Submission Date	12-09-2019
Project Name	Smart Tennis Ball Machine
Student Names	Gurwarris Sohi, Sahil Sahil, and Nicolas Cristiano
Project repository	https://github.com/Warris-Sohi/SmartTennisBallMachine
SensorsEffectors choices	Infrared Sensors, Motion Sensors, Servomotors, Stepper motors
The database will store	Our databases will keep the parameters for each play-type or practice session.
The mobile device functionality will include	The app is gonna be able to set individual parameters, you can save your level of play (level of difficulty). Our just choose one of our presets for difficulty of play.
I will be collaborating with the following company/department	Startup Life
My group in the winter semester will include	Gurwarris Sohi, Sahil Sahil, and Nicolas Cristiano
50 word problem statement	Tennis ball machines today are costly and in the age where every aspect of our life can be remotely controlled from a mobile device, tennis ball machines are still stuck with buttons and 8 bit displays. Present machines are more hardcoded and way less autonomous than today's standards.
100 words of background	Tennis ball machines us a container filled with a number of balls (100 balls by present standards), and then some machine use pressure to launch the ball and at the end a pair of tires placed on either side of the ejection tube either horizontally or vertically to finally launch the ball give the needed spin for each serve type. The whole contraption at the end is moved and horizontally and vertically to aim the ball trajectory. This part only affects the elevation and direction of the ball. But a ball can have same max height and distance with different elevations, with different launch speeds.
Current product APA citation	Baldwin, D. M. (1977). Using the tennis ball serving machine. The Physics Teacher, 15(7), 432–4
Existing research IEEE paper APA citation	N/A
Brief description of planned purchases	We are planning our machine on a Raspberry Pi 3, which will controll the servo motors that laungh the ball, and also the stepper motors that will aim the ball accordingly and motion sensors to modulate ball speed.
Solution description	Our machine is based on a simpler design than the present machine, which will make the machine cost effective and when the machine is connected to the app, most of the processing is done on the mobile side. So we can have smaller processing size on the machine.

34. doi: 10.1119/1.2339719,		