UNIVERSIDAD DE MÁLAGA

AURORA

AURORA was conceived to substitute hard and unhealthy human work inside greenhouses by means of an autonomous mobile robot outfitted with appropriate sensors and operation devices. The robotic platform was specifically designed for greenhouse tasks and supports both autonomous navigation and shared human control.

THE AURORA MOBILE ROBOT

General characteristics:

- **Dimensions: 0.8 m width, 1.4 m length, 1.0 height.**
- **170 kg tracked vehicle for outdoor navigation.**
- **Powered by an on-board petrol-fed ac-generator of 2.6 kW.**
- **Locomotion system based on 2 ac-motors with differential drive and sinchronized steering principle.**
- **Top speed: 0.82 m/s in straight line movement.**
- **Commercial adapted Knapsack-Sprayer**

Control system, Communications and Sensors:

- **Pentium IV industrial computer.**
- **Two encoders for dead-reckoning.**
- **Differential GPS.**
- **IP camera.**
- **Ten ultrasonic sonars for obstacle detection**
- **Ethernet wireless access point**
- **RS232 serial link.**

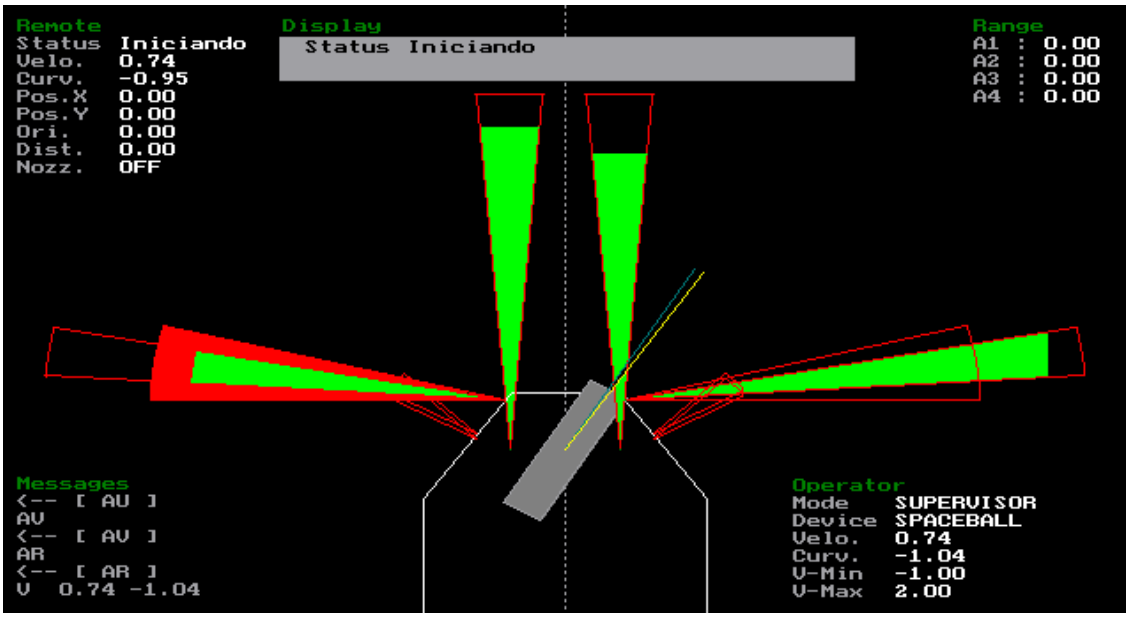
Prof. Dr. Ing. Anibal Ollero Baturone
Dpto de Ingeniería de Sistemas y Automática. Universidad de Sevilla. SPAIN
Email: aollero@cartuja.us.es

Prof. Dr. Ing. Alfonso García-Cerezo
Dpto de Ingeniería de Sistemas y Automática. Universidad de Málaga. SPAIN
Email: gcerezo@ctima.uma.es http://www.isa.uma.es/

Departamento de Ingeniería de Sistemas y Automática

AURORA PROJECT SPECIFICATIONS:

- **Reliability of the components to environmental factors such as temperature and humidity.**
- **Navigation in unaltered greenhouses, without modifying their layout or introducing beacons or any other artificial landmarks.**
- **Low cost.**
- **Flexibility, so that it can navigate autonomously in different kinds of greenhouses and plantations.**
- **Multifunctionality for competitive agricultural operations.**
- **Supervisable autonomous operation. The user can remotely share control, or even take complete control, in exceptional circumstances.**
- **Friendly user interface, so that tasks can be easily specified by end-users with minimal training.**
- **Robust control system for safe operation.**



The AURORA robot working in a supervisable autonomous operation mode.