

Murata Cheerleader Robots in Minnesota - “Truly a One of a Kind Experience”



Murata Manufacturing Co., Ltd., a global leader in advanced electronic components, brought their Murata Cheerleader Robots, to Poplar Bridge Elementary School in Bloomington, Minnesota to perform for the first time in a school in the U.S. The Murata Cheerleader Robots performed a synchronized dance for 150 spellbound 4th- and 5th-grade students and their teachers. The robots sit atop balls and use the latest sensing, communication,

and group control technologies to remain balanced as they quickly move along. Roberto Cantu, the school's principal, called the event, “truly a one of a kind experience that fully engaged students visually and through question and answers.”



“We developed the Murata Cheerleaders to demonstrate our electronics technologies,” says Koichi Yoshikawa, Senior Manager of Corporate Communications, who played a key role in developing the Murata Cheerleaders (and who set up the demonstration). “Our hope is that the Murata Cheerleaders will inspire new discoveries by young innovators and put smiles on the faces of people worldwide.”



Well, the Murata Cheerleader Robots sure put smiles on the faces of students at Poplar Bridge! Koichi Yoshikawa and Yoshihiko Takeda of Murata, Japan and Renee Piersa of Science from Scientists (SfS) enthusiastically narrated the event. (SfS is a non-profit Science, Technology, Engineering, and Mathematics education enrichment organization. Murata is currently sponsoring SfS’ interactive science stage show at Epcot® in Walt Disney World Resort®). After a brief video highlighting the persistent efforts of Murata’s team of 21

engineers and scientists, who worked for over two years and overcame several challenges to create and synchronize the robots, Yoshi narrated their dance.



The Murata Cheerleaders’ cheeks lit up “to show their excitement at ‘getting on the ball.’” Their pom-poms changed colors as they performed the “wave” and flawlessly executed geometric dance patterns and follow-the-leader maneuvers. The intent and captivated looks on the students’ faces say it all.

Using a series of educational slides, Renee and Yoshi then explained the technology inside the Murata Cheerleader Robots and where to find those technologies in our everyday lives. The robots can move swiftly in any direction and remain upright using three advanced gyro sensors to detect tilt angles. Similar gyro sensors are commonly used in digital cameras, car navigation systems, and electronic stability control systems that prevent cars from skidding.



The Murata Cheerleader Robots are capable of high-precision routines thanks to real-time position measurement technology. Each robot is equipped with four infrared sensors and five ultrasonic microphones to detect surrounding objects, even in the dark. Based on the differing speeds of sound and light waves, this system is capable of determining the relative positions of the robots within their 16-foot by 16-foot dance floor.

In collaboration with researchers from Matsuno Lab at Kyoto University, Murata also developed an advanced group control technology that allows up to 10 robots to perform in synchronization without colliding. Each robot's location is communicated via a wireless communication network and controlled through a specially developed program. This same technology may someday be used to create safer and more efficient vehicle and transportation systems.



While the technologies, dedication, innovation, and hard work of the Murata team and the enthusiasm of the Murata representatives were in themselves inspiring, even more so were the questions from students and the attentive and interactive way in which Yoshi and Koichi answered them - moving through the audience to show and pass around components for students to see and touch.



“Do the Cheerleaders have names? *Nicknames, yes.* How can the pom-poms have different colors? *With tri-color LED lights.* How do the Cheerleaders make the ball move? *With three wheels beneath their skirts.* What was the most fun about creating them? *Making them cute.* What was the most difficult part about creating them? *Synchronizing their movements.*”

Why are they red? *They are wearing Murata’s corporate color - red.* What is inside their heads? *They have microphones in their heads that catch signals, which are covered by spongy material that is made to look like hair.* What powers them? *Lithium batteries.* How long do the batteries last? *One hour.* Will you ever make pet robots? *We’ll consider that.* What is your next project? *We are still deciding on a new project.* Did something in nature inspire you in creating the robots? *Yes, the way ants carry heavy loads and follow each other exactly on an ant trail.* Do they need their arms for balance? *No, but the movement of their arms changes their balance and the gyro sensors must respond to keep them upright.* How many Cheerleaders are there; are these your only prototypes? *We have 36.*” The question and answer session went on for 20 minutes and could have continued longer were it not for the next scheduled Murata Cheerleader Robot performance at Boston Scientific.





One of the questions asked by a girl weighed heavily on some adult minds as we watched the robots dance, “Why cheerleaders?” Sometimes the word, “cheerleader,” evokes mixed emotions in Americans, as we grapple with our culture’s media representation of women. Yoshi’s answer, “We were so enthused and inspired by the encouragement we received from our customers, coworkers, and partners to innovate and succeed that we decided to create Cheerleaders to encourage, inspire, and bring cheer to them and others,” was a moving reminder that all of us as humans share an inner cheerleader, who can stay centered and balanced wherever we go, openly give and receive communication,

and bring gratitude, enthusiasm and encouragement to any team challenge.

“I was happy, the class with yesterday’s Murata cheerleaders was wonderful. I realized that the curiosity of children is the same in America and Japan.”

- Koichi Yoshikawa, Senior Manager, Corporate Communications, Murata

The students cheered when they learned that Yoshi and Koichi were leaving each of them with a squishy foam mini Murata Cheerleader Robot, and the students said thank-you in Japanese as a group.

But the pleasure truly was all ours, Yoshi and Koichi. Thank you for bringing the Murata Cheerleader Robots to Minnesota! GO MURATA!



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