Find Out Who Won Janelia's Robot Race [edit]

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Engineers hovered along a racetrack, watching as their robots, no bigger than toasters, zipped down the runway. Spectators craned their necks to witness which team would claim victory. But not all was smooth on the way to the finish line. Stalled in the track sat a robot, surrounded by a team of troubleshooting engineers. But the race was on, and time for quick-fixes had run out.

In this battle of programming prowess, competitors double- and triple-checked code and hardware, all in the name of winning Janelia's first robot race, held May 26. Five teams made up of members of Janelia's Women's Coding Circle and the Mechatronics and Robotics Club competed in the programming battle. Their mission: to be the first group to get their robot through an obstacle course and across the finish line.

The race was the culmination of weeks of preparation to construct, program, and test their robots for the main event.

The teams had to overcome three main challenges:

1. **A sensor challenge**: Using a PixyCam, a smart vision sensor taught to track objects of interest and the core system of the robot, teams had to ensure their robot stayed on course. To do this, teams programmed their robot cameras to identify the colored stripes around the track and stay within the boundaries.
2. **A motor challenge**: To win the race, the teams needed to minimize the movement of the robot's motor. The more steadily the robot could complete its course – that is, the less is wiggled as it moved – the more time was saved in the race.
3. **An algorithmic challenge**: To get their robot from point A (the starting line) to point B (the finish line), teams had to create an algorithm to inform the robot's steering strategy.

In a successful robot, all three components have to work. If one fails, everything fails.

Problems kept participants on their toes. One team was unable to race because of an irreversible bug in their code, and no amount of troubleshooting or code reversion was able to save them. The team named Three Flies and A Guy was forced to rebuild their robot when its motor burned out the night before the race. All of the teams faced sensor issues when shadows on the racetrack skewed the hue of the track markers, forcing them to reprogram the PixyCam on-site to detect the different color ranges. "There's always constant troubleshooting, that's just the nature of this," reflected Huai-Ti Lin, a race organizer and president of the Mechatronics Club.

At the finish line, the underdogs that had been troubleshooting their second robot on the race sidelines prevailed. Three Flies and a Guy—Teri Ngo, Jinyang Liu, Chen Wang, and Gabriella Sterne—took home the award for the fastest lap. Their robot finished the course in just over 30 seconds.

1. Teams troubleshoot their robots prior to the start of the race on the custom-printed track.

2. Race organizers (from left to right) Cameron Loper, Bill Mowrey, Huai-Ti Lin (president of the Mechatronics and Robotics Club), and Charlotte Weaver (president and founder of the Women's Coding Circle).

3. Robot Race participants.

4. The first round of races draws an audience from across Janelia

Images courtesy of Matt Staley

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