**CSE / EEE / ETE 499B (Section 2)**

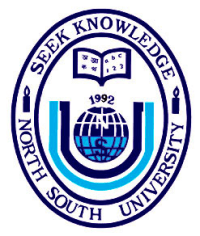
**Sustainability Report (CO3)**

**Project Title: Comparative Analysis of Different CNN Architectures on Potato Leaf Disease Detection and Classification using Transfer Learning Approach**

**Submitted To**

**Dr. Shazzad Hosain (SZZ)**

**Date: 06/06/2023**



**Group-07**

**Members**

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| --- | --- |
| **ID** | **Name** |
| 1911350642 | **MD. Fatin Habib Nihal** |
| 1921855042 | **Raihan Mahmud Tahir** |
| 1922013642 | **Sabiha Akter Shorna** |

# **Challenges in developing products from project prototype**

1. **Can the project idea be translated into a saleable product**?

It may be difficult to turn research on Convolutional Neural Network models for potato leaf disease detection into a marketable product. Commercial viability depends on the models' effective application in a user-friendly and practical manner. In order to overcome this difficulty, it is crucial to ensure that the product satisfies market demands, address usability issues, and take scalability into consideration.

1. **Can it be manufactured in cost effective way**?

The creation of an affordable manufacturing procedure is crucial for the long-term viability of the product. This problem can be solved by improving production processes, finding materials at competitive rates, and streamlining the industrial supply chain. The cost-effectiveness of the manufacturing process can be improved by conducting in-depth cost assessments and identifying areas for cost reduction.

1. **What will be the cost per unit after large scale manufacturing**?

Complexities that can affect the cost per unit are introduced by the shift to large-scale manufacturing. In order to obtain economies of scale and reduce costs, it is crucial to properly study and optimize the production process. To lessen the problem of cost per unit in large-scale manufacturing, factors including raw material procurement, automation options, and effective production procedures should be taken into account.

1. **Whether user will use the product with the perceived product cost**?

Successful market adoption depends on consumer acceptability and willingness to pay for the product at the perceived cost. To solve this problem, it is crucial to conduct market research, comprehend customer wants and preferences, and illustrate the product's value proposition. Aligning user perception with the value of the product can be achieved by pricing strategies, marketing initiatives, and good communication.

1. **What are the challenges in developing product and how can you overcome those challenges**.

Technical difficulties, dataset restrictions, model fine-tuning, and hyperparameter optimization are some of the difficulties encountered in creating the product. Continuous research and development efforts are necessary to overcome these obstacles. The accuracy and performance of the product can be increased by enhancing the dataset quality, investigating sophisticated data augmentation approaches, and carrying out methodical hyperparameter optimization. To overcome these obstacles, collaboration with subject-matter experts, thorough testing, and incremental improvements based on user feedback are essential.

# **Sustainability of the project**

1. **How the project will be funded after prototyping**?

The project's long-term success depends on finding stable funding after the prototyping phase. Continuous financial support can be obtained through investigating funding possibilities including grants, investments from venture capitalists or agricultural groups, or forming partnerships. The key to maintaining funding is to create an effective business strategy, demonstrate the project's potential impact, and interact with possible investors or funding organizations.

1. **Challenges other than funding e.g. technical, environmental, govt. policy etc. that will emerge in future and the way to mitigate those challenges.**

In addition to money, the project can encounter difficulties because of changes in government regulations, environmental concerns, and technological improvements. To overcome technological obstacles, it is crucial to keep up with changing neural network models, include cutting-edge image processing methods, and adjust to new hardware or software specifications. Environmental problems can be lessened by following environmental standards, reducing the project's ecological footprint, and using sustainable practices. It's important to keep up with changes in governmental rules and laws regarding data protection, farming methods, and the use of artificial intelligence. These difficulties can be lessened and project sustainability ensured by working with pertinent stakeholders, conducting impact evaluations, and modifying tactics as necessary.