



Flanders'
MECHATRONICS
Technology Centre
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Seminar and Hands-On on Orocos



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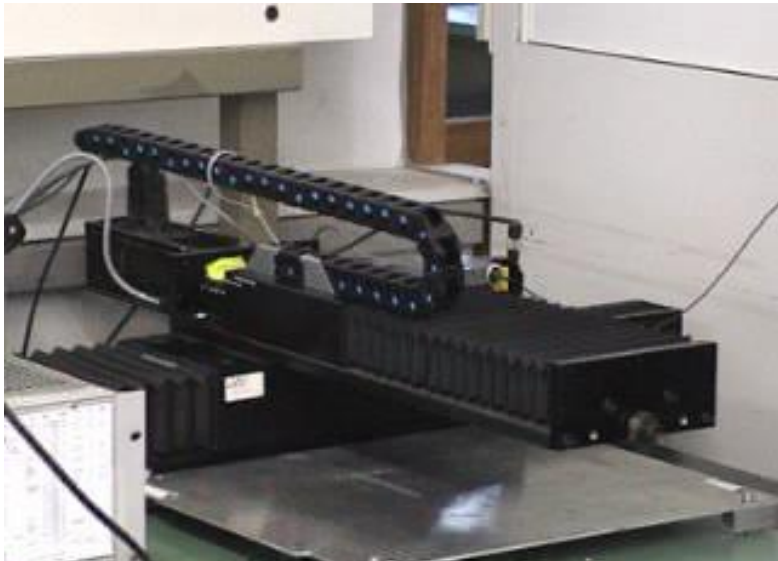
Outline

- 1 Orocos Applications
 - Machine Control
 - Adaptive Control
 - Shared Control
 - Vision Integration
 - Distributed Control
- 2 Orocos Introduction
- 3 Pause
- 4 Use Case: "RoboCatcher"
- 5 Getting Started with Orocos

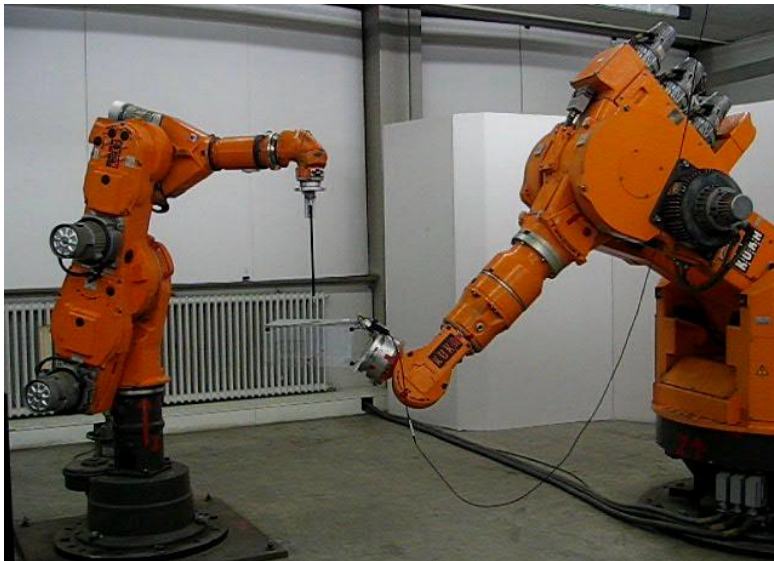
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Axes Control



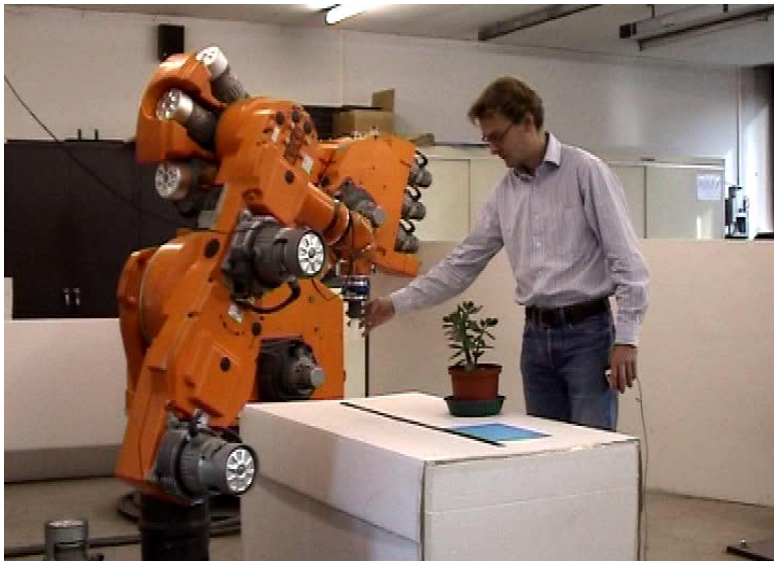
Constraint Based Control



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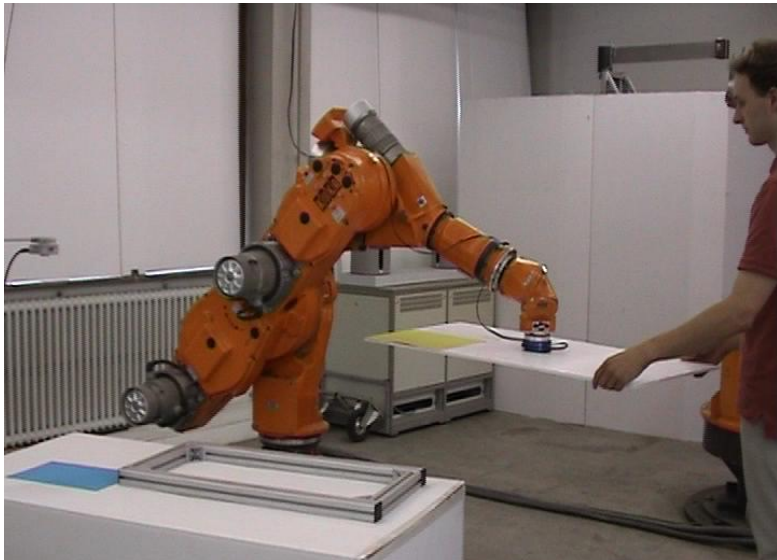
Online learning



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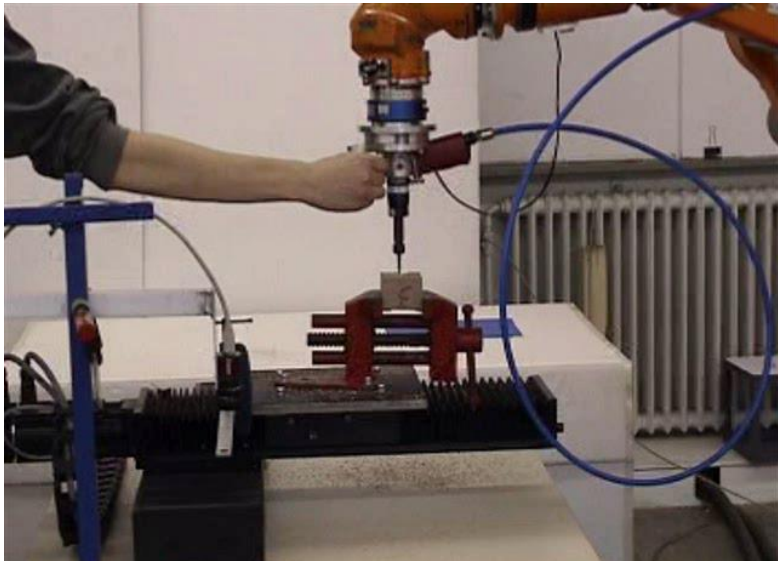
Placing a Car Window



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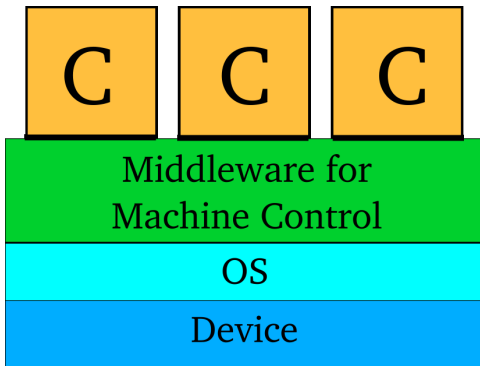
Milling a Human Bone



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Distribution in progress...



Orocos Introduction Presentation

Freely available on:

<http://www.oroocos.org>

Coffee Break



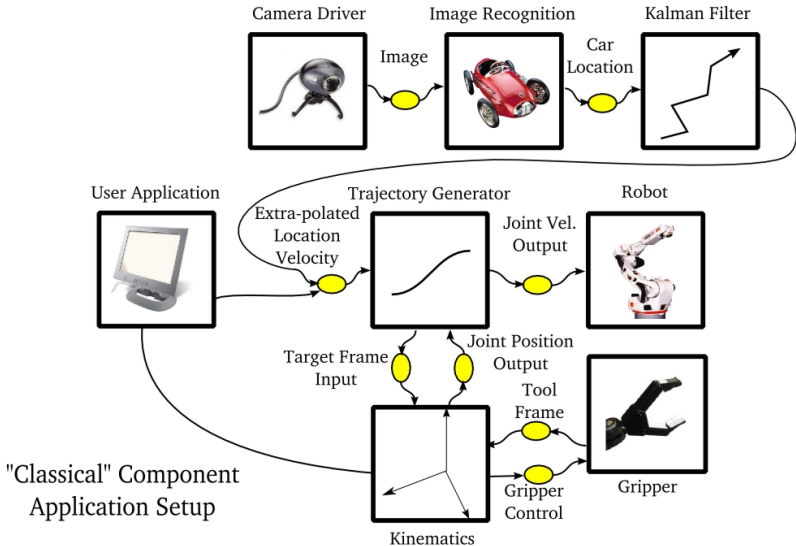
RoboCatcher: Research Application



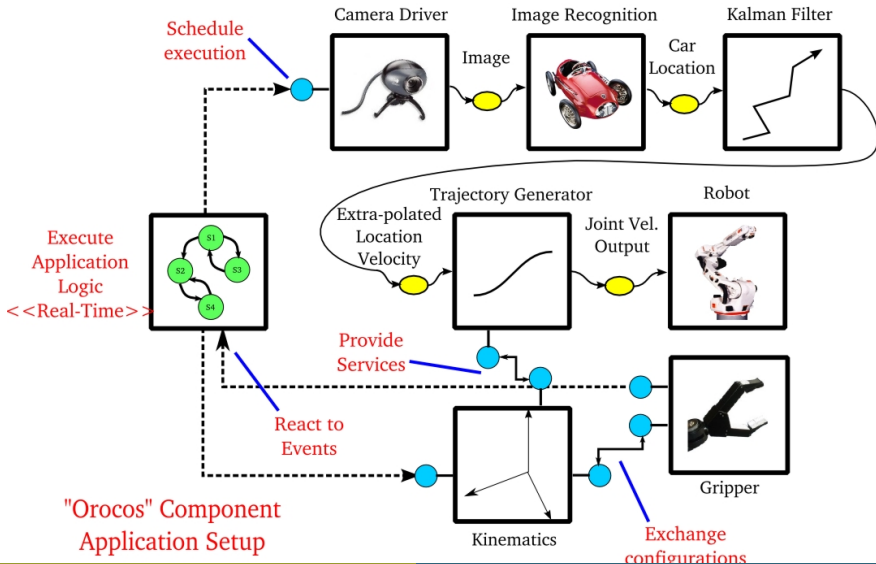
RoboCatcher: Requirements

- Software Framework
 - Modular - Component Based
 - Online reconfiguration
 - User interactivity
 - Real-Time
- Application Code
 - Camera capturing
 - Car image recognition
 - Car state estimation
 - Online trajectory generation
 - Robot kinematics algorithm
 - Robot/gripper interfacing

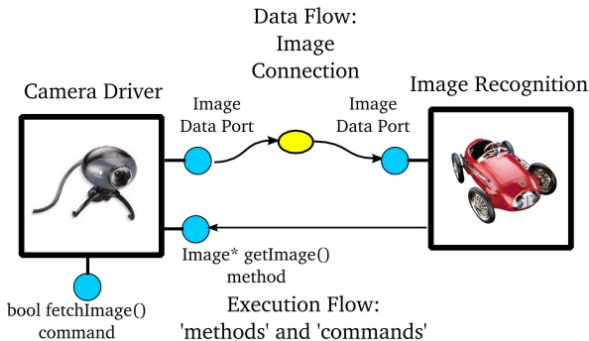
RoboCatcher: Without Orocos



RoboCatcher: With Orocos

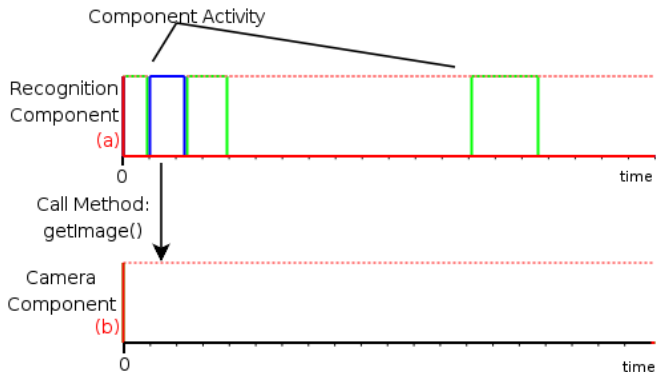


RoboCatcher: Camera



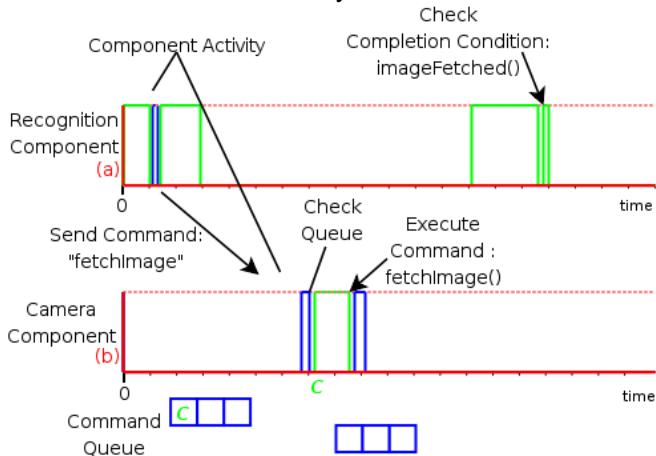
Camera Methods

Methods : Synchronously *call*



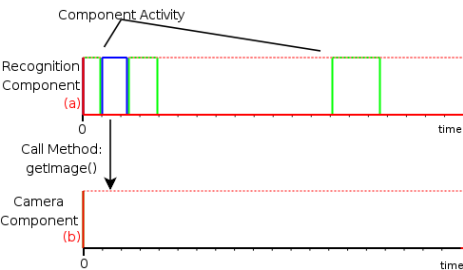
Camera Commands

Commands : Asynchronous *send*

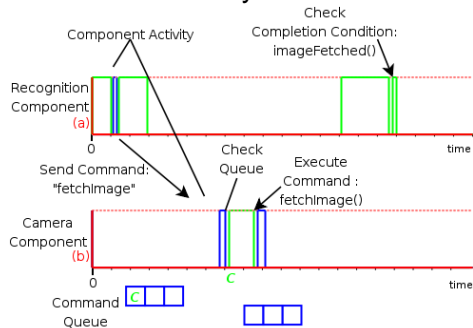


Camera Execution Flow

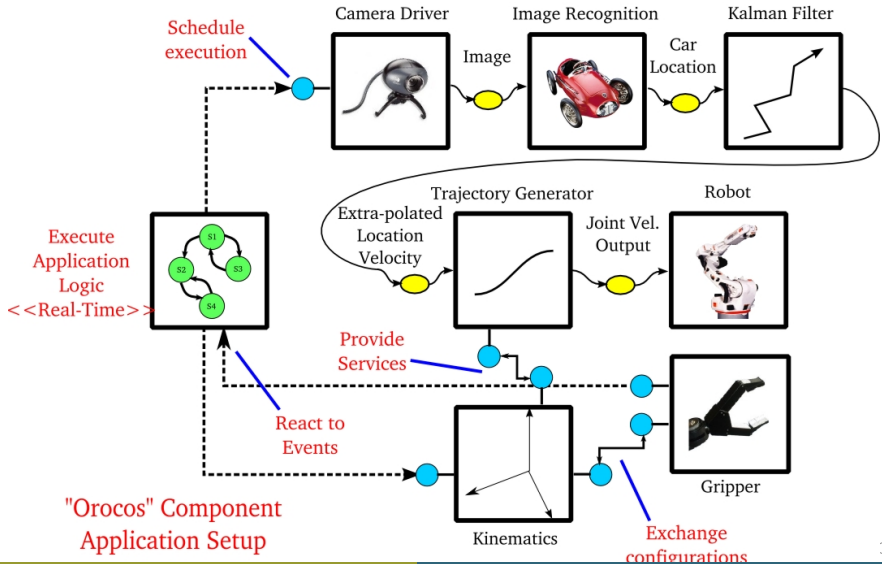
Methods : Synchronously *call*



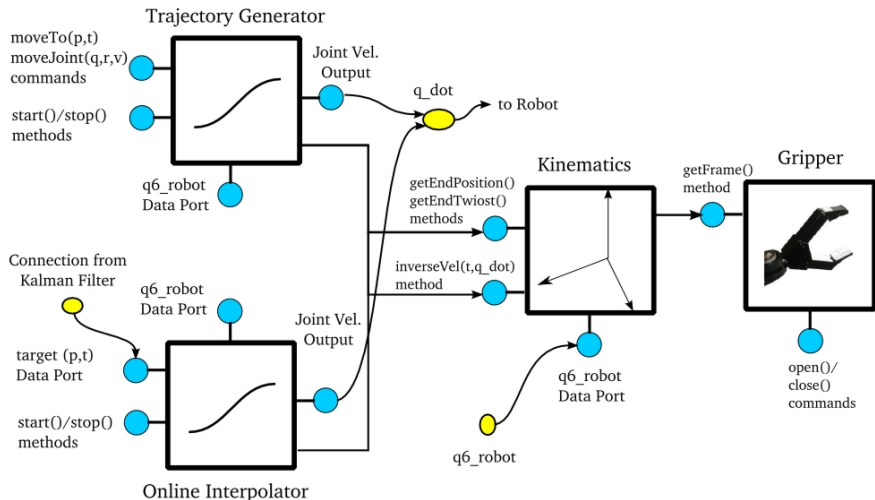
Commands : Asynchronous *send*



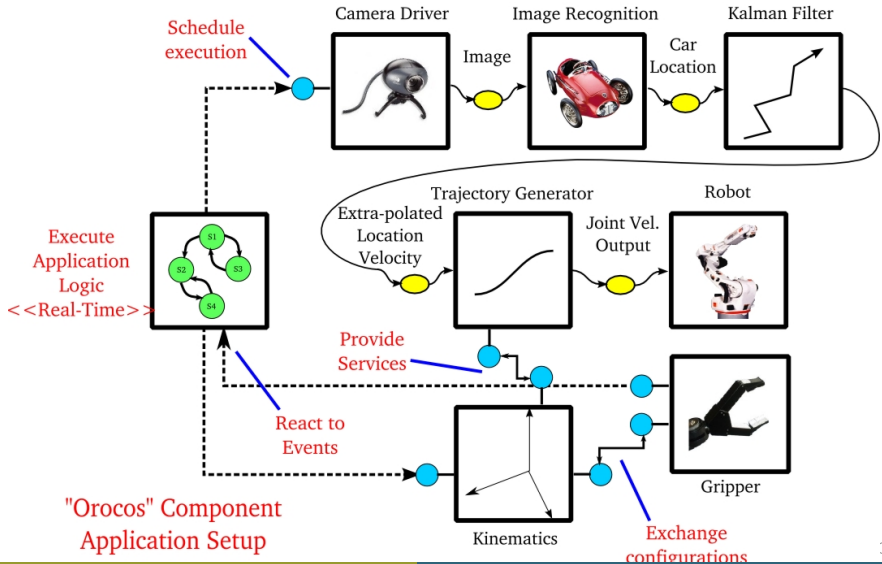
RoboCatcher: With Orocos



RoboCatcher: Kinematics

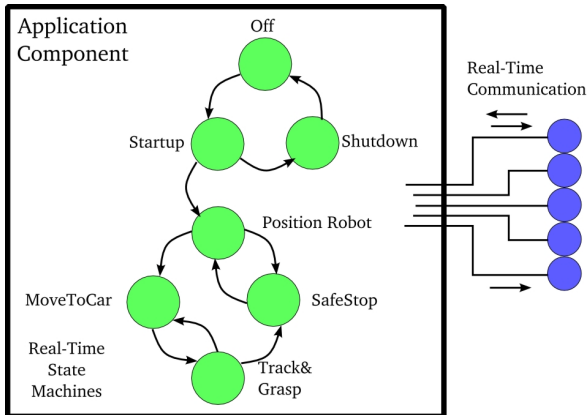


RoboCatcher: With Orocos



"Orocos" Component Application Setup

RoboCatcher: Application Logic



Conclusion

Orocos offers

- a software toolkit for building real-time components
- rich online browsable component interface
- user defined real-time state machines

Further Reference:

<http://www.orocos.org>