UG/Ph.D Research Project Evaluation Report

Department: Electronics & Communication Engineering Department	
Title of Project: Design of Automation in Agricultural Robot	
Name of the Students 1. Dhruv Patel 2. Meet Gandhi 3. SHANKARA NARAYANAN - H 4.	Enrollment No. U16EC053 Dhruv U16EC056 Meet U16EC074 H. Shankara Narayanan
Guide Name@: 1. Dr. Anand Darji (ECED) 2. 3.	Signature:
@ will be continuously monitoring proposed work for achieving project outcome	
Feasibility of proposed work for research outcome	✓Yes / No
Problem identified of the nature	1. Innovation 2. Subject matter Research ✓3. Product development/Improvement
Objective of proposed work	Clear/✓need to Improve/Vague
Proposed activities	✓Well defined/Blurred
Proposed expense	✓Accepted/Need Change/Rejected
Presentation of work	Poor/✓Good/Very good
Confidence level to achieve the target	Poor/Good/✓Very good
Defined Outcome	✓Clear/Need to Improve/Vague
Project Output	Publication/✓Patent/Product
Research benefit to	✓Society/Academic/Industry
Amount Proposed	Rs. 36000/-
Amount Recommended	Rs. 36000/-
Reviewer Details	
Name	Dr. J. N. Sarvaiya
Designation	Associate Professor
Signature	

TEQIP file
Anand
24/9/19

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ELECTRONICS ENGINEERING DEPARTMENT

SARDAR VALLABHBHAI
NATIONAL INSTITUTE OF TECHNOLOGY,
SURAT

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ECED, SVNIT

No: ECED/TEQIP-III / 1022/2018-19

Date:13/09/2019

SUBMITTED TO DIRECTOR:

Subject: - Application for the Research Grant to UG students.

Respected Sir,

With reference to the above mentioned subject, the UG students **Dhruv Patel** (Roll No. **U16EC053**), **Meet Gandhi** (Roll No. **U16EC056**) and **Shankaranarayanan H.** (Roll No. **U16EC074**) in the electronics department of SVNIT, Surat require the financial support for the project work under the TEQIP-III project grant. The brief idea of the project is mentioned below.

The project work entitled "***Design of an autonomous Agriculture Robot***" is related to the development of a farming robot using ROS (Robotic Operating System) framework and Deep Learning. Some of the areas in agriculture have been identified wherein we can provide our potential solution through a ground vehicle called "***Agribot***". Major aim behind this project is to develop a farming rover which can autonomously traverse through field and remotely monitor the health/characteristics of crops (phenotyping) and grading and sorting of bad/good crops. Different sensors, portable industrial camera and a high-performance processor will be used to generate vast quantities of rich and varied data which will be used by the system to predict the solution.

The approximate cost (Budget) of recurring and non-recurring items required for this project work is about 36,0000 INR for the project duration of 9 months. For your reference, the brief project proposal and estimated budget have been attached to this application.

Permission may please be granted to procure the list of items described in the attached enclosure from **TEQIP-III** research grant as per institute rules.

We would be very much thankful to you if the research grant is provided for this project work.

Enclosure:

1. Copy of brief project proposal.
2. Copy of estimated cost for recurring and non-recurring items.

Supervisor,
Dr. A. D. Darji

HOD, ECED
SVNIT

Co-ordinator TEQIP-III,
SVNIT

Approved. Follow TEQIP-III/44 Dt: 24/9/19.

Director,
SVNIT 24/9/19

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Brief Project Proposal:

1. **Project Title:** Design of an autonomous Agriculture Robot
2. **Duration in Months:** 9 months
3. **Total Cost (Approximate):** Rs. 36,000.
4. **Project Guide:** Dr. A. D. Darji
   Head of Department,
   Department of Electronics Engineering,
   Sardar Vallabhbhai National Institute of Technology,
   Ichchhanath, Surat - 395007, Gujarat, India.
   Mobile No.: 9423407088
5. **Team Details:**

Dhruv Patel	Meet Gandhi	Shankaranarayanan H
U16EC053	U16EC056	U16EC074
9428696512	9427732664	9427163735

6. **Department:** Electronics Engineering Department.
7. **Project Summary:**

Agriculture is dwindling day by day in India due to lower yields and heavy investments in the farming equipment. A technology driven approach must be implemented in order to lower investments and increase the yield of crops. Some of the areas in agriculture have been identified wherein we can provide our potential solution through a ground vehicle called " ***Agribot*** ". The technology to modify plant traits as per crop environment lags behind. Similarly, soil erosion in agriculture has also increased and because of the volatile prices of the fuel in the market, farmers find it very difficult to meet both the ends. Hence we try to find out the solution for these problems. A typical Agribot used in agriculture is represented below.

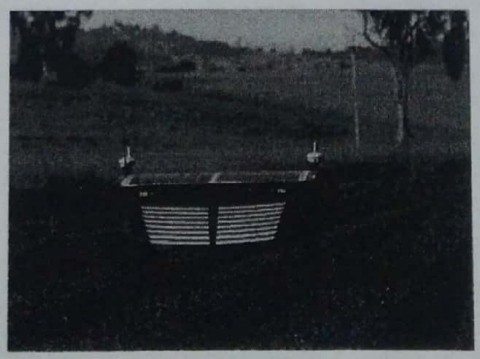

Figure 1

8. **Objective:**
   - Machine Guidance: - Autonomous robot for farming applications.
   - Crop Weed Classification: - Differentiate between the given crop and weed and removing the weed surrounding it.

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9. **Novelty/Importance of the proposed project in the society:**

The proposed Agribot is capable of autonomously traversing through the fields and ensuring that only the best breeds are grown in the field. So, this system can be used in the dwindling agriculture sector and thereby increasing the productivity of the crops. Also, it can be used for the classification of crops and determine which will be stable for a longer shipment and which will be shipped to the local markets.

10. **Activities:**

1. Sensor Data Acquisition and its Interfacing
2. Autonomous Driving & Navigation
3. Dataset preparation for phenotyping & crop sorting & building Machine Vision Model
4. Integrating sub-systems on Raspberry PI using ROS
5. Deploying Machine Vision Model on Jetson Nano

11. **Project Outcomes:**

- Identification of best breeds grown in the field for a particular environment.
- Farming techniques will become autonomous.
- Consumers will be getting good yields because of the sorting.

Estimated Budget (For 9 months)

Sr No.	Item	Price (INR)
1	Nvidia Jetson Nano	8900
2	Raspberry Pi Camera V2	2400
3	Samsung SD Card	820
4	Power Adapter	1200
5	GY-87 MPU-9265	450
6	NEO-M8N	1500
7	TP-Link Router	1100
8	DC Geared Motor	16000
9	Arduino Due	1600
10	Miscellaneous	2000

Approximate Amount: - **Rs. 36000**

Place: Surat

Name & Sign	Name & Sign	Name & Sign
Dhruv Patel	**Meet Gandhi**	**Shankaranarayanan H**
(U16EC053)	**(U16EC056)**	**(U16EC074)**

Date: 13/09/2019

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