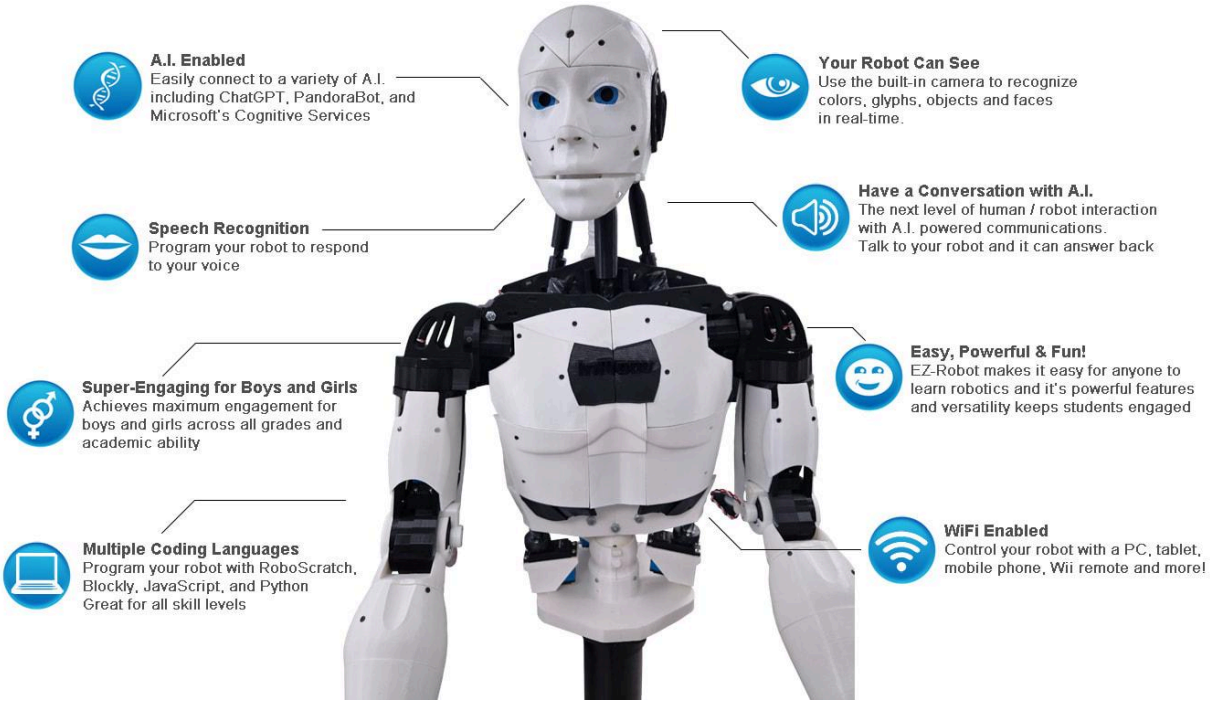
INMOOV ROBOT OPEN SOURCE



There you go , overview of the end-to-end functionality of the InMoov robot, covering both hardware (actuation) and software (MyRobotLab) aspects:

Hardware Functionality (Actuation) :

Head Movement:

Servos in the neck allow for pitch , roll, and yaw movements , enabling the head to look around.

Arm and Hand Actuation:

Shoulder servos control arm rotation and lifting.
Elbow and wrist servos for flexing and rotating the forearm and wrist.
Finger servos in the hands enable individual finger control, allowing for complex gestures and grip adjustments.

Sensors:

Ultrasonic and Infrared sensors in the head or torso for obstacle detection.
Camera in the head for visual processing and face detection.

Microcontrollers:

Two Arduino Mega 2560 boards handle the control of servos across the robot's body, organized to control each side's movement.
Additional microcontrollers, like Raspberry pi will be used as computer additional functionalities.
Software Functionality (MyRobotLab)
MyRobotLab (MRL) acts as the brain of the InMoov robot, integrating various services for control, communication, and interaction.

Speech Recognition and Synthesis:

MRL provides voice command recognition via Google Speech API or other speech-to-text systems.
Text-to-speech (TTS) capabilities allow the robot to respond verbally using software like MaryTTS or Google TTS.

Computer Vision:

Using OpenCV within MRL, the robot can recognize faces, track objects, and interpret visual data from the camera.

NLP :

MRL supports integrations with AI LLMs like(open ai and llama 3 and various others), enabling chatbot-like interactions (openai and ollama embeddings) for conversation and learning-based functionalities.

Remote Control and Web GUI:

MRL offers a web-based interface, allowing remote monitoring and control of the robot from any device with network access.
The GUI provides access to the robot's sensors, motor control, and other interactive features.

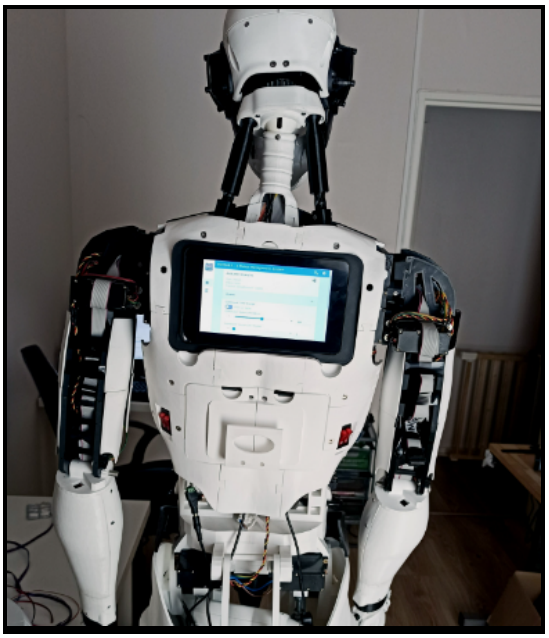
Scripted Routines and Event Responses:

MRL allows users to script custom routines, so the robot can perform predefined actions(functions like) in response to specific triggers, like saying "Hello" or reacting to movement in its vicinity.
At the end, the InMoov robot built with this setup will be a fully articulated, interactive humanoid that can understand and respond to voice commands, detect faces and objects, express itself through speech, and interact physically through controlled arm, hand, and head movements.

IN A VERY NUTSHELL , WE WILL BE ASSEMBLING THE ROBOT WHICH WILL BE ABLE TO MOVE ITS ARMS HANDS FINGERS , HEAD , EYES , HAVE VISION AND LANGUAGE CAPABILITIES .
IT WILL BE CONTROLLED BY A RASPBERRY PI ACTING AS THE COMPUTER AND ARDUINO MEGA RESPONSIBLE FOR THE ACTUATION.
SO THE COMPUTER WILL BE RUNNING MY ROBOT LAB SOFTWARE AND THERE WILL BE A 7 INCH SCREEN ON THE BACK OF THE ROBOT ENABLING
US TO INTERACT WITH MRL GUI AND DEMONSTRATE DIFFERENT ROBOTIC TASKS .
The robot won't be able to walk in the matter of 3 weeks surely.

THE INMOOV COMMUNITY IS A VERY GOOD AND RICH OPEN SOURCE COMMUNITY WHICH HAS ALREADY MADE THIS SOFTWARE SO THAT WE DON'T HAVE TO CODE ANYTHING FROM SCRATCH .

IF YOU WANT TO TEST IT , YOU CAN SIMPLY GET AN ARDUINO UNO, FLASH MY ROBOT LAB CODE INTO IT AND YOU CAN EXPLORE THE ENTIRE FUNCTIONALITY OF THE ROBOT BY FOLLOWING THE LINK BELOW WITH HAVING ANY HARDWARE.



CHECKOUT :

https://github.com/MyRobotLab/myrobotlab