

Rajesh Gund

PhD Student in Biosystems Engineering
(Agricultural Robotics)

Knoxville, TN

Motivated and skilled Agricultural Engineering graduate with valuable research experience at various research institutions. Strong communication and presentation skills, **passionate about exploring agricultural robotics.** Seeking to make a meaningful impact in precision agriculture and sustainability through the automating agricultural operations.

EDUCATION

PhD in Biosystems Engineering
University of Tennessee, Knoxville
01/2025 – Present | Agricultural Robotics

MS in Agricultural Engineering
Tamil Nadu Agricultural University, India
09/2021 – 09/2023 | Farm Machinery & Power Engineering

BS in Agricultural Engineering
Mahatma Phule Krishi Vidyapeeth, India
06/2017 – 09/2021

EXPERIENCES

Graduate Research Assistant
University of Tennessee, Knoxville
01/2025 – Present
- Building the Autonomous Pest Trap Service Robot from scratch and implementing the ROS framework.
- Set up labs and graded assignments as a teaching assistant in spring 2025.

Project Associate
CSIR–CMERI, Ludhiana, India
01/2024 – 10/2024
- Developed a digital cone penetrometer to measure soil resistance by depth.
- Mapped fields with SoilOptix and worked on variable-rate fertilizer application.

R&D Intern
SKUAST-K, Srinagar, India
10/2023 – 11/2023
- Worked on beehive monitoring during an IoT and Robotics in Agriculture internship.
- Explored IoT and robotics for smart farming.

R&D Intern
Barnstorm Agtech, Pune, India
07/2022 – 08/2022
- Canada based startup where I worked on the design of a three-point linkage for an autonomous tractor.
- Modeled the linkage in SolidWorks and analyzed draft and traction forces.

SKILLS

Robotics | Computer Vision | Embedded Systems | CAD | Python | C++

PROJECTS

Autonomous Pest Trap Service Robot
- Integrating the mobile platform, perception, sensor interfacing, CAD and embedded systems.

Wireless CO_2 Soil-Respiration Sensor
- Developed a wireless CO_2 monitoring device to assess soil respiration and help interpret microbial activity in field and lab conditions.

Vision-Based Rice Transplanting
- Transitioned the PTO-powered transplanting mechanism to an electric-powered system for controlled transplanting.

Litchi Decorticator
- Redesigned the peeling mechanism in CAD for the BS project.

PUBLICATIONS

Gund, R. et al. (2025). Application of Digital Twin Technology in Smart Agriculture: A Bibliometric Review. *Agriculture*, 15(17), 1799.

Gund, R. et al. (2023). Optimizing Nursery Trays for Minimizing Seedlings per Pick of Transplanter in SRI. *International Journal of Environment and Climate Change*, 13(10), 2813–2824.

EXPERIENCES

Project Intern, Biomass Gasification
IIT Bombay, Mumbai, India
11/2019 – 12/2019
- Burner Design: Compared gasifier burners using thermocouples and sampled producer gas mixing.

TRAININGS

AI & ML Techniques in Robotics
CSIR–CMERI, Durgapur
01/2023
- Built an Arduino line-following robot.

Farm Machinery
Tractors and Farm Equipment Ltd., Chennai
06/2020
- Studied tractor hydraulics, powertrains and field implements.

Tractor Testing
CFMTTI, Budni
Course U2
- Trained in tractor selection, operation and maintenance.

Farm Power & Machinery
NERFMTTI, Assam
12/2019 – 01/2020
- Overhauled a 5 hp Kirloskar engine.
- Implement Testing

Post-Harvest Processing
ICAR–CIPHET, Punjab
06/2019
- Practiced fruit preservation, CAD and machining.

CERTIFICATES [19 TOTAL]

Robotics, ROS 2 & AI [7]
Udemy, CSIR–CMERI
Linux to ROS 2 · ROS on Pi · Hardware · Nav2 · TF & URDF · Jazzy

CAD & Mechanical Design [4]
Udemy, Graphix Technologies, LearnVern, TCIL-IT
Graphix CAD · PTC Creo · LearnVern Creo

Programming & Data Analysis [3]
Udemy, Tamil Nadu Agricultural University
Python · Linux CLI

Embedded Systems & IoT [4]
Udemy, Anna University, The Institution of Engineers (India)
Pi & Arduino · Raspberry Pi

Organic Farming [1]
IGNOU

PARTICIPATION AND AWARDS

Graduate Student Research Award
- Received a $5,000 research award for a grain-storage pest trap robot.

ASABE 2026
- Poster Presentation on a Developed soil CO_2 sensor

Farm Robotics Challenge
- Setting up and configuring ROS on an off-board device for the farm-ng Amiga.
- Worked on navigation and wireless ROS control of the farm-ng Amiga.

LANGUAGES

English, Hindi and Marathi

INTERESTS

Robotics Travel Soccer Running