MIKE: Autonomous Multi-Species Robotic Sower Using Our Own Database and GPS Location to Determinate the Type of Vegetation

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A quarter of the soil in the world is eroding as the result of deforestation, agricultural overexploitation, soil contamination, forest fires, etc. All of these cause loss of cultivable land, an increase of floods and loss of ecosystems. In our State of Queretaro in Mexico we currently have these problems. Although there are some robots to sow new plants, they are mainly for agricultural purposes and not to reforest native plant species of the variety of ecosystems we actually find in our state. This reforester robot was developed by using C++ freeware, a small printed circuit board CPU programmed in Phyton, a sensor system, video camera, a data base with coordinates of each kind of vegetation in MySQL, GPS system, and 4G modem working with an electromechanical system that uses a rocker bogie mechanism. The result is an autonomous sower robot capable of transporting twenty different seed species with a capacity of 750 seeds in total; the robot can operate ten consecutive hours, planting 1200 seeds per hour with an accuracy of 5.4cm, and it can determine which species should be planted on a specific location in the State of Queretaro according with its different types of vegetation. This project developed a method for planting in a massive but estrategic way, helping to remedy the land’s degradation problem. Future improvements focus on increasing the database for the reforester robot until it is able to plant crops anywhere in the world with accurate and appropriate results.

Awards Won: