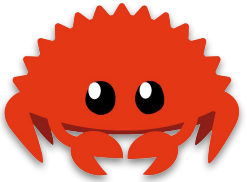
Simple, Safe, Open:

Building Your First ROS 2 Rover with Rust and Pixi



FOSDEM '26

Christophe Simon
Nicolas Daube

Agenda

1. Meet the Team
2. Why We’re Here
3. Under the Hood
4. Key Takeaways

1. Meet the Team

Christophe Simon
Chief Operating Officer @ Botronics
Active in Robotics since 2018

Nicolas Daube
Robotics Engineer @ Botronics
Active in Robotics since 2024

2. Why We’re Here (1)

The Strategy: A hands-on assessment of promising tools/technologies

The Focus Areas:

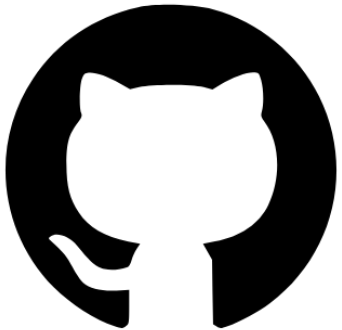
- Pixi: Modern Package Manager for Robotics
- rclrs: Rust Bindings for ROS 2
- BlueR: Official BlueZ Bindings for Rust

BlueZ

2. Why We're Here (2)

The Mission: Lowering the barrier to entry for memory-safe robotics

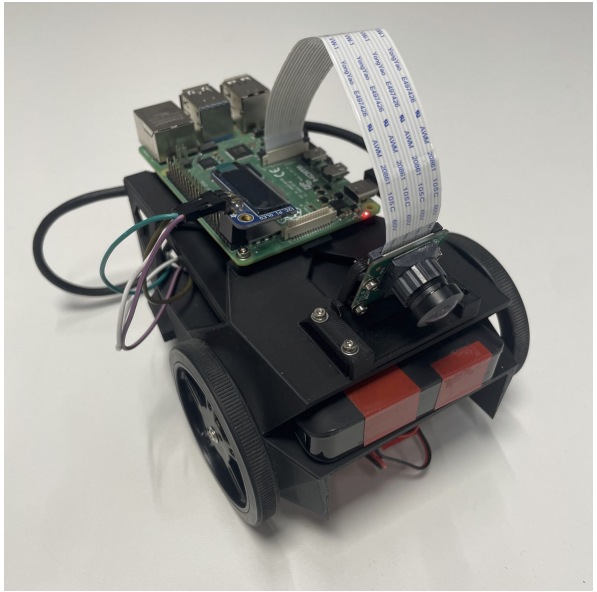
- Minimal rover inspired by Nvidia's JetBot (~ 250€)
- Easy-to-source hardware (~ 175€)
- Open-source GitHub repository
- Complete Wiki tutorial for QuickStart
- Simulation environment using Gazebo



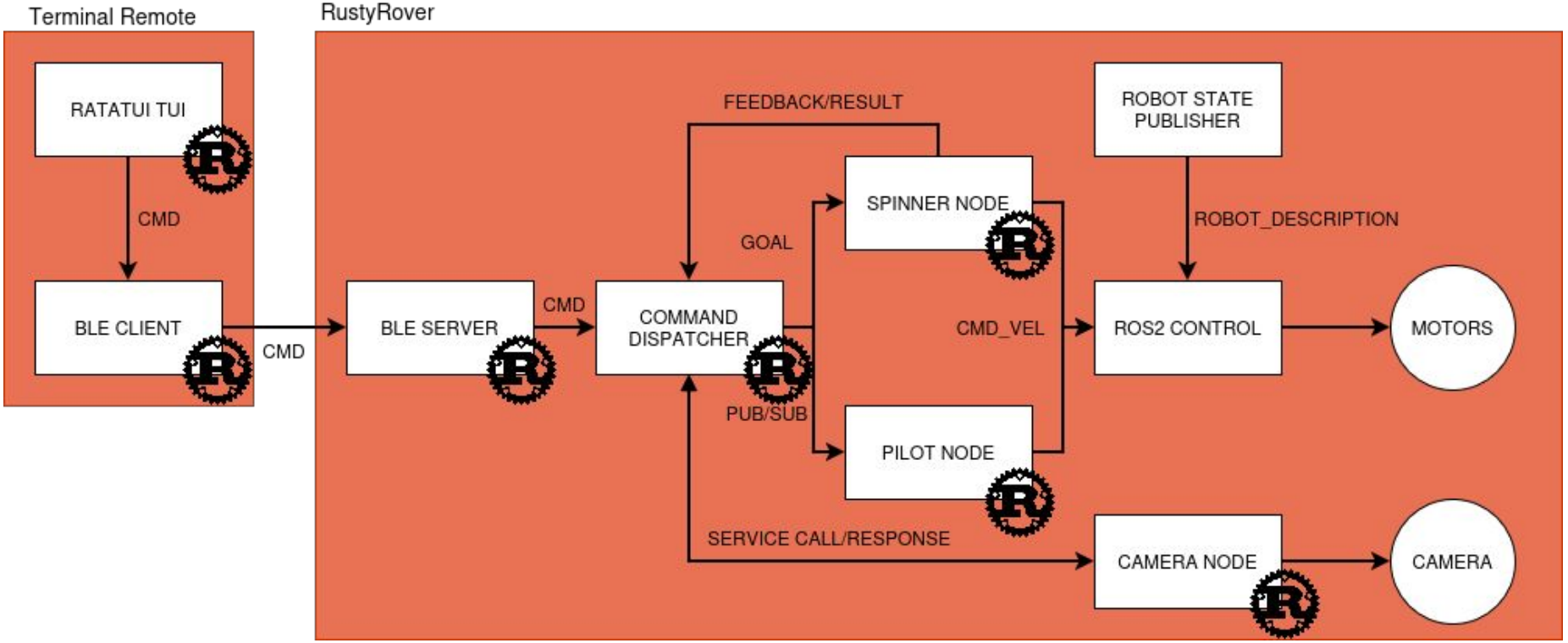
3. Under the Hood (1)

The Minimal Scope of Test:

- rclrs:
  - Action: Spin
  - Service: Image capturing
  - Pub/sub: Teleoperation
- Hardware Integration:
  - Bluetooth Server implemented with BlueR
- Pixi:
  - Install rclrs in a dedicated workspace
  - Install Kilted (ROS 2 distribution) alongside existing Jazzy install



3. Under the Hood (2)



4. Key Takeaways (1) - Pixi

Pros:

- Simplicity of installation
- Simplicity of adding new dependencies
- Linux distribution agnostic
- Unified toolchain (Dependencies, Makefiles, Cross-platform)

Cons:

- Current limitations of the RoboStack repository (Kilted incomplete, no Rolling)
- Inability to install apt dependencies
- Possible conflicts with native development installations

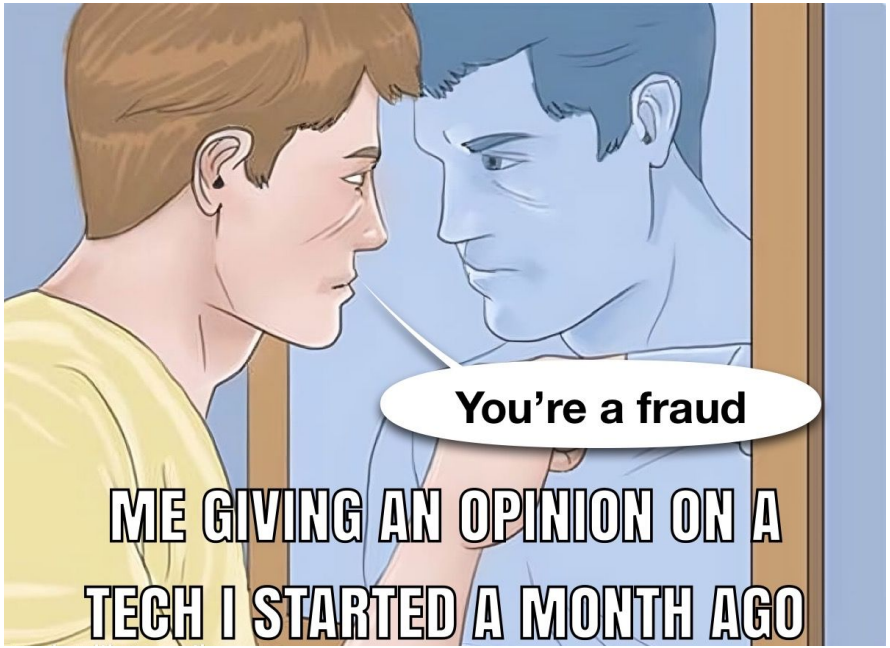
4. Key Takeaways (2) - rclrs

Pros:

- Confidence in multithreading (no Data Race)
- Safe by design
- Clean and controlled dependency management
- Performance (Comparable to rclcpp)

Cons:

- Lack of established best practices
- Ongoing development status:
  - Requirement to build from source
  - Missing features (e.g., wait for action)
- Code readability and verbosity



Feedback from the Field

But

Thank You!

Rusty Rover

SCAN ME

Credits

https://jetbot.org/master/

https://github.com/ros2-rust/ros2_rust

https://pixi.prefix.dev/latest/

https://github.com/Botronics-be/RustyRover