THE MISSING MECHANISM

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Sant'Antonino di Susa (TO), Piedmont, Italy

RoboCup Junior

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THE TEAM

INGLESI Claire Sophie — **Captain and Spike programmer**
FERRANDO Maia — **EV3 designer and programmer**
GUGLIELMO Asia — **School designer and programmer**
TROFIN Eliza — **Arduino and EV3 designer and programmer**
VELO Ylenia — **Laptop and Spike builder and programmer**

CHARACTERS
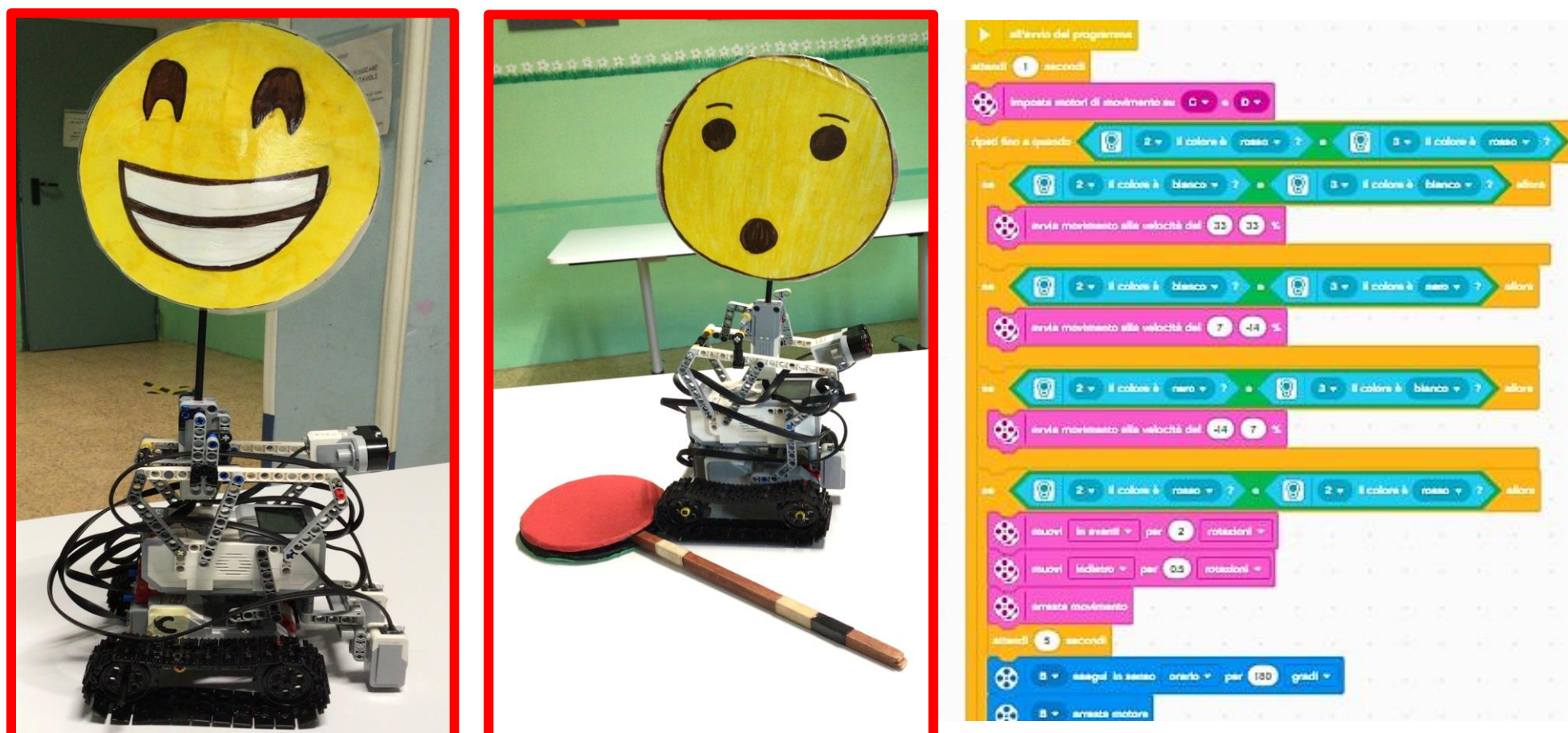
The **main character** is a **LEGO® EV3 robot** equipped with **2 large servomotors**, **1 medium motor** and **2 color sensors** that allows it to **follow a black line** and then to detect a **red tile** (*technical feature #1*), thus moving to the second part of its program to perform a **robot - robot interaction** with the touch sensors of the giant laptop (*technical feature #2*). The **friend character** is a **LEGO® EV3 robot** equipped with **2 large servomotors**, **1 medium motor, 1 color sensor** and **1 ultrasonic sensors**, that allows the robot to turn when it detects the paddle used by Maia and to be guided through the stage (*technical feature #3*) until it stops on a black tile thanks to its color sensor. The ultrasonic sensor is also used by this robot to detect the opening of the roller blind of the school and start running its program.
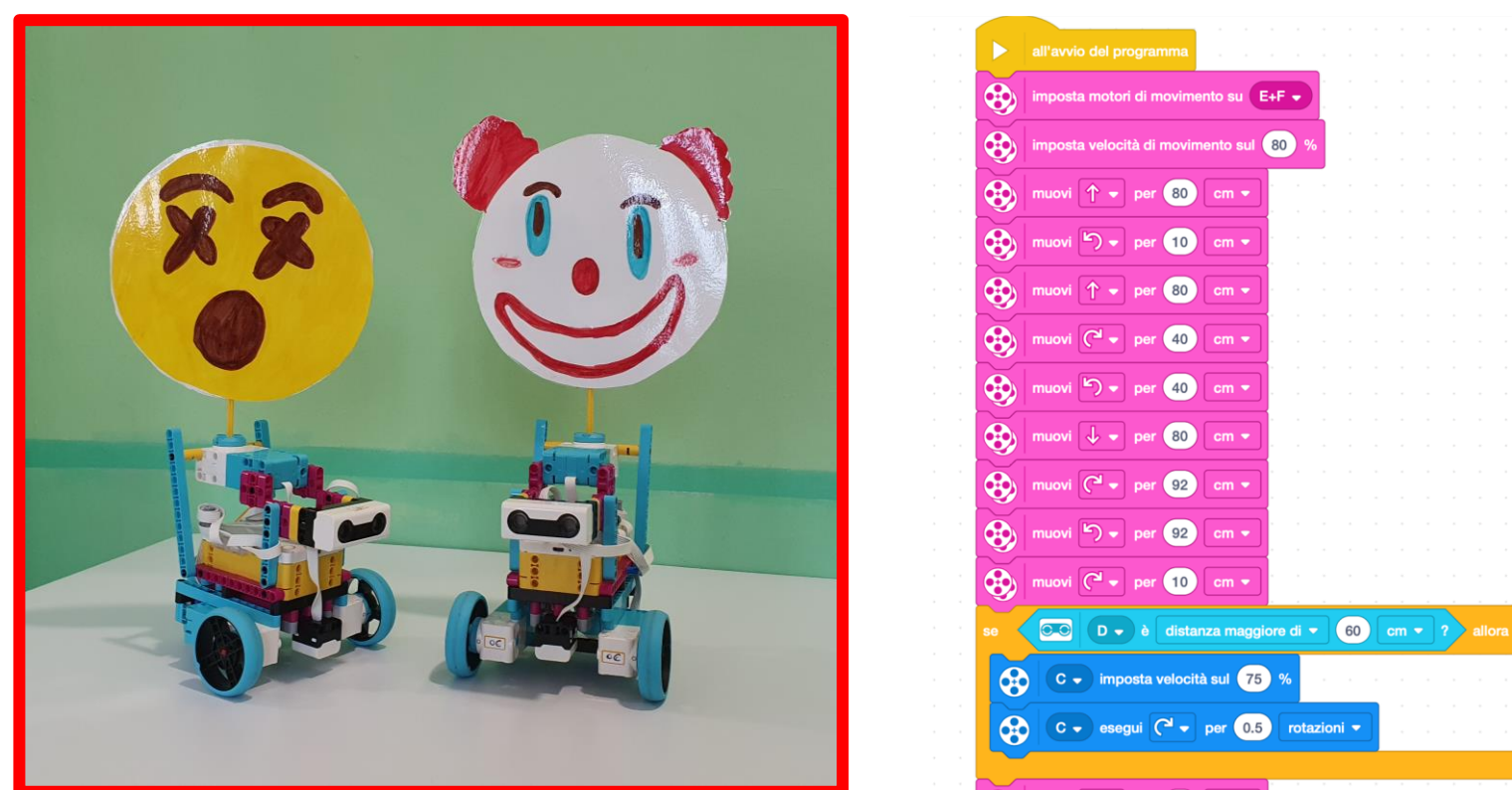
The two bullies are **LEGO® Spike Prime robots** both equipped with **2 large servomotors**, **1 medium motor** and **1 ultrasonic sensor**. After they are activated by a simultaneous **bluetooth communication** via computer, the two robots start moving and **their ultrasonic sensors detect each other** by turning face to face (*technical feature #4*), thus starting a second part of their program.
The turning emojis built on all robots help the audience to understand the characters' feelings during the story.

ABSTRACT

A young girl spends a lot of time on **social media** and becomes a **victim of cyberbullying**: she receives lots of **mean and threatening comments** and she is frightened, she suffers and her self-esteem is devastated. Despite that, she gathers the courage to **ask her best friend for help**, who gives her all the support she needs and help her to get out of this awful situation. In the end she realizes that **true friendship is not online, but in real life**. We decided to address this issue because, unfortunately, there are **many kids victims of cyberbullying** and, with our performance, we want to send the important message that, even if someone is a victim of cyberbullies, it is important to be brave and ask a friend or an adult for help. Moreover, in our performance the main character's friend comes out from our school in Sant'Antonino (Italy), because we want to underline the **importance of school and education in preventing and countering bullying and cyberbullying**.

PERFORMANCE OVERVIEW

The **two main characters** (the girl and her friend) are made with **LEGO® Mindstorms EV3 robot sets**, while **the bullies** are built with **LEGO® Spike Prime robot sets**. We also created three scene elements, entirely built by us from scratch and using many recycled materials: a **laptop** and **our school**, both animated by **LEGO® Mindstorms EV3 robot sets**, and a **smartphone** controlled by **Arduino Uno**.

SCENES
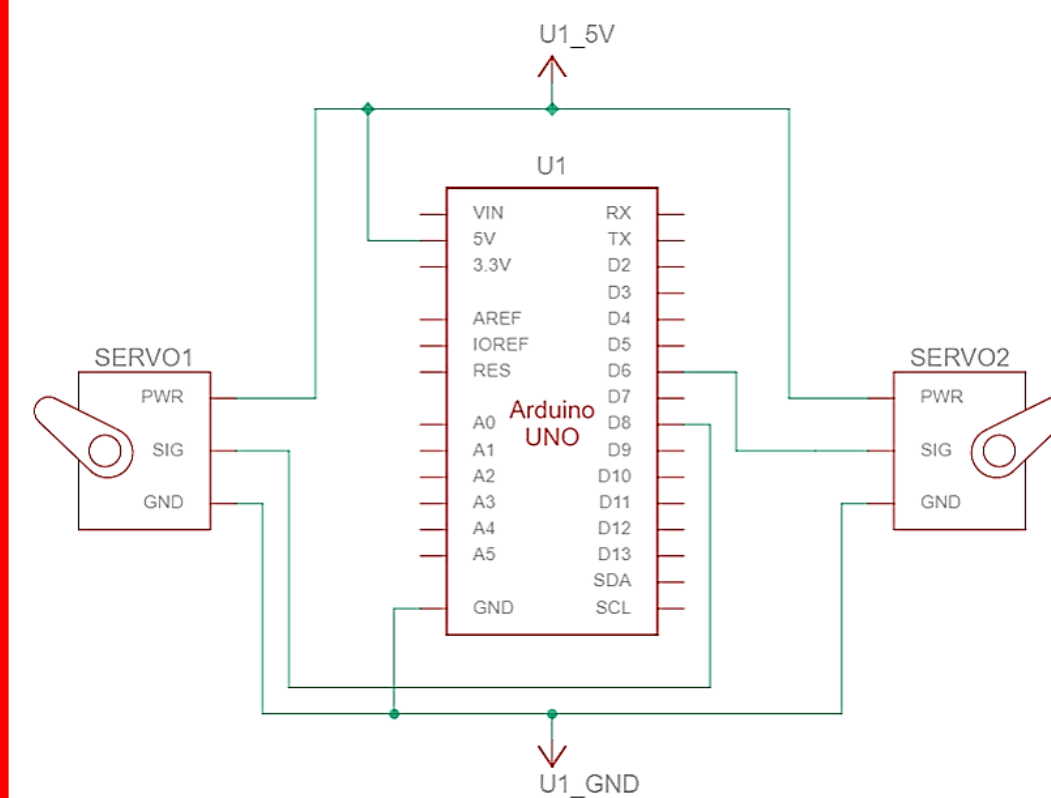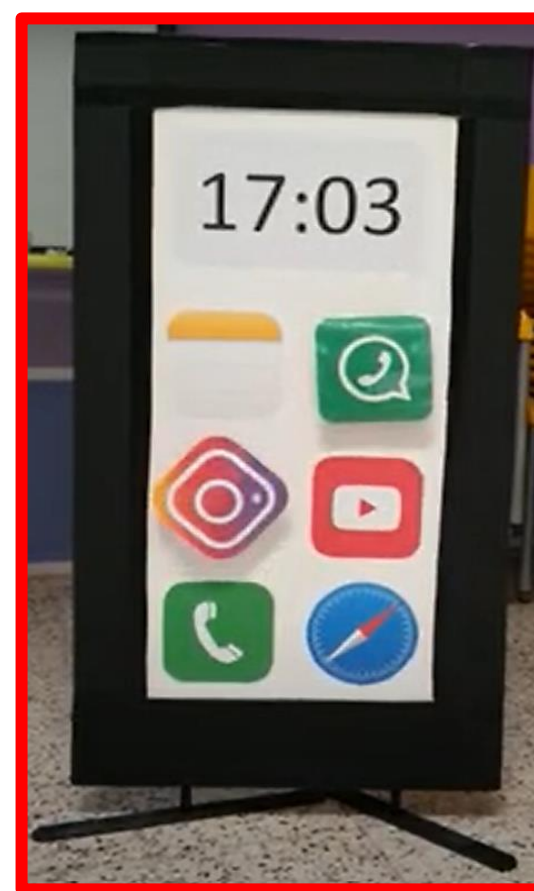
At the beginning of the performance, the **icons** on the **smartphone** start rotating thank to **2 Makeblock 9g microservo motors** driven by an **Arduino Uno board**, representing the main character use of social media.
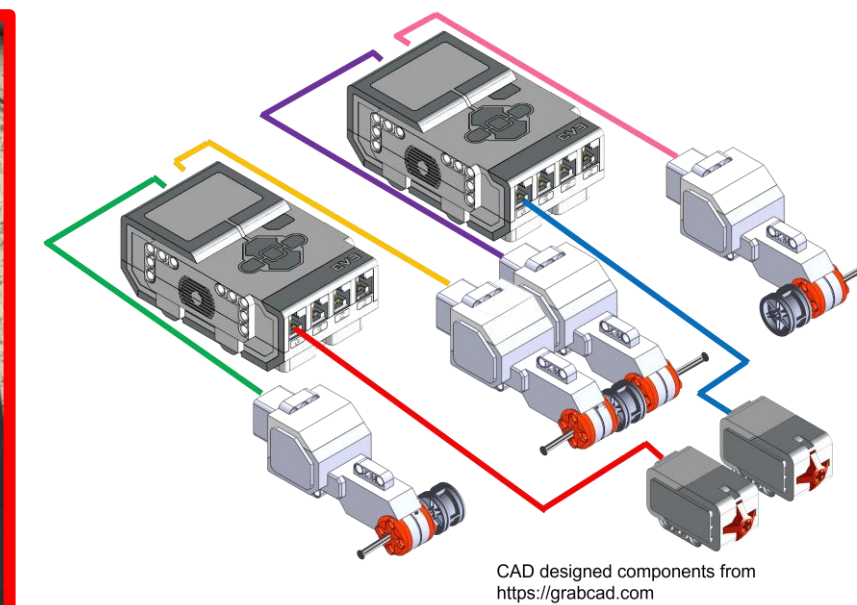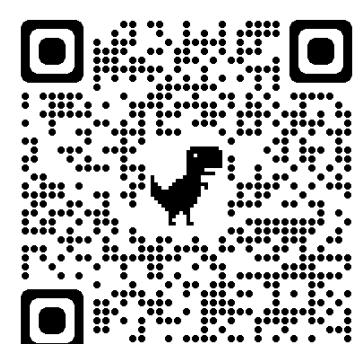

The **laptop cover** is then lifted thank to a **robot – robot interaction** between the main character and **2 touch sensors**, thus showing all the insults and bad comments.
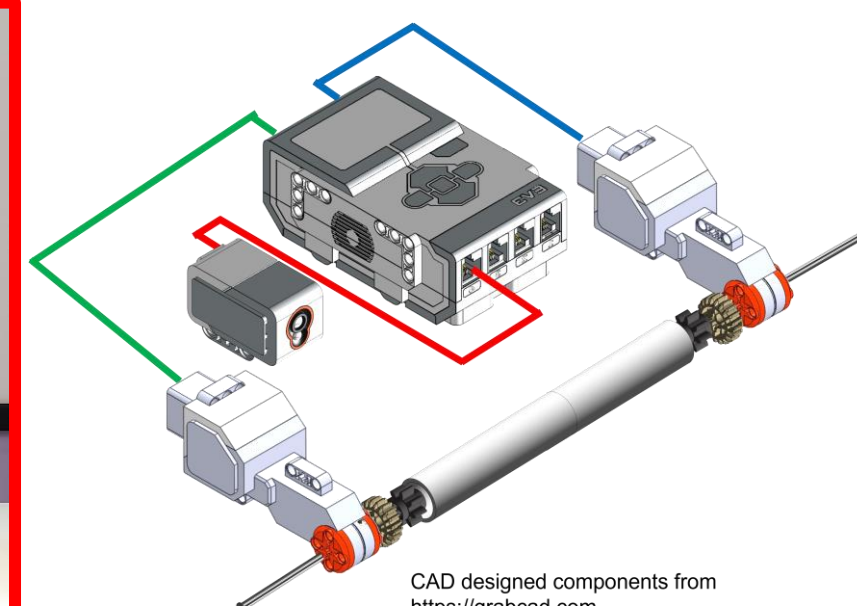
Luckily, the **school** roller blind opens thanks to a **color sensor** detecting a red paddle, and the friend robot can start its program and go to the rescue of the main character.

CAD designed components from https://grabcad.com

Check out our materials, programs, and work in progress pictures and videos following this link or scanning the QR code!

https://drive.google.com/drive/u/0/folders/1t3Bc_V-o5r3inkW0Wb3ehppRmTuGSawg