



AI-Weeder

Chemical-free removal of weeds in lawn by AI based object detection and mechanical removal

04/2022 - 12/2023

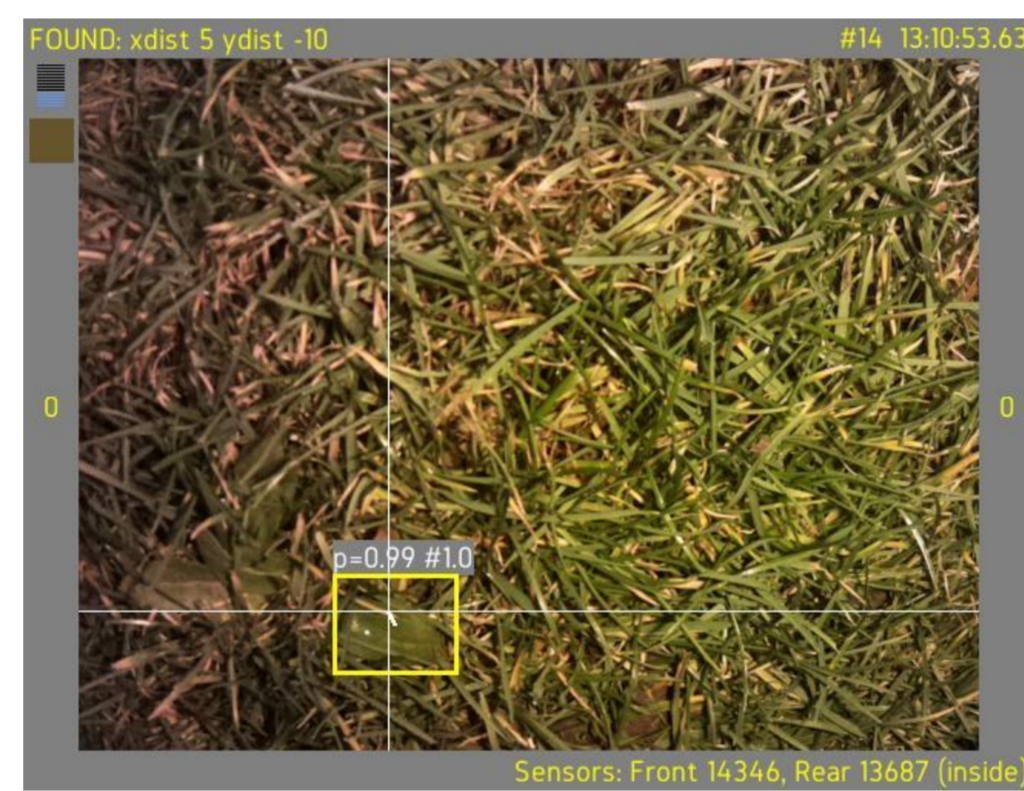
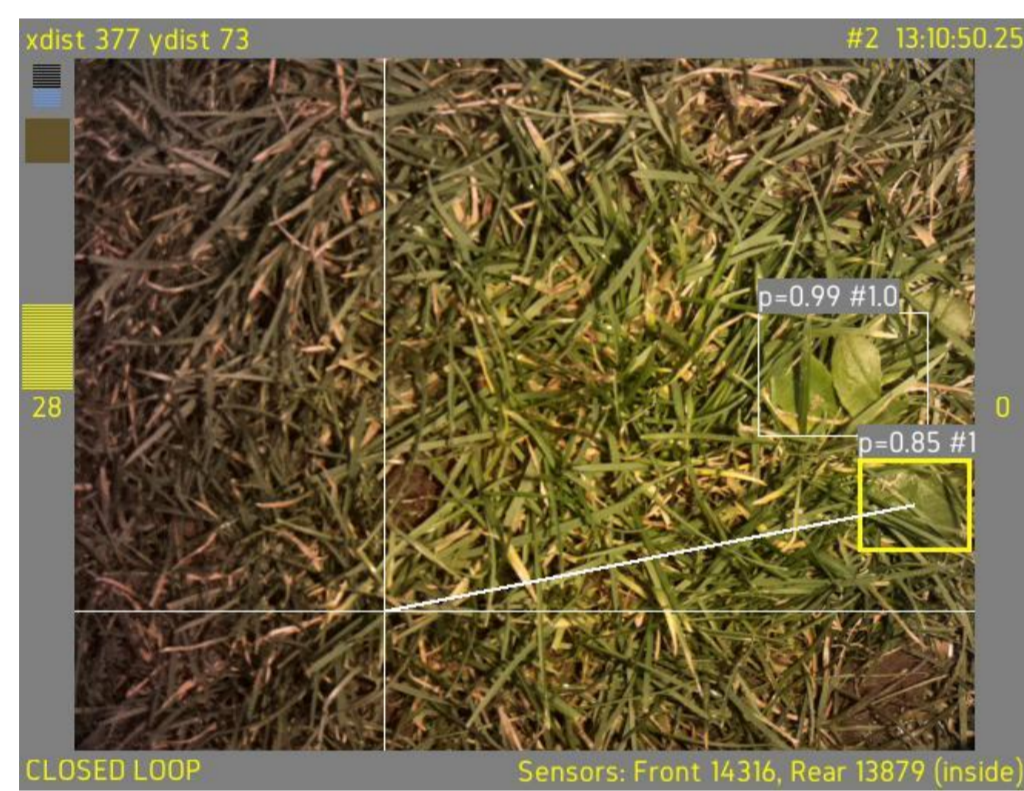
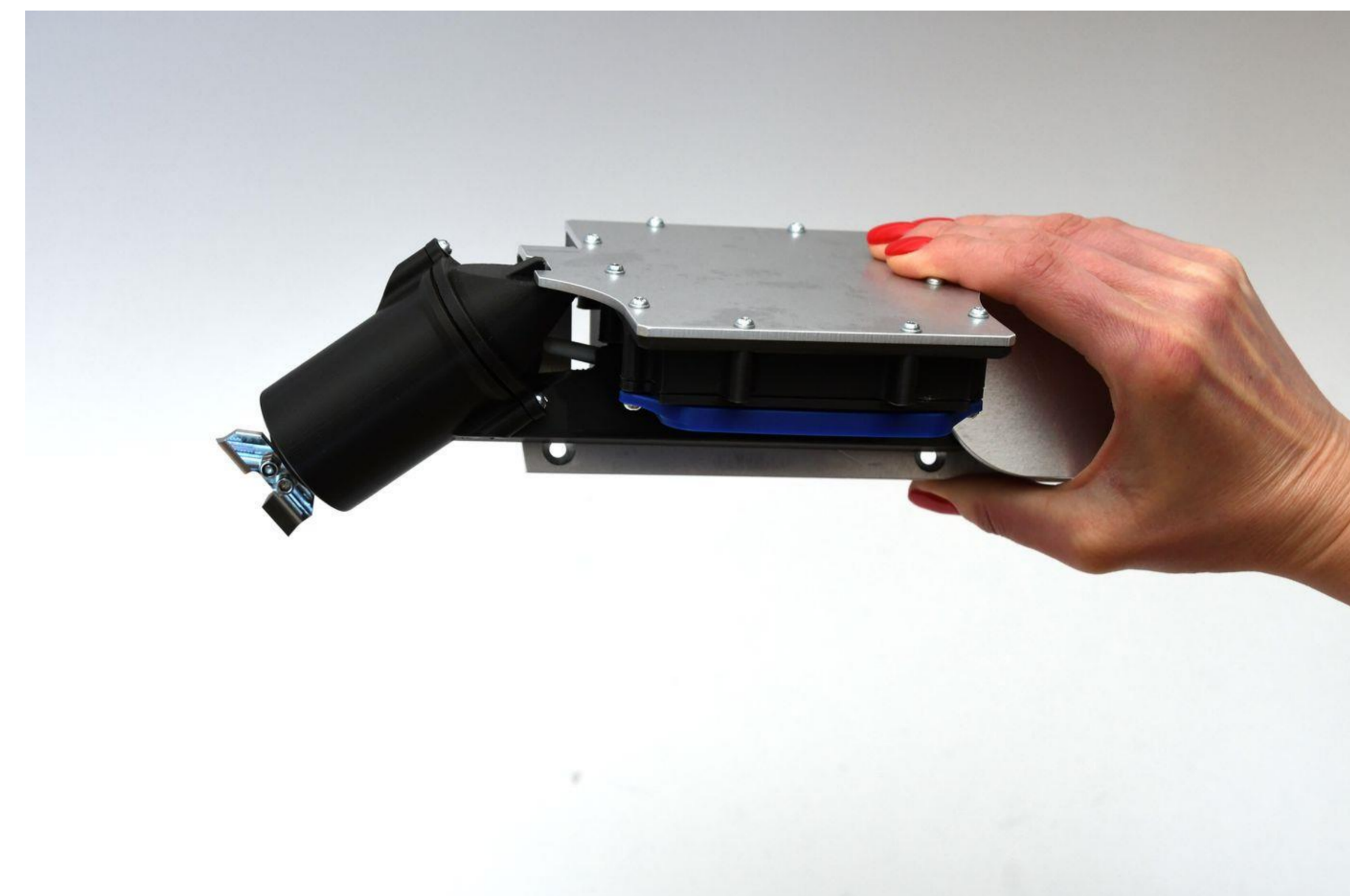
Challenge

Every year, garden owners in Austria spray 720,000 liters of chemical weed killers, which damage soil organisms and insects and endanger groundwater.

Solution

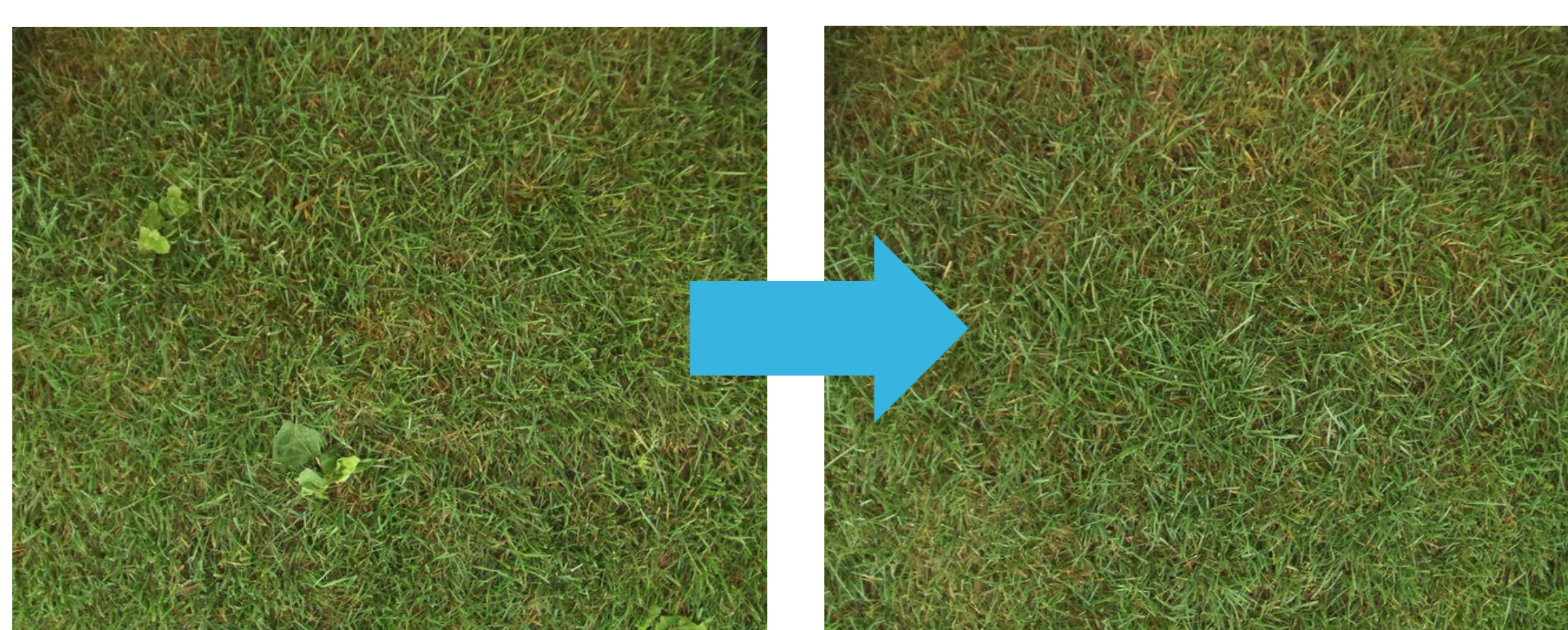
Edge-AI enabled mechanical weeder add-on for robotic mowers:

- Three-step working process in the course of the mowing process:
- #1: Continuous weed detection by camera in front of the driving unit.
 - When weed is detected the mowing process stops for:
 - #2: Servoing the robot to place the weeder hotspot above the weed.
 - #3: Mechanical weed removal.
- ... after that, the robot continues to drive.



Project Goals and Achievements

- Database Generation
- Robotized imaging of polluted lawn areas by GNSS controlled rover and manual image annotation.
- Model Generation and Implementation
- Optimized frame size, network and implementation.
- Prototype
- Hardware, integrated electronic board, and software established and optimized.
- Performance Verification
- Test on area of 3000 m² successful: 5.3 fps, > 80% detection rate.
- Patent Application
- Austrian patent granted, international patents pending.



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Robotic Weed Removal Technologies

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