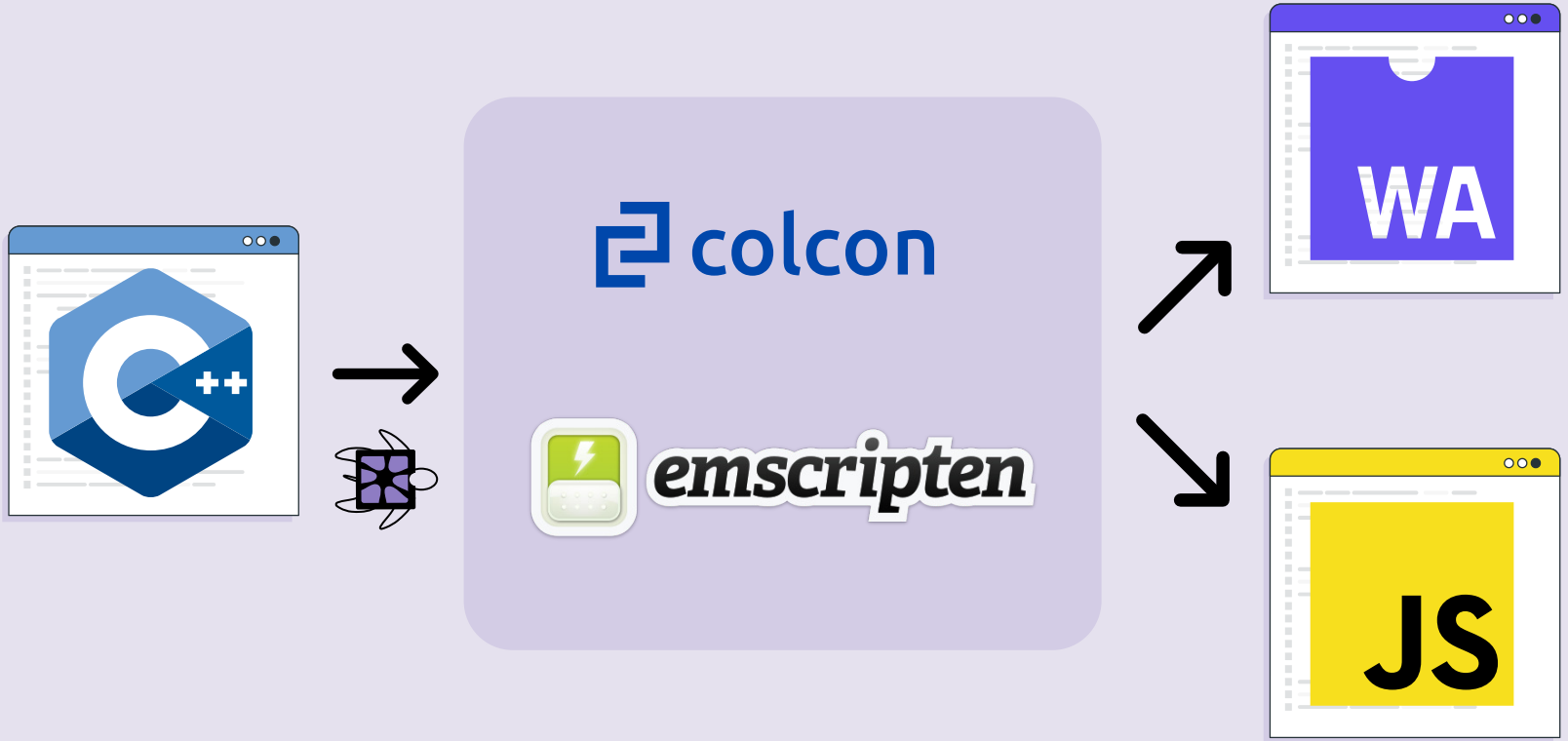


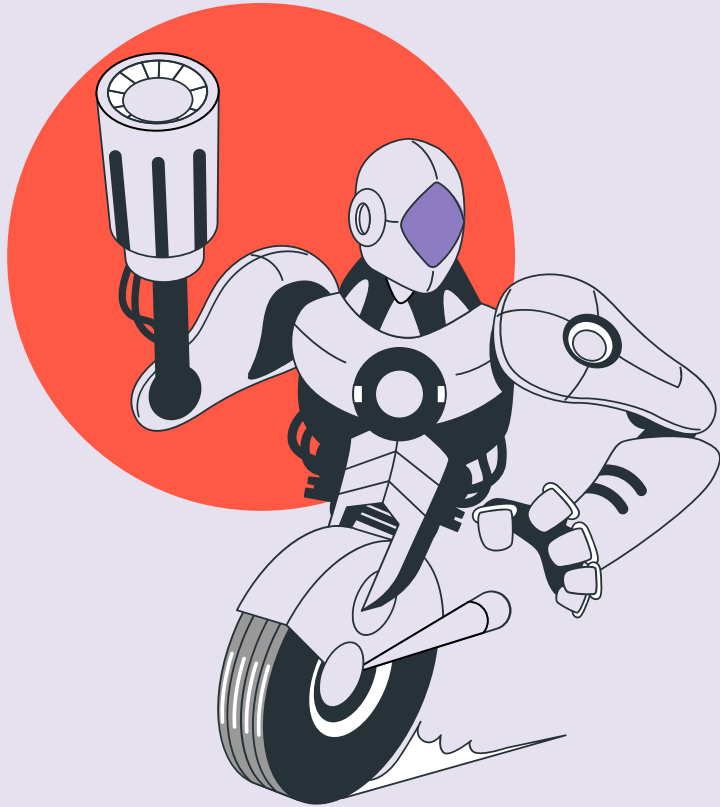
Embind



Implementation

Build Process





03

Demos



ROS Topics

Publisher

START

STOP

CLEAR

Publisher initializing.



Subscriber

START

STOP

CLEAR

ROS Services

Server

START

STOP

CLEAR

```
Server initializing.
```

Client

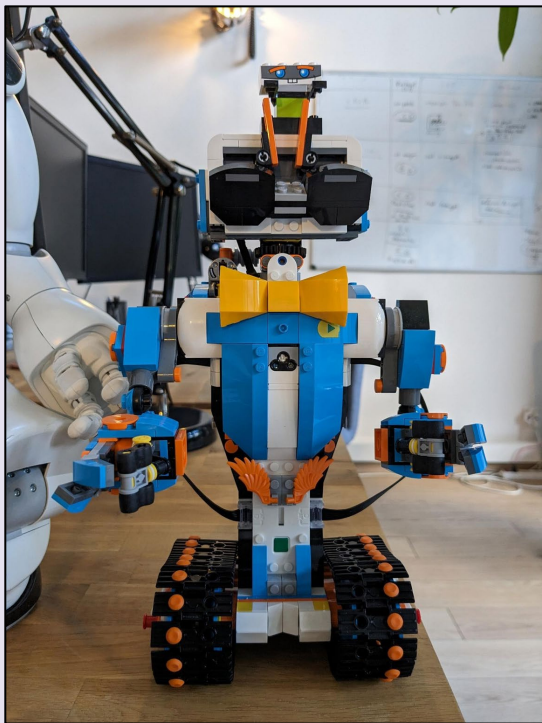
START

STOP

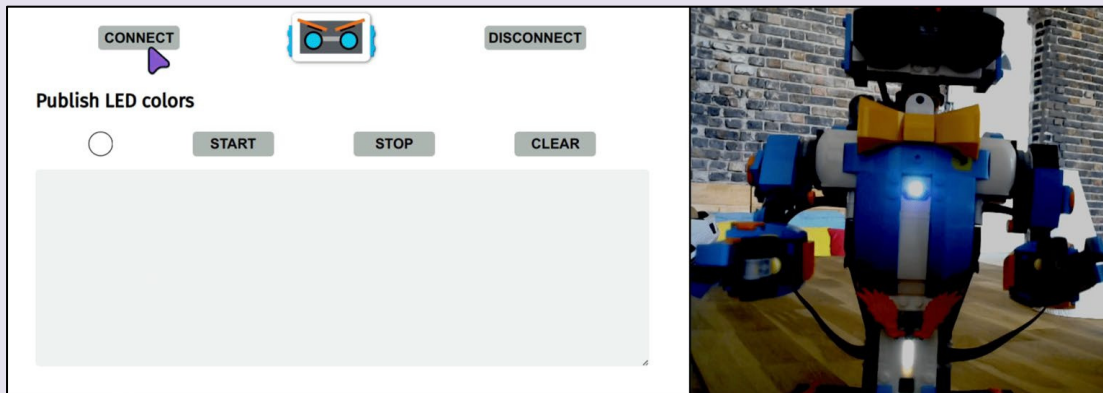
CLEAR



LEGO Boost Vernie



- github.com/DerThorsten/lego-boost-browser
- Web Bluetooth API



04

Conclusion



Summary

Pros

- ✓ No installation
- ✓ No setup required by user
- ✓ For anyone with access to a modern web browser
- ✓ Reproducible environment
- ✓ Shareable via link

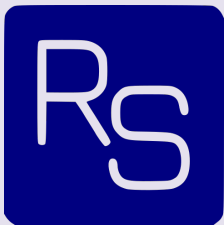
Cons



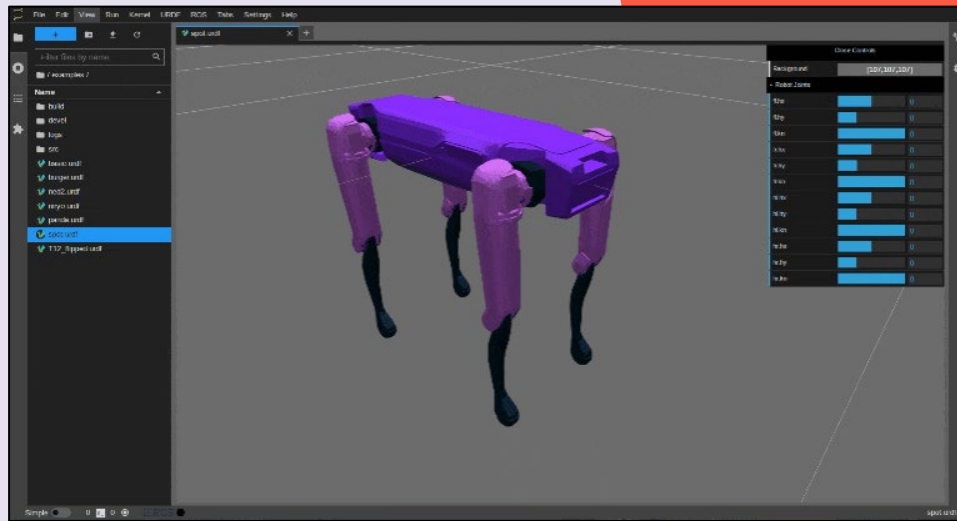
- ✗ Performance
- ✗ Complexity of deployment
- ✗ Missing features



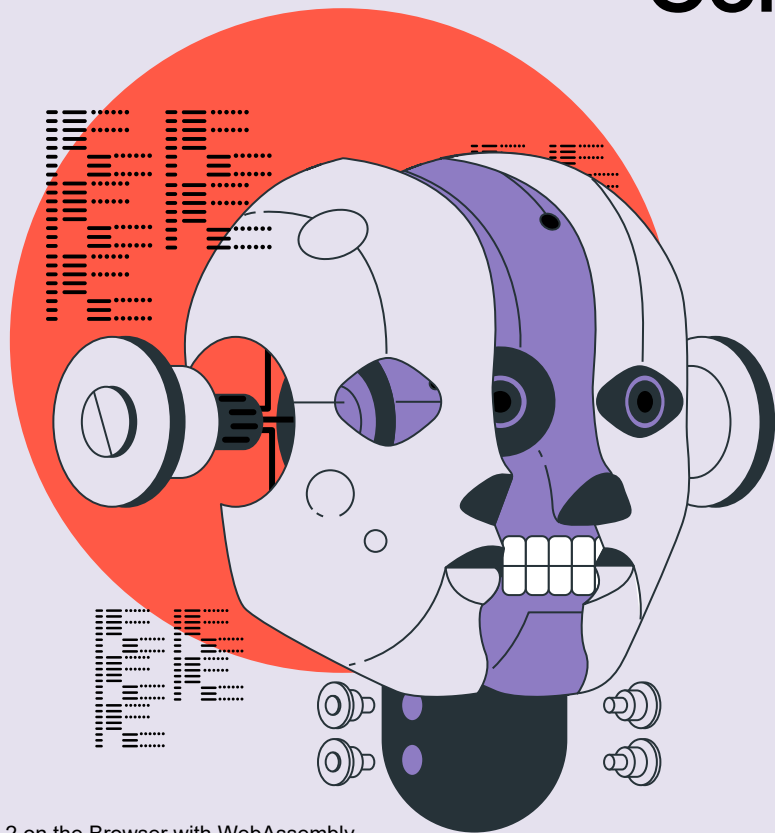
Future Work



- RoboStack (conda packages)
- JupyterLite integration



Contributing



We want your help!

- Package management
- Middleware maintenance
- Front end development

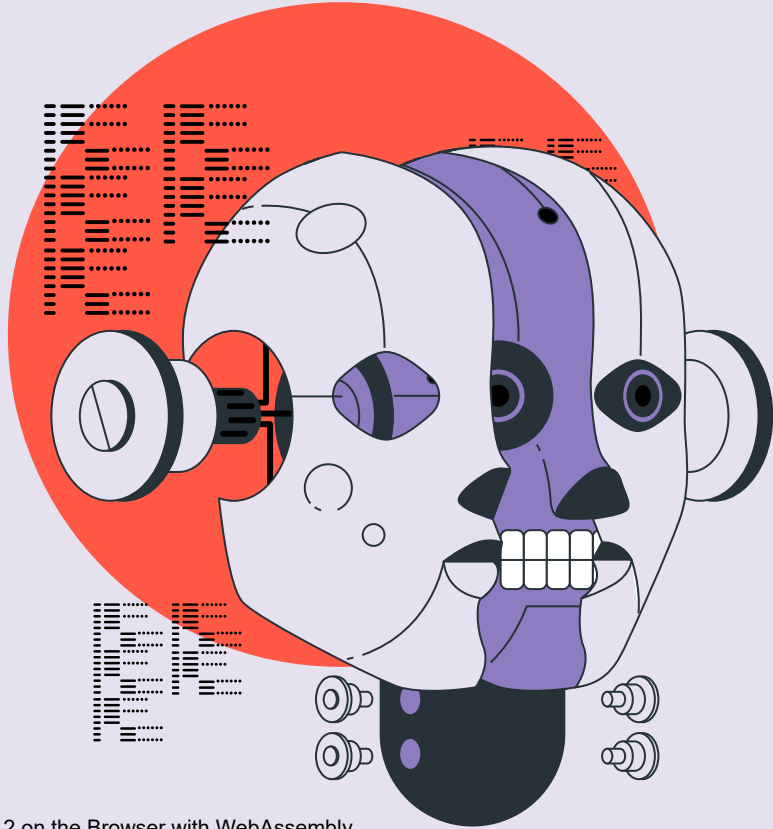


Resources

- ros2wasm.dev
- github.com/ihuicat1/rmw_wasm
- ros2wasm.dev/pages/report/report.pdf

Contact

- isabel.paredes@quantstack.net
- github.com/ihuicat1



Thanks!!