

Steps Counter

Team Walkman 
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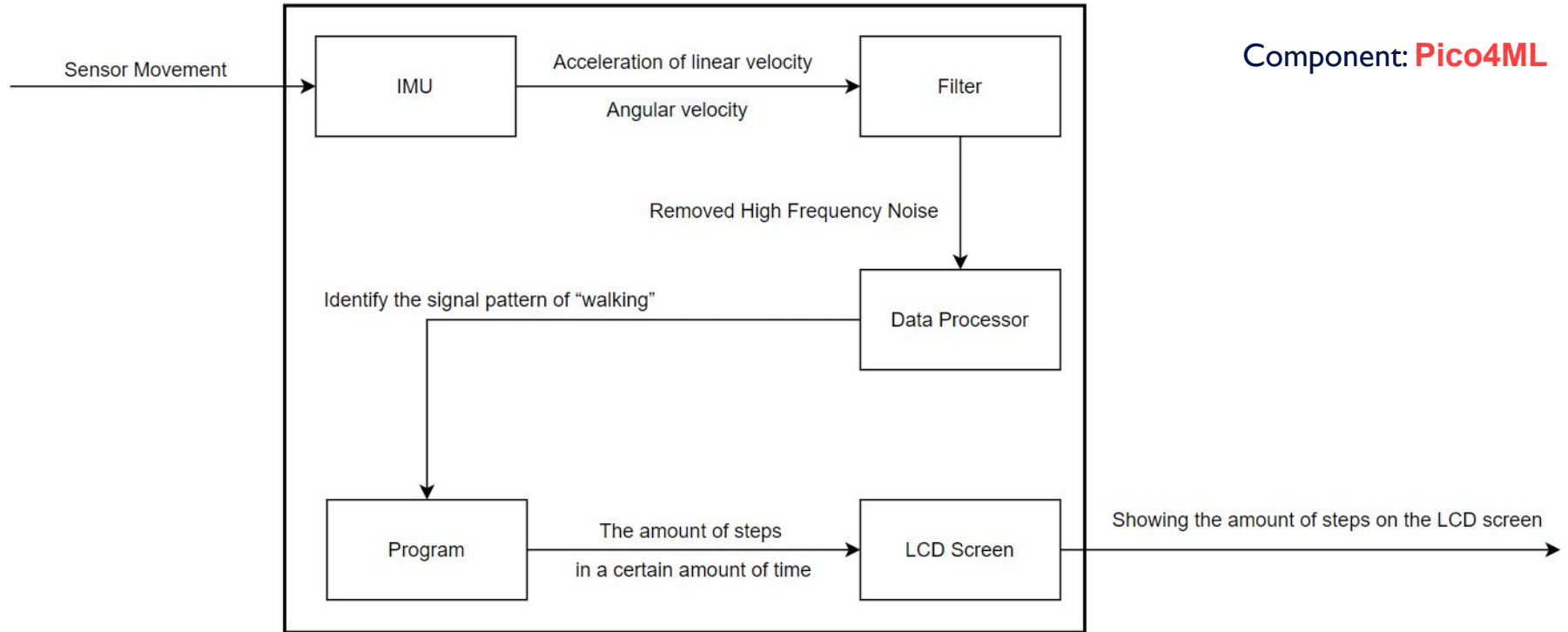
Vision

- Create a steps counter to detect people's daily walking.
 - Add modules to analyse and show data on screen and make it portable.
 - Use as a health monitor and reminder

Project Plan

- The IMU module detects the movement of the user and generates the data of acceleration of linear velocity and angular velocity
- The Filter Algorithms remove the high frequency noise from the raw data
- The Data Processor identifies the signal pattern of “walking”
- The Program counts the amount of steps in a certain amount of time
- LCD Screen shows the amount of steps on the screen

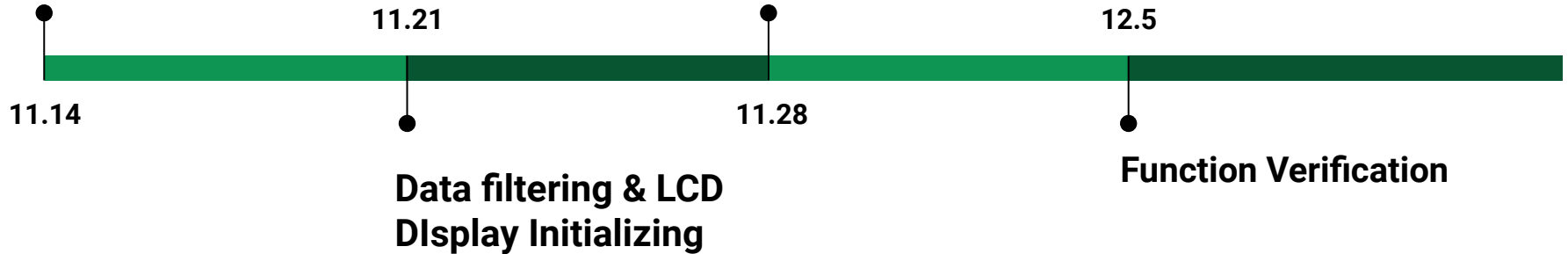
Block Diagram



Timeline

Environment
Configuration & Getting
Raw Data from IMU

Identify what is “one step”



Risks and How to De-Risk

- The contents shown on LCD display may not be as expected.
 - Simplify outputs on screen
 - Show outputs in Serial Console instead of on LCD screen
- Raw data obtained from IMU may contain useless parts
 - Choose proper filter algorithms to kick these data for counting.

Midpoint checkpoint

- Our main goal is to recognize what is “one step”
 - At midpoint, we should be able to filter and process the raw data we get from the IMU.
 - Identify what is the data pattern when user move, distinguish the difference between accident movement and actual walking.
 - See if we can print the result on the PC

Bigger picture

If we have unlimited time and resources...

Make use of the angular velocity and magnetic sensor data

By processing the angular velocity and the magnetic data from the IMU, we can get the direction information of the movement, combine it with the step count, we can now trace the track!

Supply it with battery

If connect this chip with portable power supply, this chip will become a portable device, then we have a sport bracelet!

Health status reminder

By connect this chip with a motor or buzzer, if user didn't achieve the steps goal in certain amount of time(let's say, 24 hour), the motor or buzzer will prompt the user to finished the steps goal so that keep users health

