I chose to attend to the guest lecture on Open-Source Educational Haptic Devices because it is directly related to education applications. In my point of view, it is necessary to develop low-budget educational tools to get more students interested in STEM education and careers. I believe that these tools are needed to expose Engineering concepts to students who have never heard about basic Physics concepts.

The first kit PhD Candidate Orta Martinez talked about was a handle that showed to students how changing the spring constant changed the stiffness of a moving handle. This application was striking for me because when I was an undergraduate student at USC getting my Bachelor’s degree in Electrical Engineering I had a difficult time trying to understand Mechanics and Thermodynamics. Unfortunately, the laboratories and homework assignments that were designed for students to fully understand the foundational concepts were not helpful enough for me. When I took the midterms, I always struggled with conceptual questions, such as “If we increased the weight of the ball, how long would it take to fall?” Thus, I think that this application of the Open-Source Haptic Kit would even be helpful for college students who do not have a solid background on Physics, like me.

Another application for this toolkit can be to teach students about rotational dynamics and circular-motion problems. For rotational dynamics, torque is a rotational force that when applied to calculate angular acceleration. These two concepts are extremely abstract; thus, it would be great if another haptic device were designed with a rotational motion. This device can different configurations, such as adjusting the length from the pivot point, adding or subtracting weight to the rotational platform, and modifying the friction coefficient on the pivot point with the rotational platform to adjust the stiffness of the motion. As a result, student would be able to understand conceptually and, also, with visual and haptic senses.

I believe that our haptic sensorial system can be used to benefit blind students. A teaching system can be developed and implemented to show students how to add, subtract, multiply, and divide without needing their vision. A haptic device can be connected to their ten fingers and a first round of small and controlled electrical voltages can be sent to the students as instructions so they can know if the following operation is going to be an addition, subtracting, multiplication, or division. Then, the instructor can assign a value from 1 to 10 to every single one of the students’ fingers. Finally, the visually impaired student would be able to perform calculations and, consequently, giving the opportunity to students to learn mathematics regardless of their disabilities.

The presenter’s presentational skills were extraordinary. I was able to fully understand everything that she talked about in her presentation. She explained all the theoretical concepts with basic mathematics and broke down every single concept, so that students who were not familiar with the topic were able to follow her presentation. Furthermore, she gave a significant amount of examples, showed videos, and did in class demonstration.

In my perspective, I think this presentation was intellectually interesting because I am considering getting a Doctoral degree which would allow me to become a college professor. As a result, education would be part of my career. Consequently, developing new and enhancing traditional educational methods would be a priority for me because I have struggled throughout my undergraduate and graduate education due to the lack of preparation and exposure on my early education stages. Thus, I believe these applications with Open-Source Haptic Devices would impact positively students’ educational path and, once deciding their college major, their career.