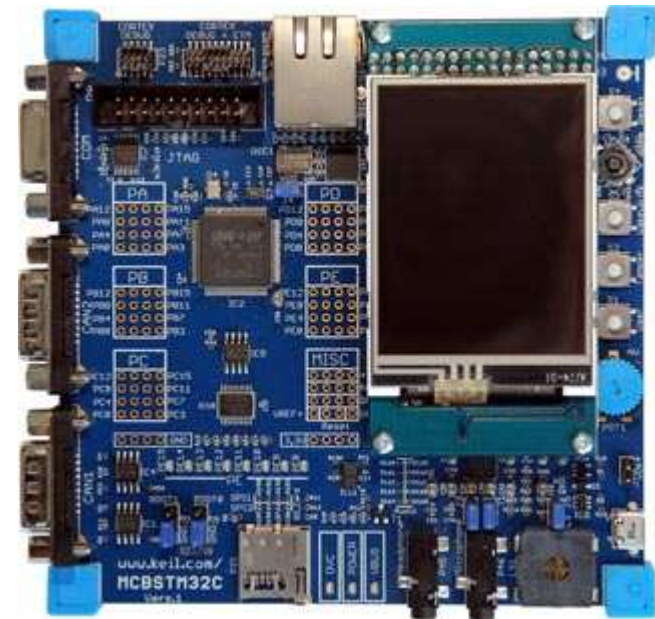


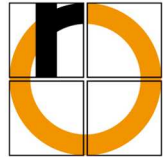
Master's Team Project WS2011

Motion-Sensitive Remote Control Unit for a Semi-Autonomous Mobile Robot Vehicle

Hardware-Platform

- ◆ 72 MHz ARM Cortex-M
- ◆ QVGA Color Touchscreen
- ◆ 3-Axis Motion-Sensor
- ◆ 5-Position Joystick, 3 UARTs
- ◆ ++ ZigBee Wireless Modules





Motion-Sensitive Remote Control Unit for a Semi-Autonomous Mobile Robot Vehicle

Vehicle & Sensors

- ◆ 2 CMOS-Cameras
- ◆ Sonar Ranging
- ◆ WLAN
- ◆ GPS

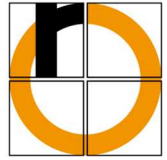




Motion-Sensitive Remote Control Unit for a Semi-Autonomous Mobile Robot Vehicle

Basic Goals

- ◆ Learn how to systematically plan and carry out a project in a team
- ◆ Until end of March 2012 plan, design, program and test a hand-held wireless pointing device that allows to manually control a mobile robot via + enhance current system
- ◆ Create documentation, so that other students can use results (i.e. know-how, development tools, software)



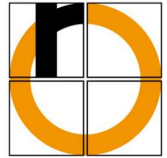
Motion-Sensitive Remote Control Unit for a Semi-Autonomous Mobile Robot Vehicle

Key Development Goal

- ◆ Control (nonauton.) robot motion via handheld pointing device

Further Enhancement Goals

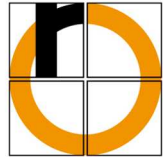
- ◆ Strictly modular & layered software architecture
- ◆ WLAN based positioning → reliability & accuracy
- ◆ Improved image processing for line/edge following



Motion-Sensitive Remote Control Unit for a Semi-Autonomous Mobile Robot Vehicle

What you can learn & apply

- ◆ Development phases of a SW project / team work
- ◆ Embedded RT programming for touchscreen and motion sensor on world standard ARM MCU
- ◆ Win XP OS services / IP-based communication via sockets
- ◆ Usage of WLAN for positioning
- ◆ Image processing / fast edge finding methods



Motion-Sensitive Remote Control Unit for a Semi-Autonomous Mobile Robot Vehicle

Key Qualifications for 4 to 5 Team Members

- ◆ C - Programming (*essential* for *all* team members !)
- ◆ C - Programming, C - Programming, C - Programming

Recommended / desired further Knowledge

- ◆ Familiarity w Windows-Programming and/or Embedded Programming, Real-Time Systems, Multitasking Applcns
- ◆ Qualification Test: date tdb.

What I expect: Initiative, independent work, serious effort