

INDEPENDENT PROJECT

Senior Honors Program is a self-driven course for seniors at Albany Academy where a student learns about something not offered as a class at the school. The student uses their research to make a product for which they give an end of year presentation. Only a select group of applicants can participate in this course. My project was to make a prototype of a mechanically assisted knee device. I read multiple research papers about the kinematics of the leg while walking (the Army Research Lab paper on the kinematics of walking and running was the main source of information). I used Autodesk Inventor to create a model of the frame and then used MATLAB to optimize the moment/torque of the knee. I tried multiple designs where I learn how to use an electric actuator, stepper motor, and brushless motor with esc (electronic speed control).

