**CS302 Project 2 Python**

Group 21: Sign-SYS



Group members:

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# Team Dynamics (3%)

Write about

* Roles of each member
* Peer view of your teammates. You can talk about your teamwork and partners here. Please show evidence if you complain about your partner.

For this project, we were all assigned to roles to ensure the completion of the project. Harsh has experience with artificial intelligence and backend development so he was assigned to more of the machine learning components of Sign-SYS app. Sai has experience with UI and frontend development so he was assigned to the overall aesthetic and graphics of our application. Lojanan has experience with backend and frontend development, so he was assigned to assisting with both parts and debugging issues. The team has collaborated and designed an application that has a balance of functionality and design looks.

# Planning (2%)

Write about

* Setup for your project, such as patterns, environment, tools, etc., and the reason to choose them
* Gantt chart – schedule and roles

For our project, we used Anaconda environment with Python version 3.12 for the overall development of Sign-SYS app. We chose these as Anaconda let us easily manage the installed packages and Python 3.12 was the latest python version.

# Design Software Architecture (10%)

Write about

* Purpose of the system
* Database and methods/model to use
* System Diagram for your software
* Explain each component of your system
* What is the benefit of your architecture?

The system is designed to train models in Pytorch and test the accuracy of the application.

# Results (3%)

Write about

* Describe your results (details of your tool).
* The statistical analysis
* Prediction results
* Discussion.

Table 1: example format for table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sensor / Image Type | Advantages | Limitations | Fruit Detected | References |
| RGB Color Image | Provides color, texture, and geometric information | Affected by different lighting conditions | Kiwifruit, Oranges, Grapes, Apples, Peaches | [5 – 13] |
| B/W Camera | Minimal effect of varying light conditions | Lack of color information | Melon | [14] |
| Spectral Camera | Capable of giving information in visible and the near-infrared regions | Time-consuming to operate | Green Apples | [15] [16] |
| Infrared Camera | Not dependent on fruit color | Affected by the size of the fruit, can only operate at a certain time of day | Apples | [17] |

Diagram

Description automatically generated

Fig. 1. Example of figure.

# Conclusion / Future Work (1%)

Write about

* Draw your conclusion
* Future works

# Acknowledgements

# References

1. Example of references…
2. M. Hunter, R. Smith, M. Schipanski, L. Atwood, D. Mortensen, “Agriculture in 2050: Recalibrating targets for sustainable intensification.” *BioScience*, vol. 67, pp. 386-391, 2017
3. J.V. Stafford, “Implementing Precision Agriculture in the 21st Century”, *Journal of Agricultural Engineering Research*, vol. 76, issue 3, pp. 267-275, 2000.
4. F. Pierce, P. Nowak, “Aspects of Precision Agriculture”, *Advances in Agronomy*, Academic Press, vol.67, pp. 1-85, 1999
5. A.L. Chandra, S.V. Desai, V.N. Balasubramanian, W. Guo, “Computer Vision with Deep Learning for Plant Phenotyping in Agriculture: A Survey”, *Journal of Advanced Computing and Communications*, 2020