

St. Charles Robotics Team (Cardinalbots) Hears from Industry Leaders

By team moderator and faculty member, Joe Moyer

Thanks to the Members of Drive Capital team, as well as alumni Timothy Sullivan and Bradley Beasecker, the Saint Charles Robotics Team, the CardinalBots, were able to attend The Dance, a series of “Ted Talks” and demonstrations led by some of the leading experts in the robotics and automation industries. The event was held on October 15, 2019 at the Columbus Museum of Art.

To Mr. Timothy Sullivan, who first contacted us concerning our participation in this event, thank you for considering the CardinalBots capable of participating in such a prestigious event and getting the process started. To Mr. Bradley Beasecker, who acted as a liaison between Saint Charles and Drive Capital, thank you for making the necessary arrangements for the CardinalBots’ participation. To the members of Drive Capital team, who created and sponsored this event, thank you for admission to an event that will have effects on the students for years to come.

Within the Drive Capital team, we would like to give special thanks to Nils Root and Nick Solaro for their willingness to share their time and talents with a group of driven, eager, and curious teenage students. The response from the students about the event was overwhelmingly positive. As a group, the students left with a clearer understanding of the breadth and depth of the computer, automation, and robotics industries as they stand today, as well as a curiosity about the near and distant future.

As part of their participation, the students were asked to document their experiences. They responded with pages of positive comments. Here is a brief summary of those.

Doctor David Autor, a professor and labor economist from the Massachusetts Institute of Technology (MIT) struck home with his discussion on technology shrinking the need for a manual work force. Before Dr. Autor’s talk, many of the students were worried about the job markets of the future. Adam Bonini commented “Before the event I didn’t know the full extent of what robots did for the workplace. I knew they helped speed up processes in manufacturing, but I learned that there was so much more to Robotics than just that.” Although technology does replace needs for manual labor in certain areas, it opens entirely new employment opportunities in other areas. The students were able to internalize

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his example of how automated teller machines initially caused a decrease in bank employees, but led to an increase in customer service opportunities within the industry. After his talk, they were excited to know that there would be increased demand for those with technical skills; something that the robotics team is learning and incorporating.

The second speaker, Doctor Ayanna Howard of Georgia Tech University, impressed the students with her discussion on imprinting technology with emotions. The students gained an interest and understanding that we, as humans, tend to apply emotional responses to technological entities: referring to technology as him or her, feeling sadness or pity when a component is powered off, or resisting putting robots in dangerous situations as they might be harmed. None of the students were aware of this imprinting, but all admitted to being guilty of it. Further, a few of the students recognized an ongoing research opportunity into this phenomenon in the present and near future.

Each of the Lightning Keynote speakers left a significant impression on at least one of our ten students, the highlights of which are summarized below. The students have a variety of interests and each found multiple speakers who attracted their attention. Doctor Marcie BockBrader of The Ohio State University impressed the students with the discussion and demonstration of pairing robotics and physiology to allow individuals with limited movements of one or more of his/her limbs to move these limbs using specific thought patterns. However, most of the students were queasy about having computer chips lodged in their brains. Nicholas Thompson further comments on that by saying “It’s surprising, exciting, and maybe a little scary to think that at some point I could be walking around with a chip in my brain.”

Jonathan Hurst, an engineer at Agility Robotics, is making robots that can move like humans and are able to “go where humans can go.” He brought out their robot called Digitv1, a bipedal robot that bears a remarkable resemblance to many of its movie star brethren. The company is currently making these robots specifically for delivery purposes. Another goal will be for the robot to complete tasks that are dangerous for a human to do. According to Coradino Colasurd “Robotics has bettered the workforce, not damaged it.”

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Many of the students were also intrigued by the talk on computer voice recognitions given by Lingjia Tang of Clinc. Most of the students were under the impression that the voice recognition problem has been mostly solved. Dean Vitale, after listening to the talk, says “I had never heard of Clinc before, but knowing all the issues I have using SIRI, it was amazing to see the capabilities of the conversational AI.” The talk opened their eyes to the many tasks still unsolved in this area.

Dan Manges of Root Insurance caused a stir among the students for several reasons. Mr. Manges described, at a high level, how Root Insurance uses the client's cell phone to collect mountains of data on the client. Root analyzes this information to set insurance rates for its clients. The students were unaware of how much personal information could be collected by just monitoring the location of his cell phone. On their walk home, several of the students engaged in a conversation concerning data mining, computer ethics, and privacy concerns. It is a topic the students could spend an entire year investigating.

The event also showcased several vendors with their products. These products were in various stages of release to the public. Each student talked individually or in groups to each of these vendors. A few of the vendors were impressed with the technical knowledge of the students relating to robotics. Some specific examples are below.

Nick Thompson, class of 2020, had the pleasure of speaking with Greg Schwartz, the COO of StockX, a massive e-commerce startup in the streetwear and street fashion industry. Nick was able to discuss many of the technologies employed in the StockX product as our robotics team has built robots of similar size, scale, and functionality. The StockX product scans shelves that have QR codes on them. When it locates the corresponding code, the robot retrieves the appropriate box and places it on the correct shelf. One of the key discussions between Mr. Schwartz and Nick revolved around what would need to be done to the high school product to make it a saleable technology product.

Another product that drew significant attention was demonstrated by Brian Coil from Fast Radius, a manufacturing company that focuses exclusively on 3D

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printing with varying density polyurethane. The product allows Fast Radius to control the “squishiness” of an object by adding or removing space in the lattice structure of the printed object. This allows them to create some pretty unique materials, such as a material for a football helmet that had a hard exterior, but a soft and squishy interior that can absorb the shock of an impact.

One of the tasks required of the students was to provide lasting impressions from the events. According to Jacob Kranz, “I learned many things that I will utilize later in my career, but of most significance is the economics behind the progression of robots in our modern society.” Coradino Colasurd added, “My view of automation has changed drastically. Before I felt a slight disdain toward automation, but after this event, I embrace it. This event has been very impactful, and I am very grateful for the opportunity.” Adam Bonini stated, “When I went into the event, I wasn’t sure I actually wanted to go into robotics for a career. Now I feel like it may be something I want to do for a living.” Harry Nguyen stated, “I want to go into a technology industry. Now that I know that many companies are looking for three-dimensional workers, those who doesn’t just know how to program for instance, I have been thinking about how I should develop into someone that would be valuable to a company.” Finally, Nicholas Thompson claims, “Overall, this event gave me a special look at how the world’s technology is evolving every single day. It’s surprising, exciting, and maybe a little scary to think that at some point I could be walking around with a chip in my brain or be a VR tourist. But I firmly believe that this event does well in allowing our robotics team to grasp the importance of the work we do.”

In summary, The Dance has had significant impact on the ten young men of Saint Charles who had the privilege of attending. The students were not prepared for the level of impact that this event could have on their lives. Each student significantly changed his views on the past, present, and future roles and opportunities within the technology world. They also received an insightful look at how humans and technology interact currently and how this relationship may develop in the near future. Possibly of most significance, they received a wakeup call about the importance of creativity, ethics, presentation skills, and public relations in the technology industry. Only time will tell how they apply these lessons.

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