**CSE / EEE / ETE 499B.2**

**Project Impact and Constraints (CO2)**

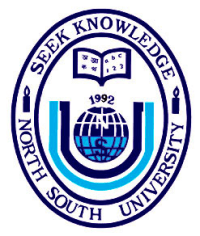
**Project Title**

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

**Submitted To**

**Dr. Shazzad Hosain (SZZ)**

**Date: 31/05/2023**



**Group-07**

**Members**

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# **Economics (cost) impact: (Should consider, when relevant)**

1. **Prototype design and production cost:** The costs associated with the design, coding, testing, and hosting of the application may be incurred during the construction of the website utilizing React.js and FastAPI. It is important to take into account the resources needed for prototype creation, such as software licensing and development tools. Convolutional neural network (CNN) model training and dataset acquisition/creation costs should also be taken into consideration.
2. **Device cost in mass production:** The expense of producing the hardware elements, such as image capture devices, sensors, or connected systems, should be taken into account if the website and the associated potato disease detection system are intended for mass production or commercialization. It is important to investigate cost-cutting measures for mass production, such as streamlining the production process or locating affordable materials.
3. **Cost savings:** Regarding disease prevention and crop management, the project may result in cost savings. Through the internet, farmers may identify plant diseases early on and take prompt action to prevent or reduce crop losses. The service can help cut expenditures connected with crop loss, pesticide use, and ineffective disease management approaches by offering precise predictions.

# **Environmental impact of the product (Should consider, when relevant)**

1. **Resource consumption:** The effects on natural resources should be taken into account during the project's development and operation. This covers the energy used to store data, host the website, and train the CNN models. Environmental impact can be reduced through sustainable practices like employing energy-efficient servers or switching to renewable energy sources.
2. **Dataset collection:** It is important to assess how obtaining the PlantVillage dataset may affect the environment. The project can be regarded as ecologically responsible if the dataset was acquired in an ethical and sustainable manner, such as with the right consent and without endangering the environment or breaking any laws.

# **Social impact of the product: (Should consider, when relevant)**

1. **Consumption patterns:** By increasing early detection and disease management strategies in agriculture, the project can affect consumption patterns. Farmers and other stakeholders that follow the website's suggestions and tactics may alter their behavior to engage in more productive and sustainable farming practices.
2. **Employment impact:** The website's automation of plant disease diagnosis may have an impact on agricultural industry jobs. The automated method on the website could partially replace manual disease detection chores often carried out by farmers or agricultural personnel. It's crucial to keep in mind, though, that the project might open up new employment prospects in sectors like software development, data analysis, machine learning, and maintenance for the website and connected systems.
3. **Safety and Health Concerns:** The project should give priority to safety measures and address any potential health issues connected to website usage. This involves ensuring that the website is trustworthy, secure, and that user information and privacy are protected. To avoid unfavorable outcomes or misuse, any potential dangers or restrictions, such as inaccurate projections or misinterpretations, should be made known to users.

# **Legal considerations and constraints**

1. The project must follow all applicable legal and regulatory requirements. In order to protect user information, this also involves compliance with data protection and privacy legislation. Furthermore, it is important to take into account and abide by any laws that may be in place regarding network standards, software development, or energy efficiency. The reliability and credibility of the project can be improved by adhering to industry standards, such as those concerning software engineering procedures and quality management principles.

The project can ensure a holistic approach to sustainability by taking into account these economic, environmental, and social factors, avoiding negative effects while boosting its beneficial benefits to agriculture, society, and the environment.