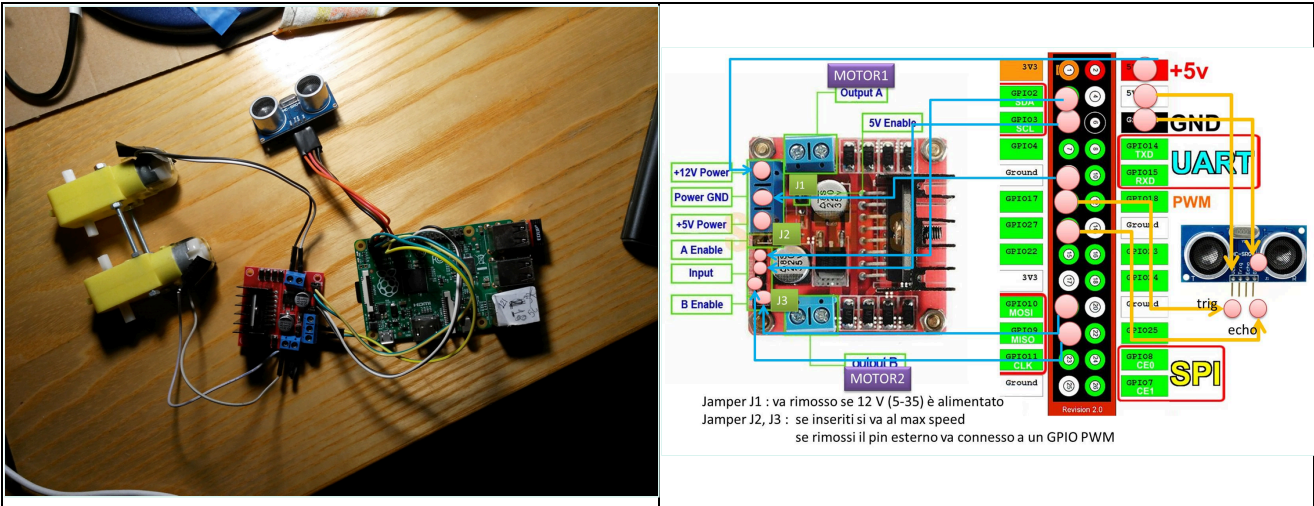# LabNanoRobot | The home-made basicrobot

The low-level support

The technology-dependent part of the robot is embedded in a Kotlin object nanoSupport.kt that provides two main operations:

nanoSupport.kt
 	
``kotlin
fun create(owner: ActorBasic,
       withSonar : Boolean = true)
``
	Creates a support to be used by the given **owner** actor.
	
	``kotlin
	fun create(owner: ActorBasic, withSonar : Boolean = true){
	       this.owner = owner
	       motorscSupport.create(owner)
	       if(withSonar) {
	              val realsonar = robotNano.sonarHCSR04SupportActor("realsonar")
	              //Context injection
	              owner.context!!.addInternalActor(realsonar)
	       }
	}
	``
	
	The flag withSonar is used to create an **internal actor** sonarHCSR04SupportActor.kt that provides the first component of an event stream.

``kotlin
fun move(cmd : String){
       motorscSupport.move(cmd)
}
``
	Send a move command to the robot by using the motorscSupport.kt, that in turn uses Motors.c.

A robot-usage utility

The Kotlin object nanoSupport.kt provides an utility that allows application designers to send commands the robot actuators without knowing any detail of their low-level configuration.
Moreover, this utility creates (if required) a data-source (the actor sonarHCSR04SupportActor.kt) that works as a event stream source with respect to the data generated by the robot sonar.

Since a sonar usually emits data with a quite high frequency and since these data are sometimes not reliable, the application designer could conveniently create a pipe including a data-cleaner and some filter. sonarpipenano.png
- dataCleaner.kt: eliminates data outside a prefixed interval of values
- distanceFilter.kt: emits an **obstacle : obstacle(D)** event when the sonar distance is less than a prefixed limit

High-level demo

An utility to send commands is defined in the project
it.unibo.qak21.robots:
- consoleGuiTcp.kt
- consoleGuiMqtt.kt
- consoleGuiCoap.kt

	All these utilities inherit from
	• consoleGuiSimple.kt
	and make reference to the configuration object: sysConnKb.kt