

Tec SLP students unite humans and robots in bomb-defusing game



Students in the sixth semester of the Mechatronics Engineering program have designed an adaptation of a video game whose aim is to defuse bombs.

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INSTITUTIONAL COMMUNICATIONS

Through a collaborative robot, students in the sixth semester of the **Mechatronics Engineering program** at [Tec de Monterrey's San Luis Potosí campus](#) have designed an adaptation of a **video game whose aim is to defuse bombs.**

The original game is called *"Keep Talking and Nobody Explodes"* and the student project created by **students Mauricio Guerrero, Vanessa Franco, Paola Torres, and Alberto Flores** is called *"Mission Impossible: The Bomb."*

This version of this project involves humans and robots working hand in hand to deactivate explosive devices. The robot interacts with the bomb but **doesn't know how to manipulate it**, while **the person** can't see it but **has a manual explaining step-by-step how to defuse it.**

Vannesa Franco, a student at the [School of Engineering & Sciences](#), said that **the idea arose from an urge to do “something different”** and that the biggest challenge was creating the system for **establishing communication between the robot and the camera** that provides it with information.

Both this project and that of **a traditional bingo game and Connect 4** were developed and presented by students from the Manufacturing System Automation block to the [training partner RTI Automation](#).

Different projects from the Automation block were presented to the training partner. Photos: Institutional Communications



Robots in the entertainment industry

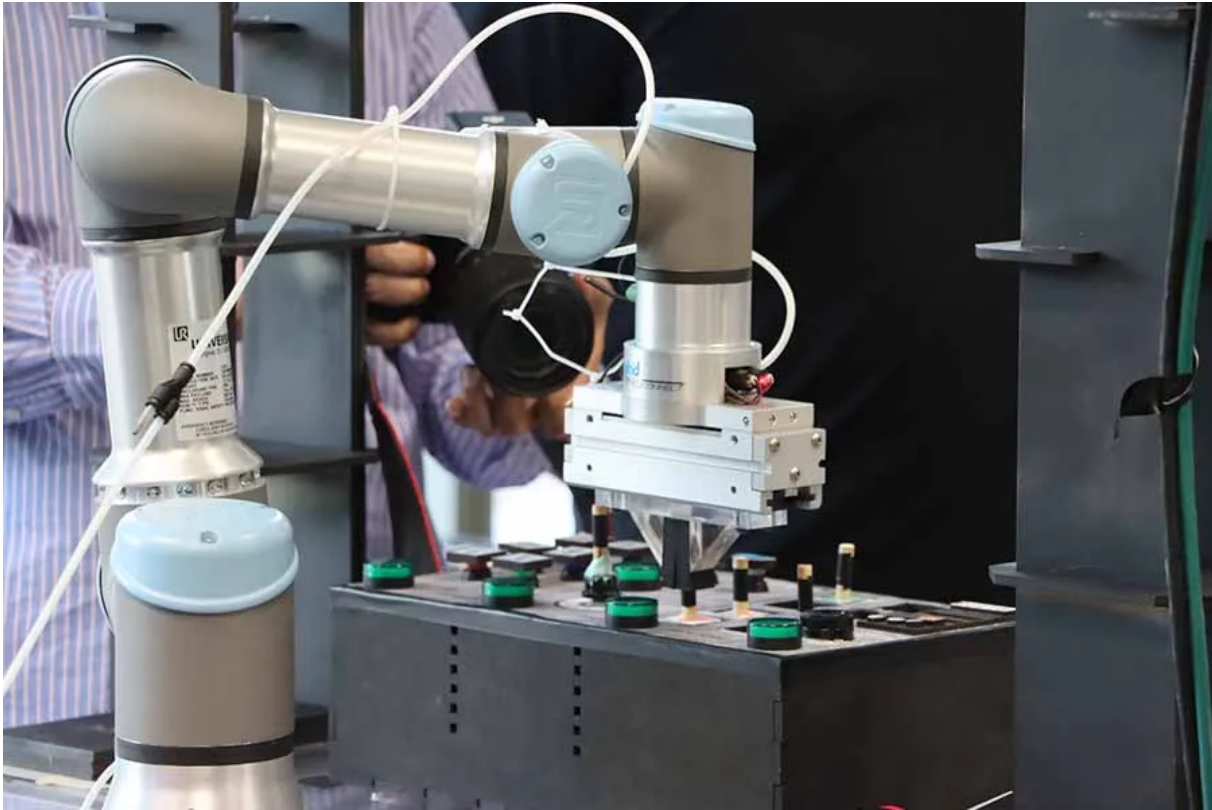
Gustavo Flores, a professor at the **Mechatronics Department** of the School of Engineering and Sciences, pointed out that **18 students participated in the challenge**, who developed **a total of four different projects** over **ten weeks**.

The teacher explained that the training partner needed a game to be created that would place **robotics and automation at the service of the entire population**, while demonstrating that robots can also be immersed **in the entertainment industry**.

Their game *“Mission Impossible: The Bomb”* stemmed from a love for the original version and the thought of doing *“something that no one had done and that would challenge us”* such as **developing and making both the bomb and its buttons functional**, according to Vannesa Franco.

The Engineering student added that **the game requires assertive communication**, and the use of a collaborative robot enhances **human-machine cooperation for solving problems accurately** and even **through computer vision**.

In the game, the human *“dictates”* **instructions to the robot in order to defuse a series of bombs**, each with modules **whose solution is procedurally generated with each round**, so **players must communicate to defuse them before the time runs out or they reach the failed attempt limit**.



In the Mission Impossible game, humans and robots team up to defuse bombs. Photo: Institutional Communications.

Lessons that come alive

The game, according to Vannesa Franco, can be solved in **five minutes** and people of all ages can participate **as it has two levels: easy and demanding**. In the first, you practically only need to follow instructions, while **the second deals with puzzles and/or equations that you must solve**.

"It's a good opportunity to see everything a Mechatronics (engineer) does, i.e., programming, mechanical design, and electrical design. "They are very, very complete projects," Franco added.

Professor Gustavo Flores insisted that **these types of challenges "save" companies up to 6 months of training**, since students develop **competencies**

and skills that are useful for the industry.

“It’s a good opportunity to see everything a Mechatronics engineer does, from programming to design.” - Vanessa Franco

“The guys are most thrilled with this work, because at the end they see that their ten-week effort at the training unit converges into a game they play and so they see that everything they learned comes alive,” he said.



The Mission Impossible creative team presenting the project to the training partner. Photo: Institutional Communications

Useful challenges for industry

For his part, **Sergio Esquivel, General Director of RTI Automation**, a company dedicated to **designing and developing comprehensive solutions for the industry** through implementing specialized control processes **and devices for the automation of production lines**, said that **not only the students benefit. For companies, it represents the opportunity to implement refreshing ideas**, which *“has worked very well for us in promoting our company.”*

“It’s important that students face problems that may occur in the industry. We put a lot of emphasis on those issues,” he added.

Vanessa Franco appreciated **the opportunity to work with Programmable Logic Controllers, collaborative robots, and industrial cameras**, *“which aren’t frequently used in classrooms, but which provide skills for solving problems as professional engineers,”* she concluded.

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