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ECE 153B: Project Proposal
The Recognized Oratory Vehicle Return (ROVR) Project

We propose to build a small, 2-wheel drive cart mounting the LPC4088 developer's kit for mobile movement. Steering is handled by driving the two wheels differentially, as the cart turns on a third free-direction wheel. The board is setup with an array of three or more microphones connected via multiplexed analog input to listen for sounds in the local environment. Then, software on the board performs simple band-pass filtration to listen for human vocal ranges, allowing the cart to follow the sound of the loudest nearby voice.

To drive the wheels, we intend to use the LPC4088 developer board's GPIO pins to drive H-bridges to drive brushed DC motors, individually controlled with PWM.

Though the LPC4088 developer's board has only a single ADC, this one ADC device allows for 8-input multiplexing. Because we need only brief snippets of environmental audio to band-pass filter, we can effectively maintain responsive control by round-robin cycling all (connected) analog inputs. This would be awful for speech recognition, recording, or any more consistent processing, but should be sufficient for our application.