ENGR 90 Topic Selection Memo

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Indoor Garden

We propose to design and build an indoor garden with automated controls. The system would be hydroponic or aeroponic, using a nutrient solution rather than soil. The water quantity, nutrient level, pH, algal growth, and other parameters would be monitored electronically and uploaded to a server for remote observation. Some parameters, such as water quantity and nutrient level, will be automatically adjusted to remain at set levels. The primary design elements of this project are the mechanical considerations of the pump and plumbing used, the water quality considerations of nutrient solution monitoring, and the electrical considerations of automation and data collection.

We have been in contact with Jose-Luis Machado in the Biology Department regarding how our project could be useful to him. We anticipate his support, at least as a biology resource. Since the garden would be built to operate consistently with minimal human attention, it could be used for long term biology experiments. In particular, if the garden were sealed, it could be used to measure net primary productivity, the net amount of carbon taken in by plants in a given unit of time.