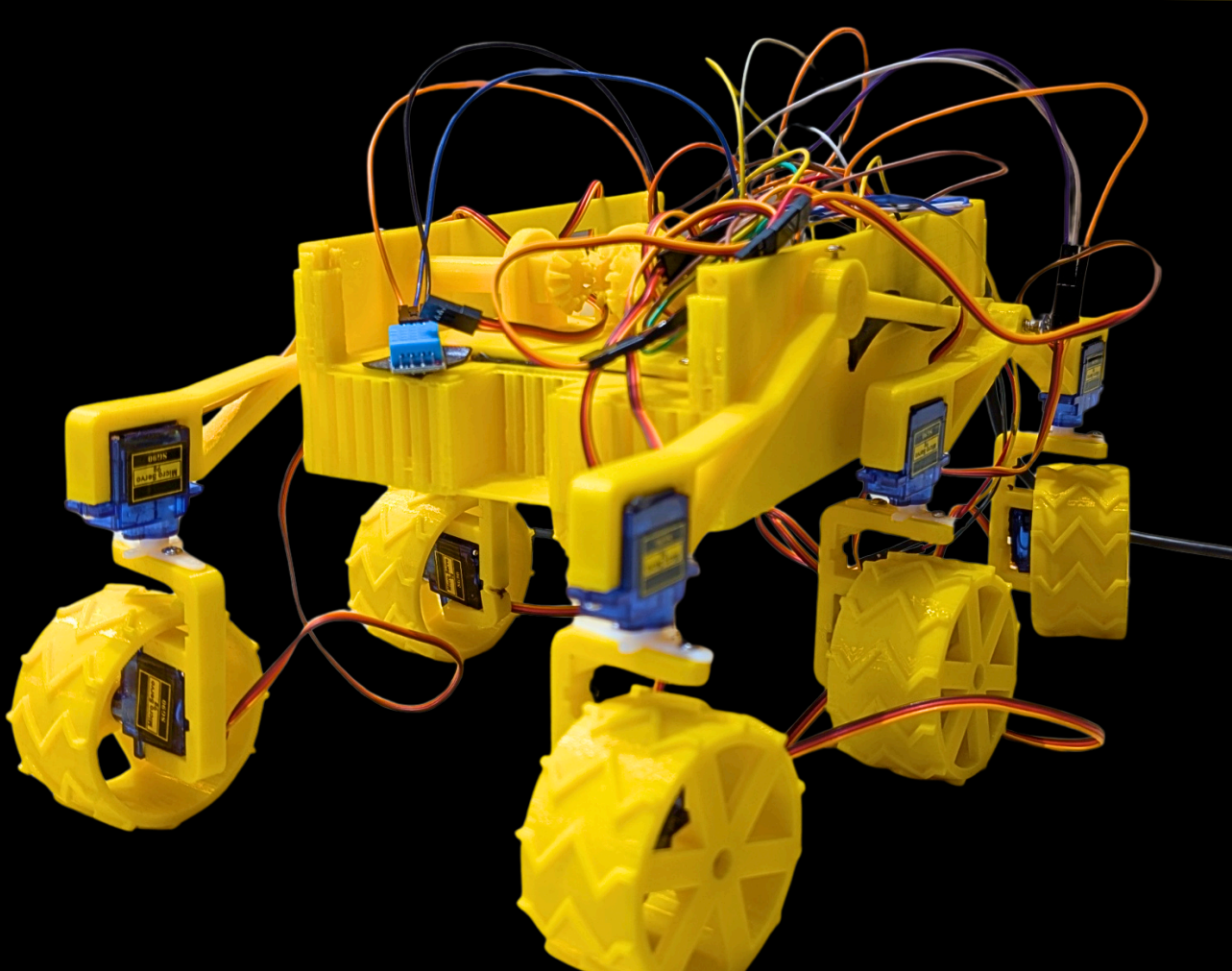# AGRO VIKING ROVER

USER MANUAL

This manual provides a comprehensive guide to operating the Agro Viking Rover. Inside, you'll find step-by-step instructions for setup, connectivity, data collection, and troubleshooting. Designed for ease of use, it ensures that you can maximize the rover's capabilities while maintaining optimal performance. Whether you're a first-time user or experienced operator, this guide helps you navigate every function confidently and effectively, enabling accurate insights for your agricultural projects.

ROBOTICS ENGINEERING

OVERVIEW

The Agro Viking Rover is an affordable, lightweight, and energy-efficient agricultural vehicle designed by the Agro Vikings team from Bal Bharati Public School, GRHM, for the Bal Bharati Hackathon 2.0. The idea addresses the high cost of soil surveys and the limitations of traditional robots and drones in difficult terrain. The rover is presented as a revolutionary instrument intended to combat widespread crop failures by providing a practical, cost-effective field management tool for sustainable agriculture. Its physical design features a 3D-printed modular chassis using PLA for cost-effectiveness and easy repair, and a six-wheeled tread system for suspension-free terrain adaptability across rough and uneven surfaces.

The rover's functionality is powered by a sophisticated dual-ecosystem approach to ensure reliability and precise control, with one ecosystem dedicated solely to high-accuracy data acquisition. The Raspberry Pi zero-WH serves as the "brain," managing complex tasks like image processing from the camera and relaying information from the modular sensor suite, which includes the DHT-11 humidity and temperature sensor and the YL-69 soil moisture sensor. The second ecosystem, centered around the ESP-32, acts as the "nervous system," handling low-level functions such as controlling the motors and servos for locomotion through the PCA9865 driver. This separation minimizes the chance of mechanical failure.

The system provides real-time visual intelligence and comprehensive soil diagnostics via proprietary custom-built software. This software seamlessly receives, analyzes, and visualizes the soil data, displaying key metrics like temperature, humidity, soil moisture, and pH level. Crucially, the software then provides immediate, actionable insights to the farmer, including the soil type (e.g., Loamy Soil), recommended fertilizer (e.g., Urea + DAP), and specific suggestions (e.g., to irrigate lightly in the evening). The software is easily accessible and downloadable from the team's official website, ensuring farmers can conveniently access insights without relying on third-party tools.

INSTRUCTIONS

Step-1:

Connect your computer or device to the Agro Viking Rover's Wi-Fi network by selecting the rover's network name from the available Wi-Fi list and entering the provided password to establish a secure connection for data communication.

Wifi - AgroVikingRover
Password- 12345678

Step-2:

Visit our official website and download the Rover Sensor Dashboard software by clicking on the provided download link, then save the installer or compressed package to your computer for installation.
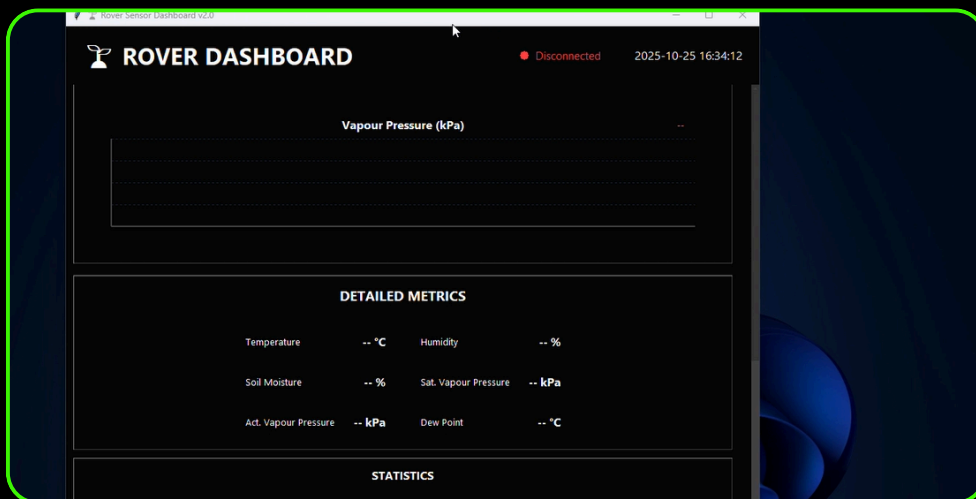

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AGRO
VIKING ROVER

Advanced Agricultural Vehicle For Soil Surveys

Explore Mission

Our official website

INSTRUCTIONS

Step-3:

Open the software to verify that all data is functioning correctly. If any issues arise, check the Wi-Fi connection or visit THIS LINK to access the raw data directly.

Scan to access raw data

OVERVIEW

Thank you for choosing the Agro Viking Rover. This user manual has been designed to guide you through every aspect of setup, operation, and troubleshooting to ensure a smooth and efficient experience. By following the instructions carefully, you can optimize data collection, maintain reliable performance, and maximize the rover's capabilities for your agricultural projects. Should you encounter any difficulties, check your Wi-Fi connection, consult the troubleshooting section, or access the raw data directly through the provided link. Regular use of this manual will help you understand the rover's functions more thoroughly, enabling you to make informed decisions and leverage the technology to its fullest potential. We hope that the Agro Viking Rover enhances your workflow, provides accurate insights, and supports the advancement of sustainable and precise agricultural practices.

THANK YOU