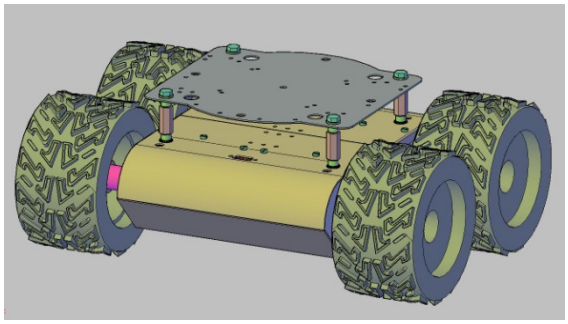


- *High mobility 4x4 platform*
- *Modular and open architecture*
- *Fully controllable using I2c or USB*
- *Fully customizable by adding custom deck's : Xpe default*

Wifibot LAB

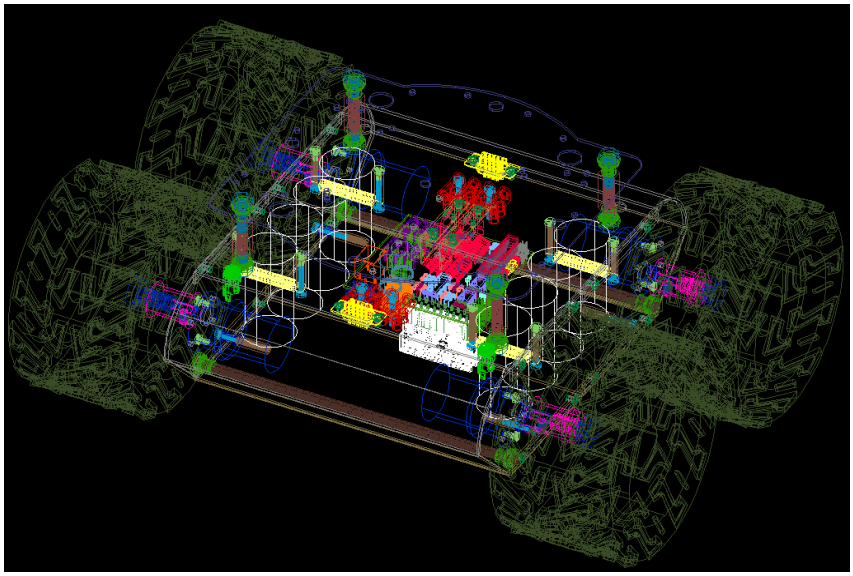
Multi-purpose robot

Wifibot Lab is suited for those who wants an affordable mobile platform for developing and learning robotics. The base system is composed by a four wheel drive platform controllable using I2C or USB bus. You can add our custom deck's witch can include different kind of CPU's. We propose by default Intel Atom SBC running Windows Xpe or Linux Xubuntu on a 4G compact flash.
LS2 UBNT router can be added as an option.
You can connect devices such as mini-pci WIFI (default a/b/g card), IP camera (MJPEG or MPEG), USB Webcam, GPS, RS232 robotic arm, phidgets usb modules, Hokuyo Lidar or different kind of custom electronic boards like analogue multi camera mini-pci mpeg4 card etc...
For controlling this robot, several GUI and API are available for PDA and PC.

www.wifibot.com

WifiBOT LAB

Sensors:	2x Hall effect encoders Battery level
Speed Control:	1 X DSPIC 33f (PID) ICD2/3 (option)
Motors:	4x motors 12V 50:1 8.87Kg/cm 150 rpm
Dimensions:	Length : 30 cm Width : 35 cm Height : 15 cm Weight : 3.8 Kg
Batteries:	9.6V NiMh 10000 mAH Charger included
Control Bus:	I2C / USB



Wi Fi™

WifiBOT LAB

IP CAMERA **Phidgets Sensors** **Robotic Arm** **WEBCAM** **WIFI** **User** **GPS**







...

LAN USB RS232 I²C BUS

Windows Embedded

UBIQUITI NETWORKS

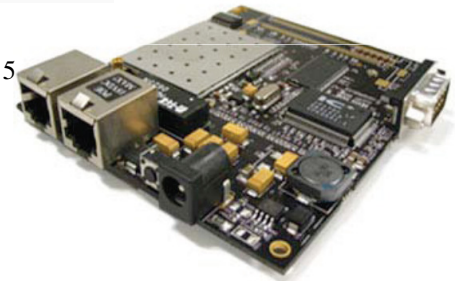
Intel Atom
low power
Embedded SBC

SBC Industrial PC
XPE or Linux

Free C/C++ API
or (future option)
Microsoft Robotics Studio
or (future option)
RTMAPS (C++)

+
(option)

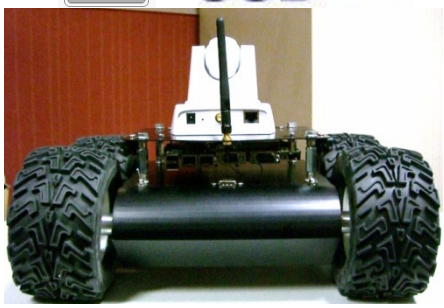
UBIQUITI
LiteStation2 or 5
2.4 or 5 GHZ



UBNT LS2

Free C/C++ API
Free Wifi ubnt Linux SDK

I²C BUS USB

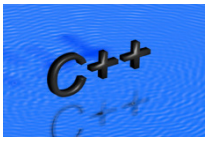


USB/I2C Mobil Robot
Generic Platform

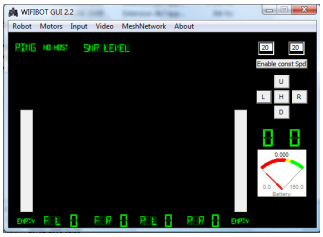
Hokuyo Lidar

Wi Fi™

WifiBOT LAB



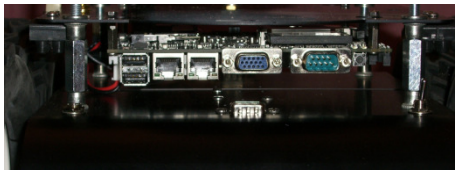
C++ API
Embedded
Control server



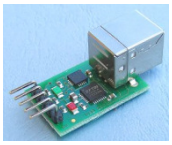
GUI

RS232

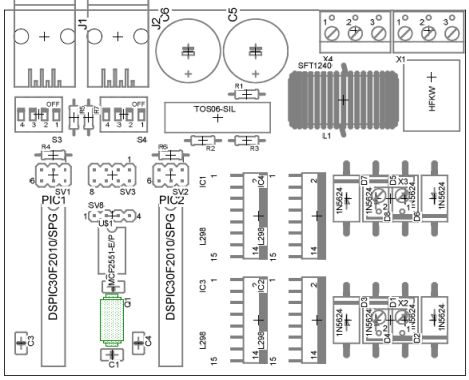
ICD2-3 (option)



CPU



USB -> I2C



DSPIC motor board

Web Server / OPENCV

Camera

IR sensors

Motors + Hall Encoder

X86 CPU

Industrial Single Board Computer

3.5 inches Miniboard

LE-374

Intel Atom processor
Onboard VGA, LVDS , DVI , Giga LAN,
Mini PCI, USB2.0, SATA
AC97 Audio and Compact Flash socket

Form Factor	3.5 inches Miniboard
CPU	Intel Atom N270 processor 1.6GHz Package type: FCBGA8 , Front side bus: 533MHz
Memory	One 200-pin DDR2 SO-DIMM SDRAM up to 2GB Non-ECC, unbuffered memory supported only
Chipset	Intel 945GSE & ICH7M
Real Time Clock	Chipset integrated RTC with onboard lithium battery
Watchdog Timer	Generates a system reset with internal timer for 1min(sec) ~ 255min(sec)
Power Management	ACPI 1.0 compliant, supports power saving mode
VGA Interface	Intel integrated extreme GMA 950(Graphic Media Accelerator) Technology
Video Memory	Up to 224MB shared with system memory
LVDS interface	Onboard 18-bit dual channel LVDS connector
Serial ATA interface	2 x serial ATA interface with 150MB/s transfer rate
Solid State Disk	IDE supports 44-Pin Disk On Module with +5V power supply One Compact Flash Type II socket
DVI Interface	Onboard Chrontel CH7307C DVI Transmitter for DVI interface
Audio Interface	Intel ICH7-M integrated with Realtek ALC655 5.1CH AC97 Codec
LAN Interface	1 x Intel 82574L Gigabit Ethernet controllers
GPIO interface	Onboard programmable 8-bit Digital I/O interface
Extended Interface	1 x Mini-PCI socket
Internal I/O Port	1 x IrDA, 1 x GPIO, 1 x AUDIO, 1 x CDIN, 1 x LVDS, 2 x USB2.0 1 x RS232/RS422/485, 1 x DVI, 1 x LCD Inverter, 2 x SATA，1 x HDTV
External I/O Port	1 x COM, 1 x VGA, 1 x RJ45, 2 x USB2.0, 1 x PS2
Power Requirement	9~24V full range DC Input
Dimension	146mm x 101mm
Temperature	Operating within 0~60 centigrade Storage within -20~85 centigrade

Wi-Fi Linux Router

UBIQUITI NETWORKS

LiteStation2

Hi-Performance, Open Software, 2.4GHz Wireless Platform

Ethernet

Wifibot Lab
(USB / I2C)

LiteStation2

The LiteStation platform was designed for high-performance outdoor and industrial OEM applications. It features an industry best radio design offering hi-power, great receive sensitivity, and capable of multi-km wireless links. The system was designed for high temperature operation and features industrial grade components as well as a integrated heatsink beneath the board. The LiteStation ships with basic bridging and routing software, as well as publicly available software development materials needed for custom OEM use.

APPLICATIONS

MultiPoint CPE

Mesh/Mobility CPE

Bridging

SYSTEM INFORMATION	
Processor Specs	Atheros AR5312 SOC, MIPS 4KC, 220MHz
Memory Information	16MB SDRAM, 4MB Parallel Flash
Serial Interface	On board RS232 with DB9 conenctor
Networking Interface	2 X 10/100 BASE-TX (Cat. 5, RJ-45) Ethernet Interface

REGULATORY INFORMATION	
Wireless Modular Approvals	FCC Part 15.247, IC RS210

RADIO OPERATING FREQUENCY 2412-2462 MHz (2312-2732 MHz*)

TX SPECIFICATIONS

	DataRate	TX Power	Tolerance
802.11b	1Mbps	26 dBm	+/-1dB
	2Mbps	26 dBm	+/-1dB
	5.5Mbps	26 dBm	+/-1dB
	11Mbps	26 dBm	+/-1dB
802.11g OFDM	6Mbps	26 dBm	+/-1dB
	9Mbps	26 dBm	+/-1dB
	12Mbps	26 dBm	+/-1dB
	18Mbps	26 dBm	+/-1dB
	24Mbps	26 dBm	+/-1dB
	36Mbps	24 dBm	+/-1dB
	48Mbps	23 dBm	+/-1dB
	54Mbps	22 dBm	+/-1dB

RX SPECIFICATIONS

	DataRate	Sensitivity	Tolerance
802.11b	1Mbps	-97 dBm	+/-1dB
	2Mbps	-96 dBm	+/-1dB
	5.5Mbps	-95 dBm	+/-1dB
	11Mbps	-92 dBm	+/-1dB
802.11g OFDM	6Mbps	-94 dBm	+/-1dB
	9Mbps	-93 dBm	+/-1dB
	12Mbps	-91 dBm	+/-1dB
	18Mbps	-90 dBm	+/-1dB
	24Mbps	-86 dBm	+/-1dB
	36Mbps	-83 dBm	+/-1dB
	48Mbps	-77 dBm	+/-1dB
	54Mbps	-74 dBm	+/-1dB

ADJUSTABLE CHANNEL SIZE SUPPORT (Increase Channel Capacity or Increase Throughput)			
5MHz	10MHz	20MHz	40MHz (Turbo)

RANGE PERFORMANCE	
Outdoor (Antenna Dependent):	Over 50km

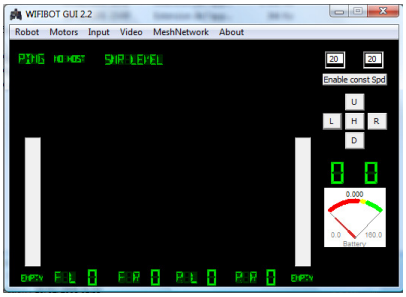
PHYSICAL / ELECTRICAL / ENVIRONMENTAL	
Dimensions	18 in. length x 13 in. height x 2in. Width
Weight	3.7 lbs
Max Power Consumption	6.5 Watts
Power Method	Passive Power over Ethernet (pairs 4,5+; 7,8 return)
DC Voltage Rating	5-24V (18V max recommended)
ESD/EMP Protection	Transient Voltage Supression at POE port
Operating Temperature	-40C to 85C (System PCB optimized for hi-temp)

SOFTWARE INFORMATION	
Modes	Station, Station WDS, AP Bridge
Tested Compatibility	Mikrotik RouterOS, StarOS, Ikarus, MADWIFI
Services	SNMP,DHCP,NAT,
Utilities	Antenna Alignment tool, Discover Utility
Advanced	ACK Timeout adjust, CTS/RTS adjust
Operating Temperature	-40C to 85C (System PCB optimized for hi-temp)

Development Option

Ships with LiteStation system board, JTAG / Serial interface connectors, documentation, and development software

The simple control software (TCP) :

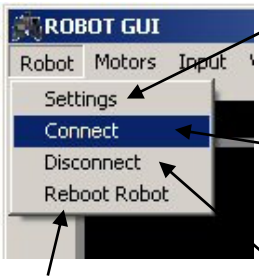


The control software:

The control software can be found in the CDROM in **..\Software\control software**

- Install if necessary the **Video Decoder** present in the same folder.
- Launch the **WifibotGUI** program.
- Click on **Robot** then **Settings**. The **Robot Settings** window appears.
- Set the **Control Server IP** and the **Control Server Port** which by default is **15000**.
- Set the **Camera IP** and the **Camera Port** which for the image is by default **80**.
- Select the proper **Camera Type**.
- Click on **Video**, then select **VideoOn**. The image from the camera will appear.
- Click on **Robot** then **Connect.**
- Click on **Input** then select **Joystick** or **Virtual_joy**. The robot can now be operated.

The menu options:

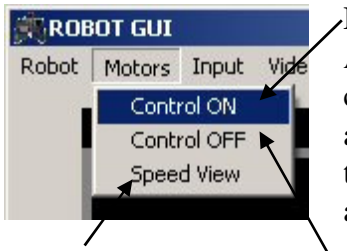


Settings: IP settings of the Control Server and the Camera.

Connect: Starts the communication with the Control Server.

Disconnect: Stops the communication with the Control Server.

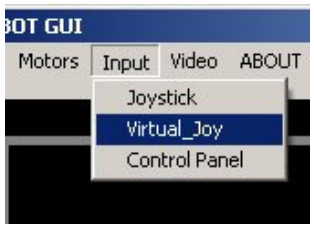
Reboot: Reboots the robot's CPU.



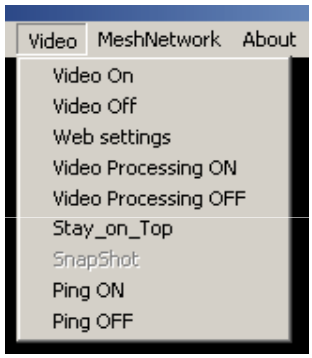
Motor Control ON: Activates the speed control, Input_Left and Input_Right set on the dialog will be applied.

Speed View: Plots in real time the speed signal from the code wheels.

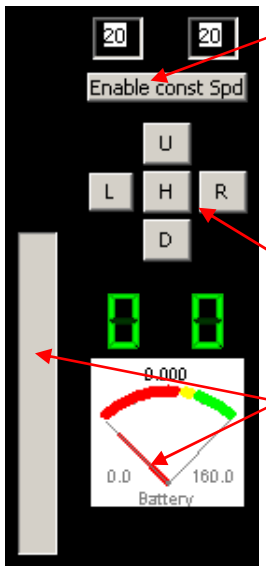
Motor Control OFF: Deactivates the speed control.



Input Selections (control panel for calibrating the joystick)



Video selections: Allows to configure and control some options of the camera.



Current input: shows the current input or allows to set it manually with keyboard.

Pan-Tilt camera control: The red button takes the camera to the default position. You can click on the image too for moving the camera.

Sensor feedback: shows the data retrieved from the range sensors, the battery level and the speed of the robot.

RTMIX multi-robot interface (UDP)

Features:

- The RTMIX multi-robot interface allows the user to control a team of up to four robots.
- The interface is best viewed with a 1024x768 resolution.
- Platform related controls are located on the left while visual related ones are located on the right.
- Before operation the user has to make sure all IP addresses and ports are correctly set.
- Selected robots can be controlled using the virtual joystick, a joystick or a wiimote, selecting more than one robot at a time will have as a result having all of them receiving the same command.
- Cameras can be selected individually or blended in one image with RTMIX. Preset mixing layouts can be selected and new ones added thanks to the "video source configuration" webpage.
- Certain functionalities need a reference which can be selected with a menu located just under the Mesh and Map buttons.
- Certain types of supported cameras have incorporated relays which are set with the I/O checkbox.
- The "base" can be either an external gateway or the control computer itself (check "virtual" for this).
- The Map button needs to have an active internet connection and will show the robot's and the base position on a Google Maps webpage provided those are equipped with a GPS.