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My capstone project involved building a computer vision framework for a virtual reality game, My Little PITA. The game was developed for iOS and took inspiration from the hugely popular virtual pet game, Tamagotchi, in which each player receives his or her own virtual pet, which has needs such as hunger and sleepiness that need to be satisfied as if it were a real pet.

The game itself revolves around the caretaking of a pet, called a "pita". Each pita has life vitals that need to be satisfied. These life vitals include hunger, sleepiness, and happiness. In order to satisfy these life vitals, the caretaker must interact with his or her phone and environment in various ways. For instance, to feed the pita, the caretaker must take a picture of a food that the pita is able to eat. In order for the pita to sleep, the phone must stay in the same position for at least a few seconds, to simulate the process of falling asleep. For discipline, a caretaker may shout into the phone's microphone. If a caretaker fails to maintain the pita's life vitals, the pita perishes.

The computer vision framework was necessary for the game for the hunger satisfaction portion. When the caretaker takes a photo of a food, the photo passes through a logo detection pipeline. The logo detection was performed using HOG detectors and an SVM for classification using the OpenCV for C++ library. The system prototype detects hot pockets logos in scenes. The system was trained using a set of approximately 40 hot pocket logo images taken from non-stock photo scenes and the INRIA set of non-person images. Since HOG detectors do not encode for color, but color can be rather discriminative for logos, I split each test image into its three color channels (blue, green, and red) and performed separate classifications for each. The ending classifier was able to detect hot pockets logos with approximately 80% accuracy. With appropriate training methods, the classifier should be extendable to any logo.