Project Title: **DogeFetch**

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EECS 149/249A Project Charter, Fall 2014

**Project Goal**
This project will create an automated dog toy that keeps a dog entertained on its own by throwing balls in the opposite direction of the dog.

**Project Approach**
The project will use a state machine governed by two main sensor inputs - a sensor for detecting whether a tennis ball has been inserted and a sensor for detecting the position of the dog relative to the robot. The goal will be to detect the insertion of a ball, detect the location of the dog, and throw the ball in the opposite direction of the dog. It would remain inert until the next tennis ball insertion.

**Resources**
Our plan is to use the Arduino Uno as the processor core driving the robot’s movements. We will plan on using this to interface with a [Vernier Sensor Motion Detector](https://www.vernier.com/products/sensor-motion-detector/) that will be able to detect the movement and position of the dog. For detecting the insertion of the tennis ball, we plan on using a [Flexiforce Pressure Sensor](https://www.flexiforce.com/products/sensors/pressure-sensor/) to detect the weight of the inserted ball. The launching device will be able to rotate using a [Digital Continuous Rotation Servo](https://www.servomart.com/continuous-rotation-servo) that will rotate to the opposite direction of the dog, at which point a switch will activate the launch of the ball.

**Schedule**
- October 21: Project charter due
- October 28: Statecharts simulation model with logic and timing for controller
- November 4: Project review with GSI
- November 11: Installed software for development, basic servo control
- November 17: *Mini project update:* demonstrate motion detection and servo control
- November 25: Motion detection of dog should activate rotation to opposite direction
- December 2: Actuation in response to ball insertion, timing of actions measured
- December 9: System testing, measure false positives, assess timing effectiveness
- December 16: Demonstration video made, powerpoint prepared
- December 17: Final presentation and demo
- December 19: Project report and video turned in

**Risk and Feasibility**
The motion detector could detect ambient motion. The robot could be destroyed by dog.