



Maestría en Ingeniería en Automatización de Procesos Industriales

Title

**Automation a prototype of cutting sugarcane
bud chipper, using vision system embedded**

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Automation a prototype of cutting sugar cane bud chipper, using a vision system embedded

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1. Introduction

Sugar cane is an important crop because of the great economic uptake. Mexico sugarcane area is made up of 15 states, noted for their high annual average yield, Morelos, Puebla and Jalisco with values of 121.52 tons / ha, 112.84Ton / ha, 95.69Ton / ha.

New technological tools should be developed in order to improve production

2. Objectives

2.1. General objective

Automating a prototype of cutting sugar cane bud chipper, using a vision system embedded.

2.2. Specific objectives

- >To design the mechanical system and control, of sugar cane stalks with individual supply.
- >To design mechanical and control system, of cutter of sugar cane stalks.
- >To developer a sugar cane knot detector, using and adjusting machine vision libraries for this purpose.
- >To implement the prototype that includes the entire assembly, programming and configuration.

3. Methodology

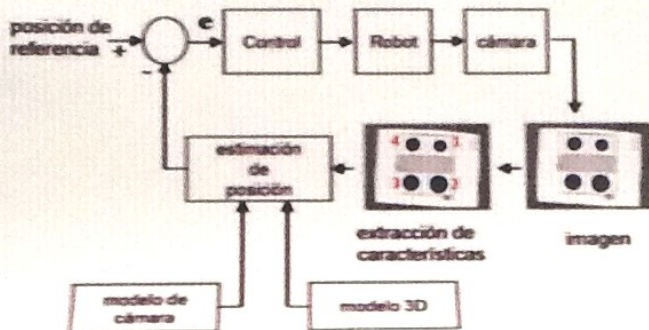


Figure 1. Methodology used by 3D location

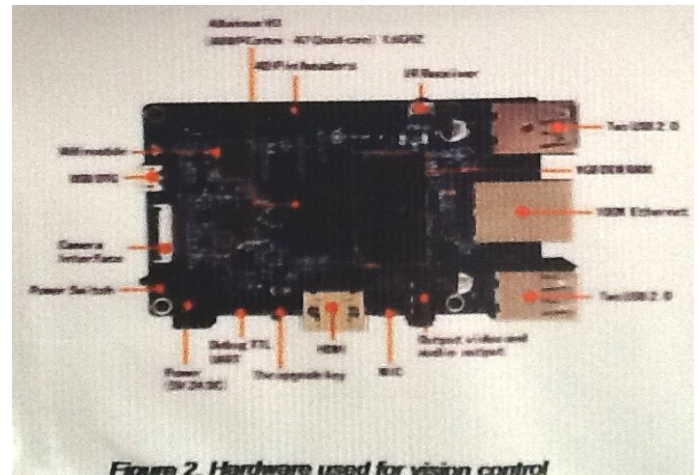


Figure 2. Hardware used for vision control



Figure 3. Vision sensor

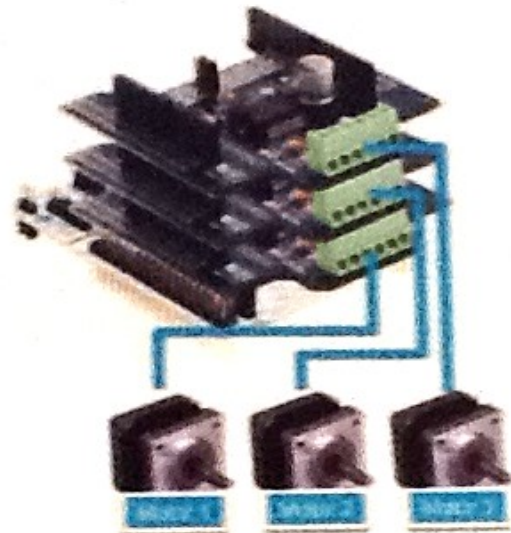


Figure 4. Stepper motor driver expansion board



Figure 5. Nucleo-PLC01A1 Expansion board



Figure 6. STM Nucleo-F446RE development board

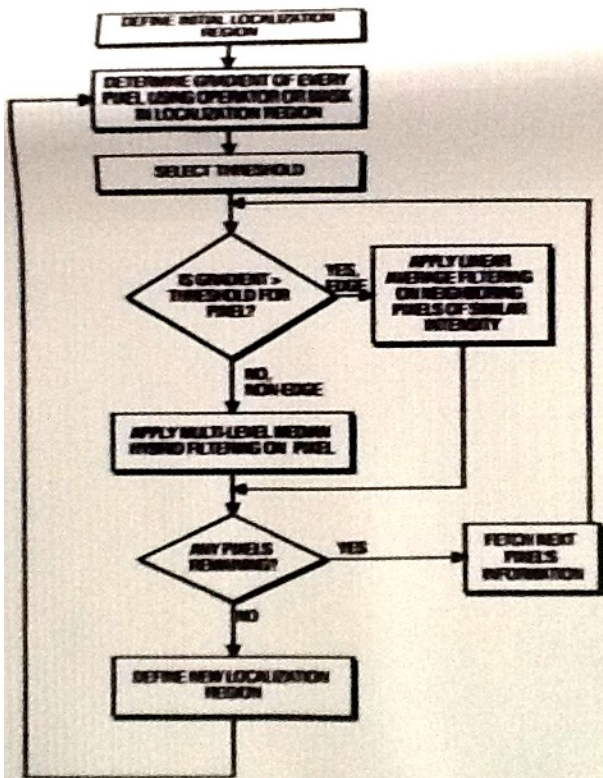


Figure 7 Edge-detection based noise removal algorithm.

4. Results



Figure 8. Sugar cane stalks with individual supply

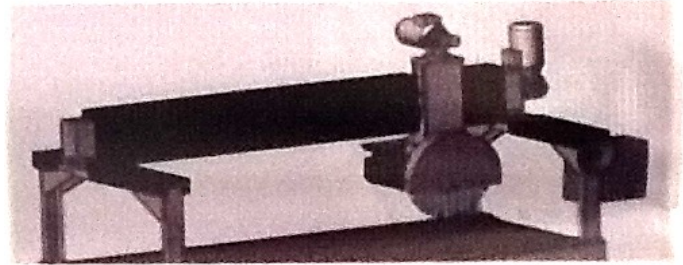


Figure 9. Sugar cane stalks cutter

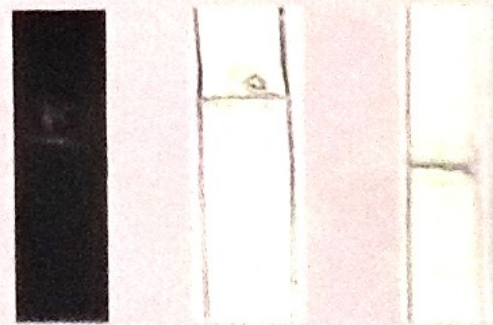


Figure 10. Edge detection

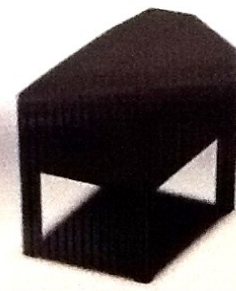


Figure 11. Design of external structure

5. Conclusion

According to the results this cutter can be used by producers and researchers a sugar cane. The next goal is to implement the selection and viability of using embedded vision

Acknowledgements

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