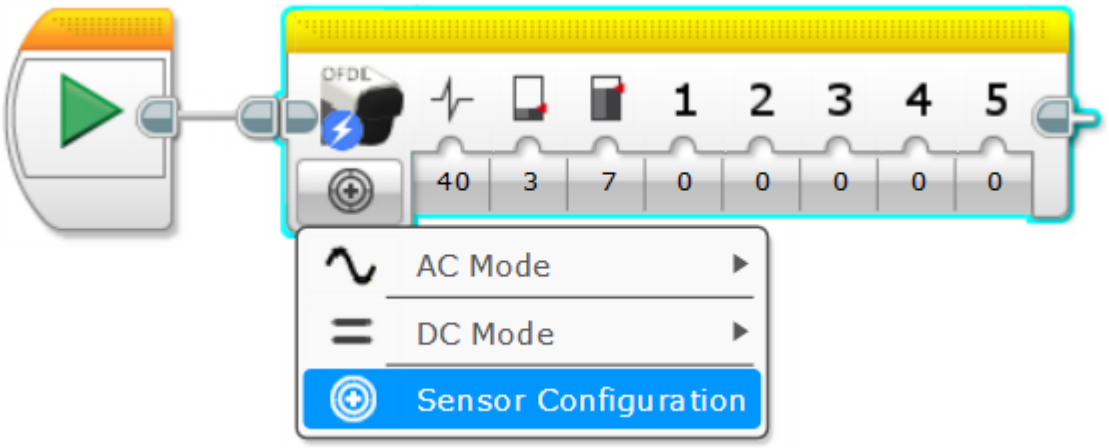

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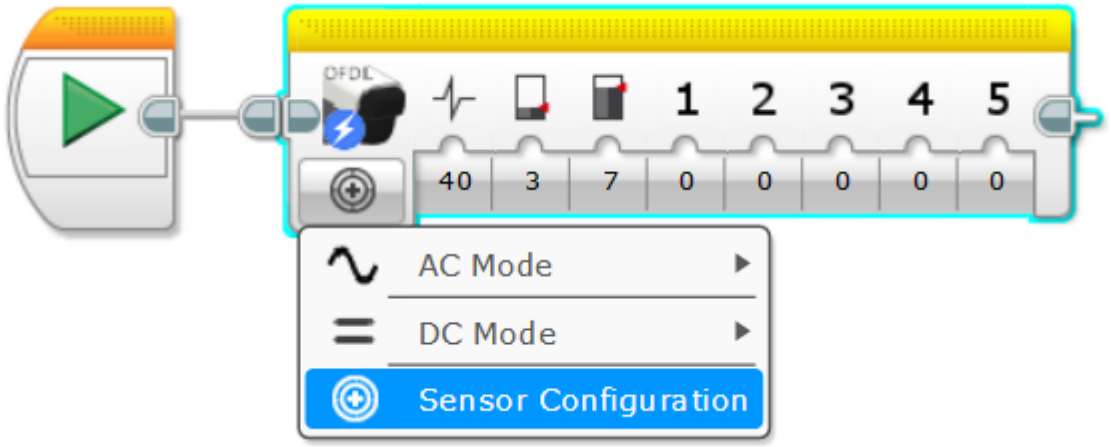
HT IRSeeker V2 Block Enhanced

DESCRIPTION

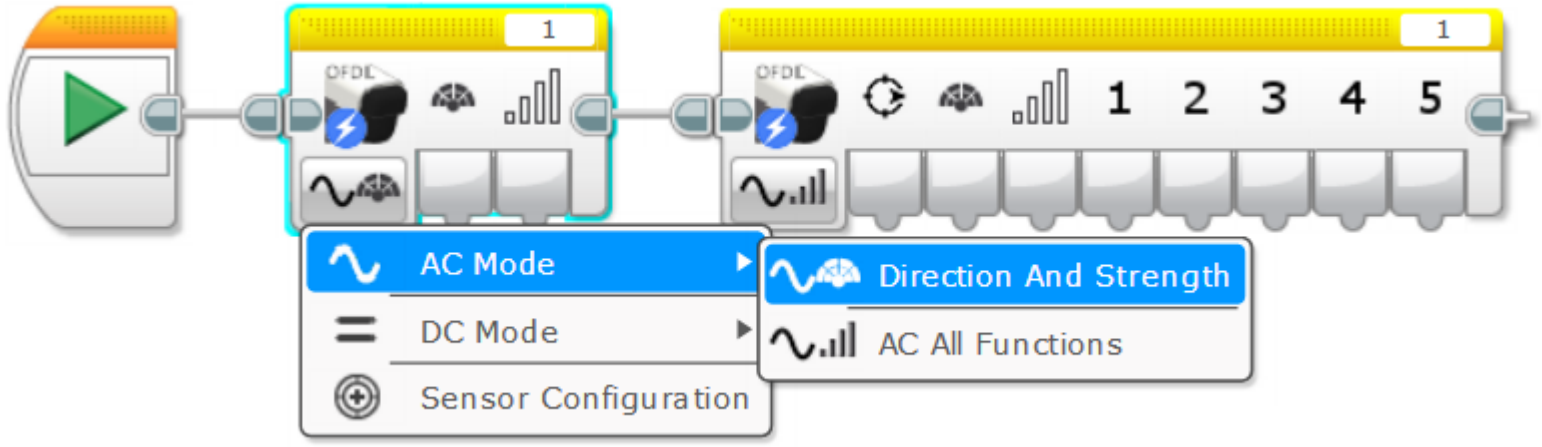
Mode- Sensor Configuration



1. **Filter Strength Set**：Set the Filter Strength.
2. **Direction Lower Bound**：Set Direction Lower Bound to apply Strength Filter.
3. **Direction Upper Bound**：Set Direction Upper Bound to apply Strength Filter.
4. **Channel Offset 1~5**： Adjust IR Seeker V2 Channel 1~5 Offset.

***The description of Filter and Channel are slides on the next few pages

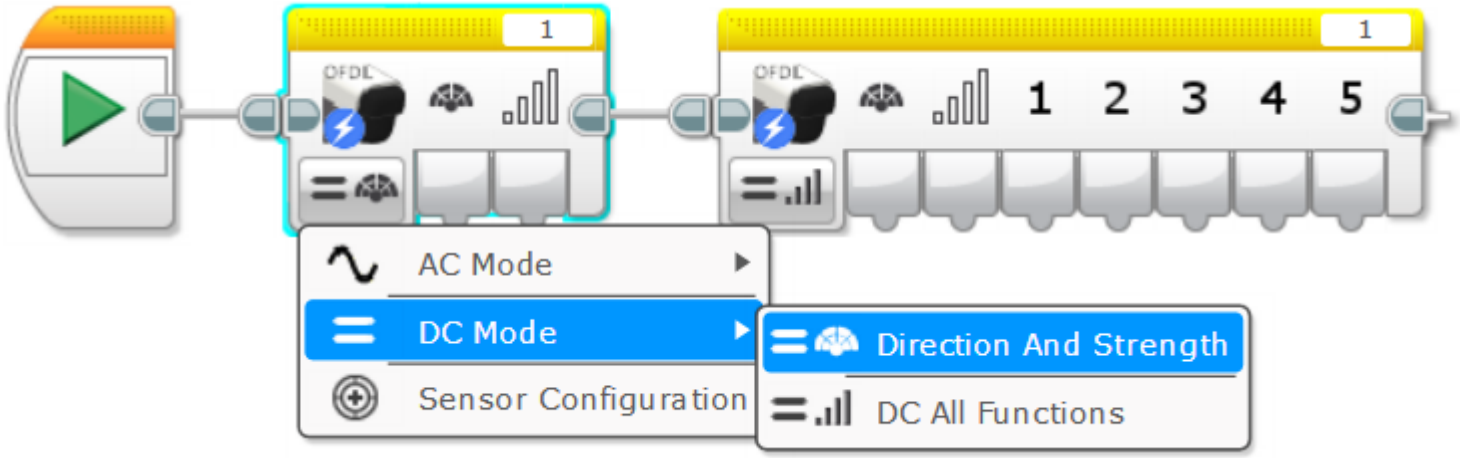
Mode - AC Mode



✓ AC All Functions provide **all functions**，Dir and Str only provide Dir and Sth.

1. **Filter Direction** ：Read Filtered Direction value.
2. **Direction**： Read **Original** Direction value.
3. **Strength**：Read **Strength** value, strength is the maximum value of Channel 1~5.
4. **Channel 1~5**：Read **Channel 1~5 Strength** value.

Mode - DC Mode



✓ DC All Functions provide **all functions** · Dir and Str only provide Dir and Sth.

✓ DC mode didn't provide the **Filter functions.**

1. **Direction**： Read **Original** Direction value.
2. **Strength**：Read **Strength** value, strength is the maximum value of Channel 1~5.
3. **Channel 1~5**：Read **Channel 1~5 Strength** value.

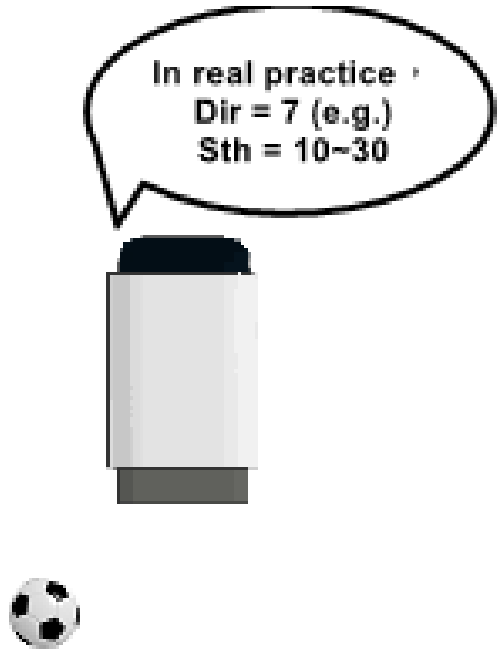
Filter functions

- Q：Why we add filtering and offset functions ?
- A：Because IR Seeker may cause misjudgment due to external influences, causing the robot to burst away.
- Let's introduce filtering Functions, sometimes the ball behind robot, maybe due to reflection, sunlight, etc.
- As a result, the Direction value is misjudged, as shown below:

Filter functions

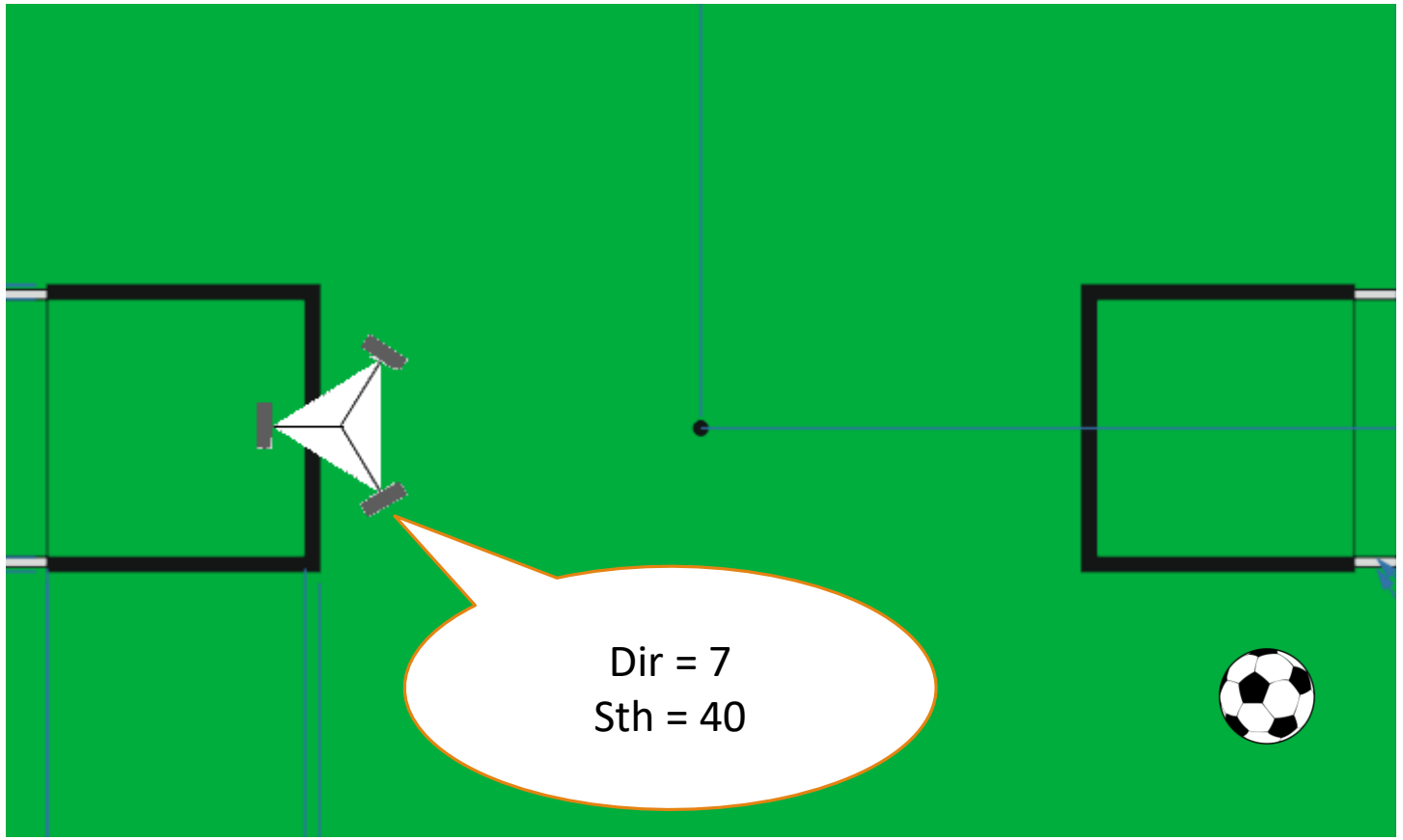
- Usually these misjudgments do not have too strong IR Strength.
- But the IR Seeker only use strength to decide the Direction.
- So it is not judged whether its strength is correct.

Direction	Strength Source
1	Channel 1
2	Channel 1 and 2
3	Channel 2
4	Channel 2 and 3
5	Channel 3
6	Channel 3 and 4
7	Channel 4
8	Channel 4 and 5
9	Channel 5



Filter functions

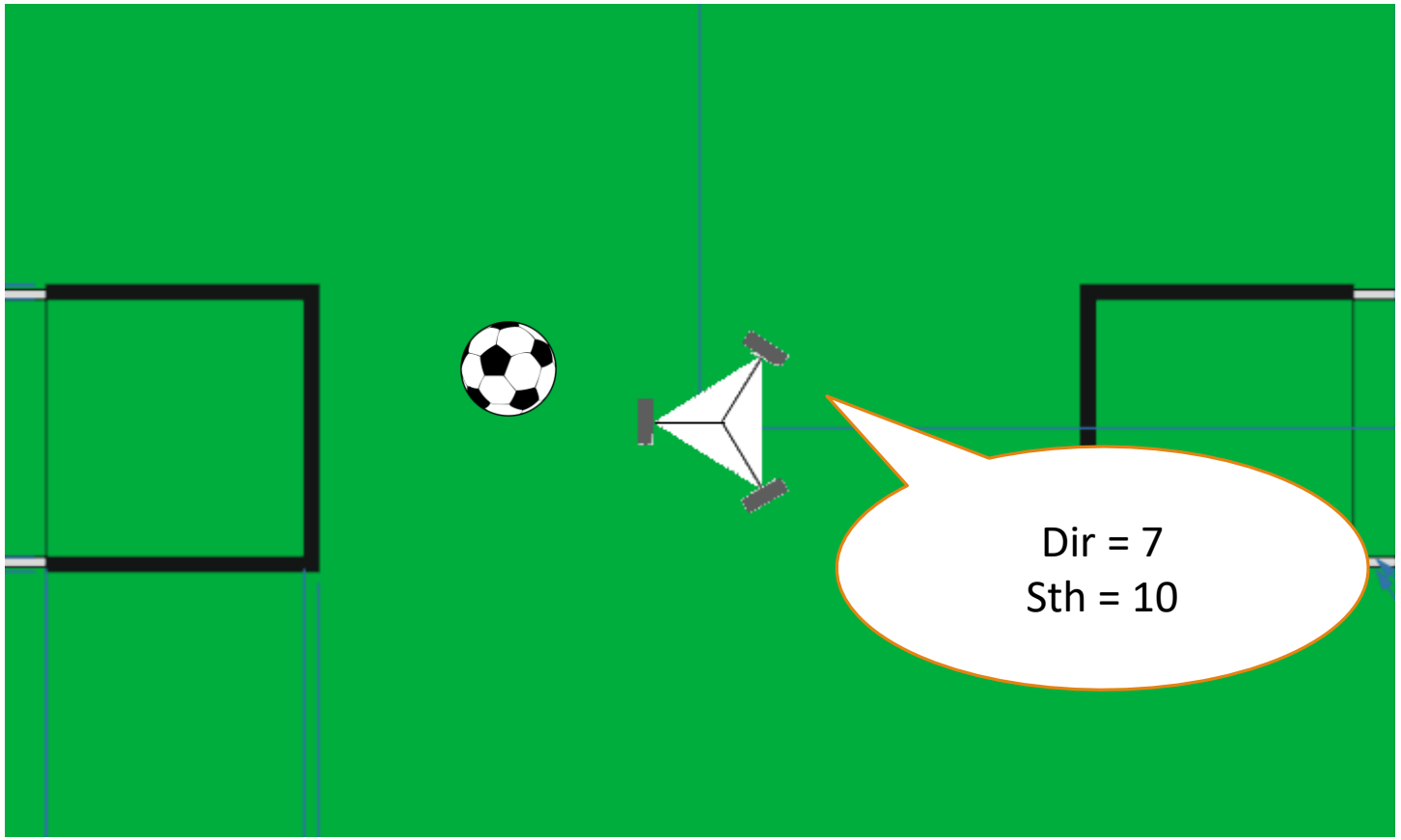
- So if the direction is 7, and we put the robot on the WRO football game field.
- In theory, more than half the game table should still have a certain strength.



Channel	Channel Strength
1	0
2	0
3	0
4	40
5	0

Filter functions

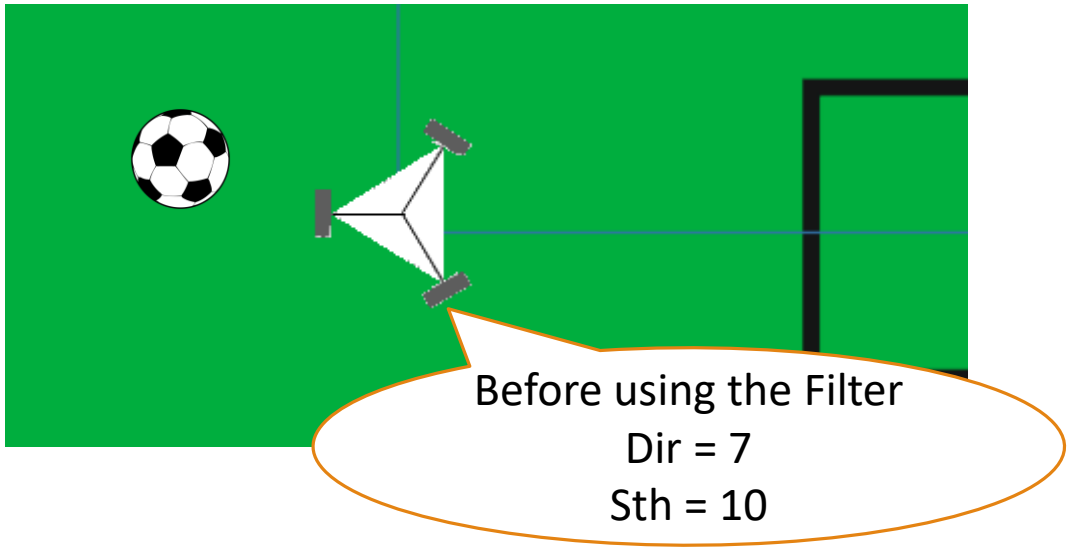
- But in this case, the robot may determine that it is in the wrong direction.
- There because sensor misjudgment due to goal or other factors (maybe sun light ...etc.).

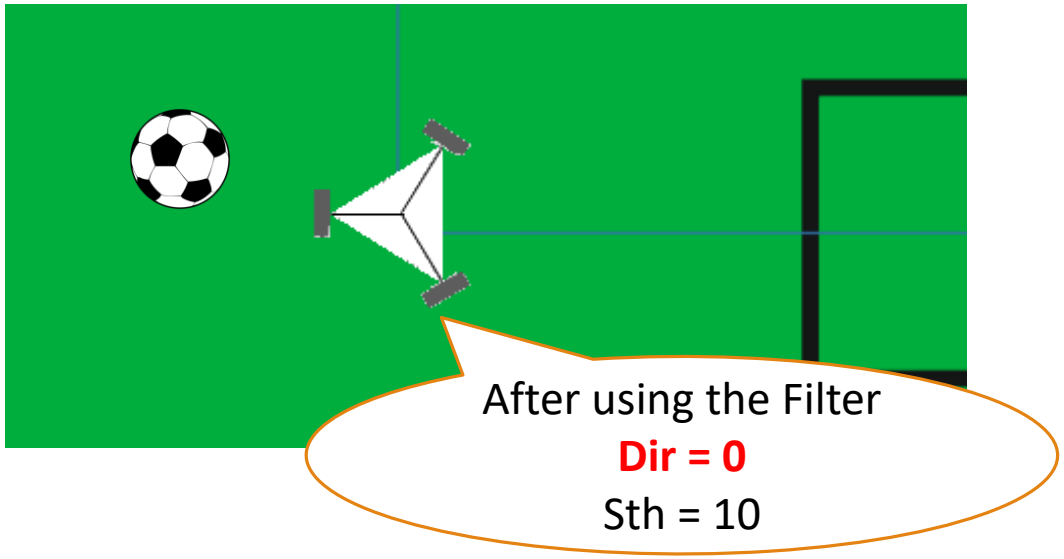


Channel	Channel Strength
1	0
2	0
3	0
4	10
5	0

Filter functions

- So in some direction, if the detected strength is very small, maybe it is misjudgment.
- So Filter Direction will output the direction as 0.
- In this way, external factors can be avoided to interfere with the operation of the robot.





Filter functions

- Of course we can write the filter functions in EV3-G, but use Block is faster.
- Filter functions Prototype：

```
if ( Filter Sth Set<= Str ) || ( ( DirHighSet >= Dir ) && ( Dir >= DirLowSet ) ){
    FilterDir=Dir;
}else{
    FilterDir=0;
}
```

Offset Functions

- In Sensor Config mode, we provide 5 channel offset config.
- Mainly because of different IR Seeker quality, So we provide offset that you can adjust the sensor.
- Strength is the maximum value of channel 1~5, so offset not set up properly will effect the strength output.

Original

Channel	Channel Strength
1	76
2	80
3	0
4	0
5	0

Offset Cfg

Channel	Offset Config
1	9
2	5
3	0
4	0
5	0

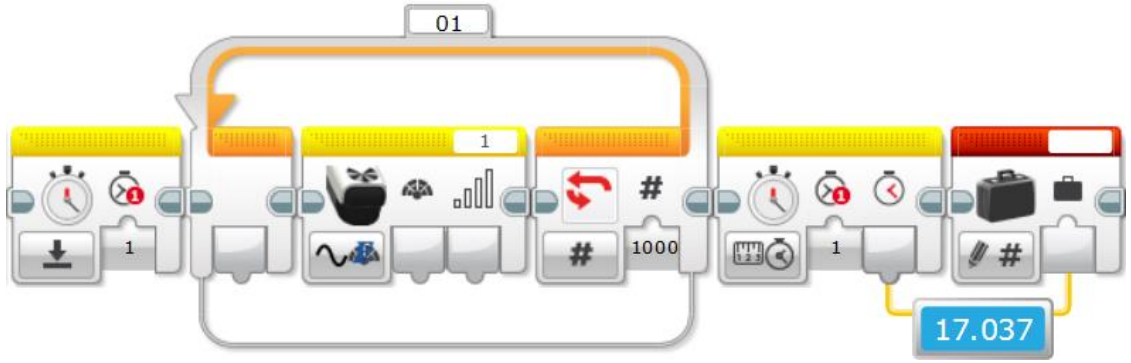
Result

Channel	Channel Strength
1	85
2	85
3	0
4	0
5	0

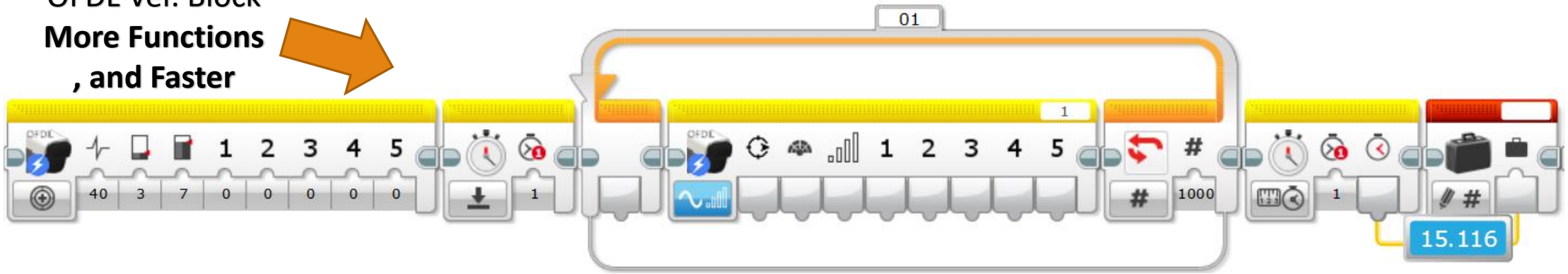
Performance

- Does adding such multifunctionality cause the program to run slowly ?
- No， This Block has been optimized(I2C) , Even faster than the original, helping to improve robot accuracy.

Original Block
notice: This mode **only provide Dir and Sth**



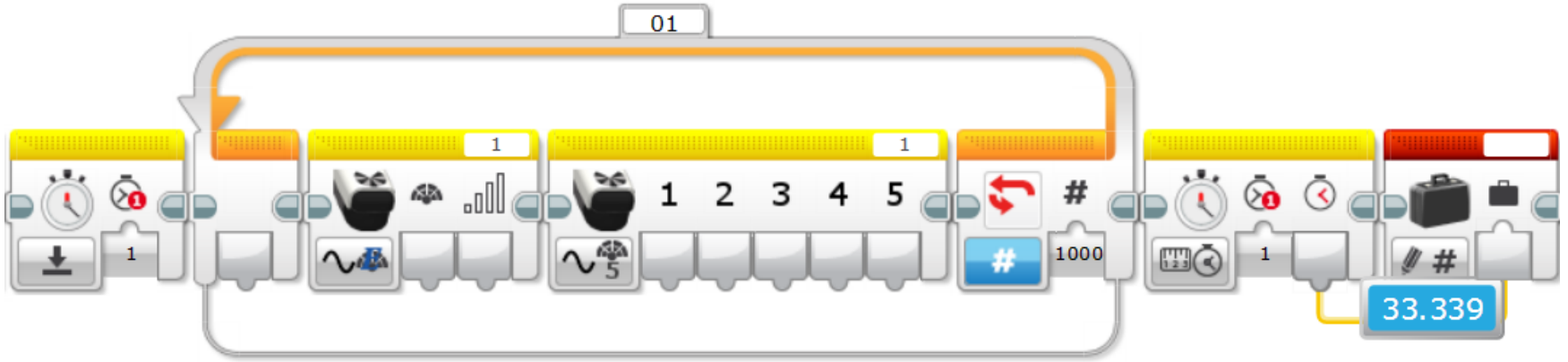
OFDL Ver. Block
More Functions , and Faster



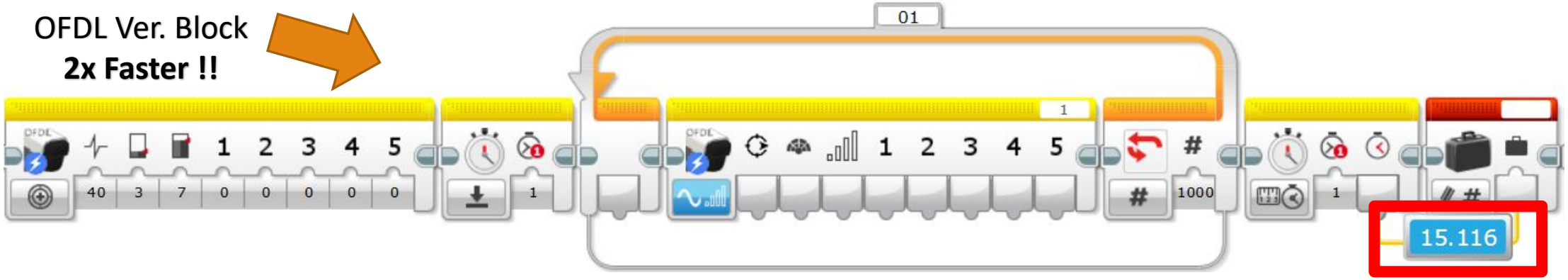
Performance

- Especially original Block, read out all values is very slow。
- Our Block read out all values still faster, and we provide more functions.

Original Block



OFDL Ver. Block
2x Faster !!



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Thanks For Watching

https://github.com/a10036gt/EV3 AdvHTIRSeekerV2 Block