

ROS2 Package

from code to deploy



ROS2



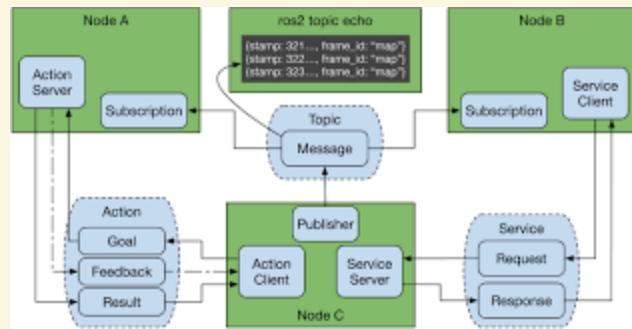
Robot Operating System (ROS) is an open-source robotics middleware suite. Although ROS is not an operating system (OS) but a set of software frameworks for robot software development (wikipedia)

ROS2

1. How to resolve the robotic problem
2. Why of thinking
3. Think only on your's.
4. Standard. Standard. Standard.
5. Community

ROS2 Framework

- 5. Nodes / Process
- 6. Communication (DDS)
- 7. Tools (rqt, bag, ..)
- 8. ECO System (diagnostics, logging, allot of packages)
- 9. Standard. Standard. Standard.



Verbs

- Package
- Nodes
- Topics
 - Pub
 - Sub
 - Service
 - Action
- Parameters
- Messages

Code to Deploy

let's start

AXE and other tools

"Give me six hours to chop down a tree and I will spend the first four sharpening the axe"
(Abraham Lincoln)

- Dev environment
 - VSCode

Package from code to deploy

- Requirements analysis
- Design
- Coding

Continue ...

- Code quality
 - Tests
 - Linters
 - Static and Dynamic analyze
- Source Control
- Documents
- Package Version
- Deploy
- CI / Maintenance

Language

- Python (3.10)
- CPP (C++17)
- CMAKE
- XML / yaml / json / schema
- BASH
- GIT
- Network
- Physics and Simulation
- Markdown

Dev Environment

- GIT
- VSCode
 - Extensions
- ROS2
- Docker
- Network and diagnostic tools

VSCode

- Python
 - autoDocstring
 - pylint, pylance
- Git
 - Git Graph
 - Git Lance

VSCode more Extensions

- Other
 - xml
 - xml tools
 - yaml
- Helper
 - tabout
 - draw.io
 - project manager
 - Code spell checker

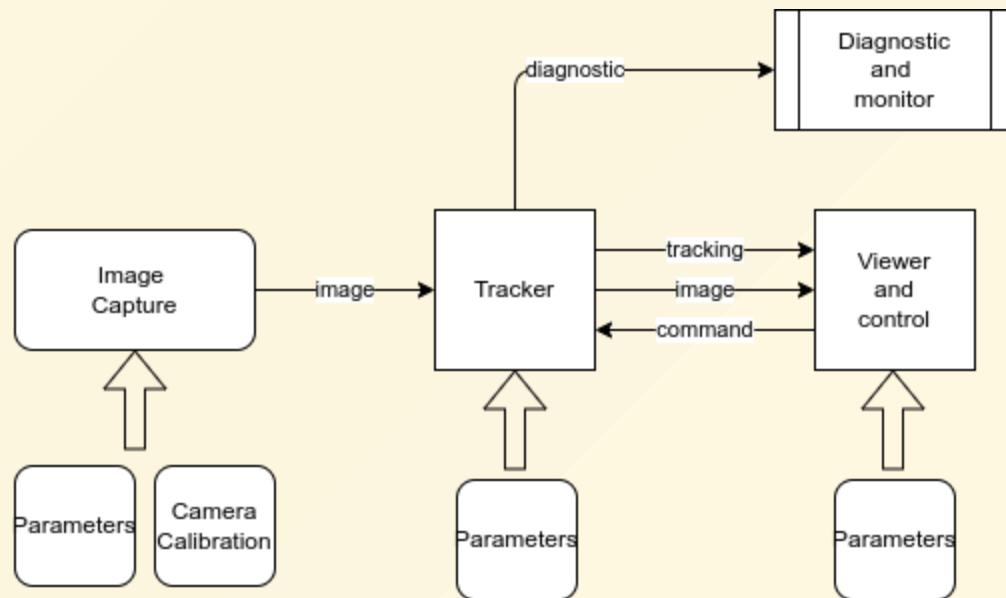
Demo Time

Simple python package from code to deploy

- Requirements and Design
- Code
- Code Quality
- Source Control
- Versioning
- Dependencies
- Deploy

Demo

Optical Flow simple tracker



Design

4 Nodes

- Image source
 - test
 - camera
- Tracker
- Viewer and controller

Topic and messages

Code Quality

Take time but pay off in the long run

- Type hinting
- Formatters
- Linters
- Test (pytest)
 - unit test
 - integration test
- Commit / Pre-commit

Type hinting

Type hint should be use whenever unit test are worth writing

They help you as a developer write better code

Linters

A linter is a tool to help you improve your code

- Fewer errors in production
- Readable, maintainable, consistent code
- Code Style (no endless arguments)
- More secure and performant code

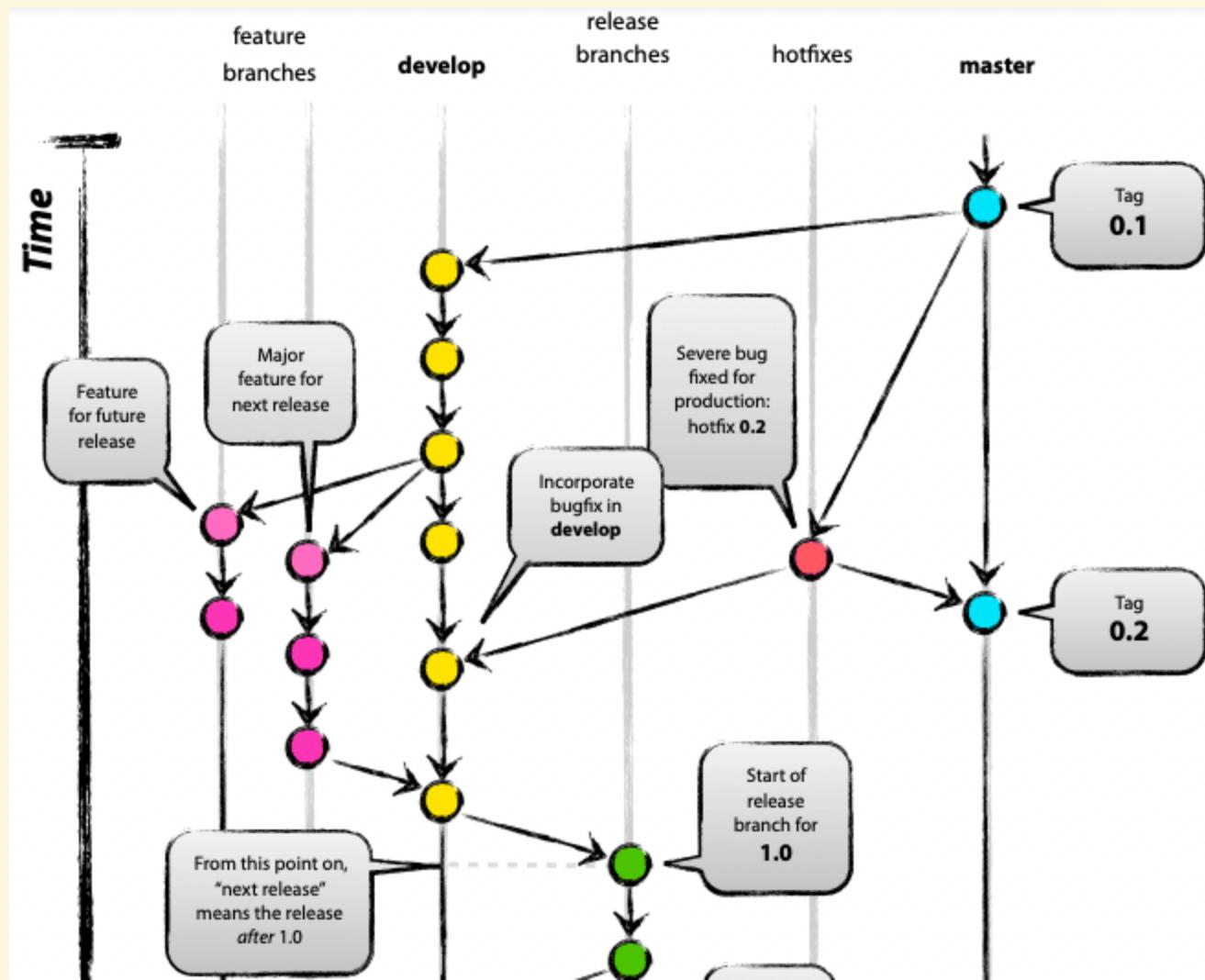
Linters tools

- Pylint
- Flake8
- mypy

GIT

- branching strategy
- commit
- tag
- merge request

branching strategy



GIT helping tools

- GIT cli
- VSCode
 - Builtin
 - GitLens
 - Git Graph



Thinks that left out

- C++
- Cross Compiler
- Simulation
- CI/CD
- Docker and Dev container