Proposal for The Chaac Unit

Project Chaac

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Objectives: Chaac is a differential drive robot robot whose objective is weather prediction.Chaac is designed to be able to follow a line to a to a given location, sample information from its environment, and predict the weather in its environment. The Chaac unit uses a variety of sensors for navigation and prediction. In the aspect of navigation the Chaac unit will use 2 or more infrared sensors in order to follow a black line on a white floor. In order to make sure that the chaac unit makes it safely to its destination ping sensor will be mounted to avoid any collision with unexpected objects. The Chaac unit will work by using a raspberry pi with keras toolkit installed to perform classification on information that is collected by the teensis hummidity, temperature and barometric pressure sensor. Using database of the local rochester weather a neural network will be trained with 1000 samples to create a mapping of the relation between the the input, sensor data, to the output, weather. The original performance of the Chaac unit will perform at a hopeful 70% accuracy. This estimate is predicted under normal weather conditions, this means excluding any abnormal storms that don't match the norm. The raspberry pi will then use serial communication to send the task to the teensi based on the predicted weather. The actions and noises produced by the chaac unit will the notify the user of the probable weather. Although weather can be described in many different ways my robot will explicitly only differentiate between 5 types of forecast; these include rain, snow, cloudy , foggy and sun. Based of the sensors that the Chaac unit has available these are the most likely to be accurately represented. When Chaac predicts the forecast to be rain the Chaac unit will run in a circle. If the expected weather forecast is sunny then the Chaac then the unit will move to make the japanese kanji for sun 日. For a forecast of cloudy the chaac unit will create a spiral. For snow the chaac unit will move to make a star(*). For a forecast of foggy the chaac unit will produce 4 parallel lines. The Chaac unit will also have the have a remote controlled capabilities allowing the user to take manual control of the robot's movements at any point.

PURPOSE: In today's era of rapid communication and the internet of things Chaac stands as unit whose purpose is to obtain value from from the environment when information is scarce or when using the internet to obtain information on the probable

weather is scarce. Boating is situation where Chaac could be useful. If a dataset of weather can be extracted for the area then Chaac can be trained to predict the weather.