**CS Senior Project Proposal**

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Project Goals

I aim to build my own “car Tamagotchi” (name in progress). Instead of taking care of a virtual pet via a handheld video game, this “pet” would be interacted with by driving. A user would plug my project into their On Board Diagnostic II (OBD-II) port on their vehicle, and be greeted by a face that can emit a range of expressions and emoticons. The pet will react to certain events in real time, like becoming unhappy when the brakes are applied hard, or when the fuel in the vehicle is running low. As the vehicle is driven for longer distances, the pet will become happier. At the end of a drive, a summary of the drive would be displayed, and what mood the pet ended on. For the first version, driving stats and the pet’s mood would be reset on every drive, but saving the stats and carrying them into the next driving session could be developed at a later date.

Project Details

This project will have both a hardware component and software component, with the focus mainly being on the latter. The hardware will consist of an Arduino Nano, a small OLED screen, and an adapter to connect the board to the vehicle. Provided with the adapter is a C++ library that reads from the OBD-II port, converting data from the CAN bus in the vehicle into a more malleable and readable format for the Arduino to interact with. This library will be the linchpin to build my code off of, as it scans PID’s used by every vehicle that uses the OBD-II standard, providing real-time data that my project will require. By reading from the various ECUs in the vehicle, my project will be able to react immediately to a wide array of events that may occur while a user is driving. By showing Tamagotchi-like expressions on the OLED display, my project will be able to react to the accelerator or brakes being applied hard, a high or low fuel level, exceedingly high coolant temps, etc. I’m aiming to learn more about the OBD-II and CAN protocols, and have a deeper understanding of the inner computations that take place in the series of ECU’s inside a vehicle. On top of that, creating and maintaining an open-source Arduino project is something I’ve wanted to accomplish ever since taking Microarchitecture with Dr. Tireman. The hope is to create a sort of “driving buddy,” a novelty item that adds to the user’s experience during their normal commute, or a road trip across the states.