Easy-Shot Distance Measure for Lawn Bowling:

Build Instructions:

Step 1 – Print and Prepare the Parts

* 3D Print the Components: Print the following files (1 of each unless noted):
  + Base
  + Battery lid
  + Button holder
  + Display mount
  + Dual round display back
  + Laser cap
  + Handle
  + Lid
  + 4 × Legs
  + Tip: PLA is easiest for beginners, PETG is stronger but trickier to print.
* Make the Pole (optional advanced step):
  + The pole is a wooden tube to hide the wires.
  + Glue two pieces of oak (or another hardwood) together after routing a groove down each piece.
  + Once dry, turn it on a lathe (or sand it round) so it’s smooth.

Step 2 – Open the Battery

* Use a small screwdriver to remove the screws on the Talentcell battery pack.
* Gently pull apart the shell (there’s some sticky tape inside — go slowly).
* Take out the battery and the small circuit board inside.
* Be careful with the wires — don’t yank them.

Step 3 – Build the Base

* Cut the battery wires so you can extend them.
* Place the battery into the 3D-printed base and cover it with the battery lid.
* Secure it with glue.
* Make sure the wires pass through the wire hole.
* Mount the ESP32 board and other electronics inside the base using hot glue or screws.
* Remove the original power switch from the battery pack — you’ll move this switch to the dual display holder later so it’s easier to use.

Step 4 – Connect the Displays

* Solder wires from the ESP32 to the two round LCD displays.
* You can use the included wires or add your own extension wires.
* Leave some slack so you don’t have tight connections.
* (Optional) Add quick connectors so you can unplug the displays if you need to take the device apart later.
* Note: Everything except the battery circuit runs on 5V DC.

Step 5 – Build the Handle

* Insert the push button into the 3D-printed handle.
* Solder wires from the button back to the ESP32.
* Insert the brass threaded inserts into the 3D-printed holes (a soldering iron works well to heat and press them in).
* This lets you screw the parts together without cracking the plastic.

Step 6 – Upload the Code

* Install the Arduino IDE on your computer.
* Connect the ESP32 board with a USB cable.
* Open the Easy-Shot code (from the GitHub page).
* Click Upload to send the program to the board.

Step 7 – Align the Laser

* Insert the green line laser module into the laser cap.
* Power on the device.
* Carefully aim the laser so it lines up straight across the bowls.
* Once aligned, super glue it in place so it doesn’t move.
* Every laser is a little different — take your time here. This is the trickiest part of the whole build!