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| Student Name | Thapa Arjun | Student Number | M22W0385 |
| Project Theme (Choose from Master Project Guidelines) | Practical implementation of a system or technology | | |
| Proposal Title | Use of Infrastructure IoT in wheat Agriculture in Nepal | | |
| Introduction (Summary and Goal)  *200 or more words with at least 2 paragraphs* | Today`s world is the age of technology where different systems and technology are used for different purposes. Today different people use different technology and the internet in the field. IOT stands for Internet of Things, which refers to devices that are connected to the Internet and capable of exchanging data with other systems and devices. These devices relate to sensors, the internet, and other technologies by using software. IoT is a group of technologies rather than a single item or specific tool. In recent years, there has been less of a digital gap between agricultural producers and IoT devices. These sensors are used for monitoring environment and farming areas well as for sending the exact data to framer through server and android system[3].  Agriculture is the basic source of livelihood of people in Nepal where 68% of total economy and most of Nepalese people are dependent upon farming Central Bureau of Statistics Nepal[1]. In the last ten years, agricultural development has been minimal because of the less farming due to the lack of technology. We can work to increase agriculture field product production by using IoT technology and others to meet expectations on the market. Also, its strategy, method, and process, with the goal of reducing time limitations and other physical impediments to the smooth running of the sector[4]. In Nepal, farming and organic agriculture may benefit from IoT-based smart agriculture applications. Remote monitoring, decision-support tools, automated irrigation systems, fertilization, and other practices are all part of smart agriculture in IoT. Remote monitoring is the best system to use in the agriculture because it used to detect the problem of the soil and moisture. Remote monitoring is using a lot in today`s world in the agriculture. IoT is helping to reduce and give advanced technology to the farmer to make the agriculture better and better day by day. | | |
| Background Research  *300 or more words with at least 3 paragraphs* | In the previous days, people were using old methods in agriculture which was good at that time but in today`s world where Technology is using every sector even in the agriculture which help to grow more and more in the agriculture sector. IoT helps a lot in agriculture with the help of remote monitoring, decision support tools, fertilization and other practices which are used in smart agriculture. The main goal of the IoT is to connect machines, things, and people around the world where agriculture is the place where people are connected through work also.  This study is carried out on agriculture which is used on IoT-based systems where it can help to grow and maintain the value of agriculture in the market. These technology tools are Internet of Things, Cloud based system, and wireless system these devices are widely used in connecting devices and collection of information[1]. Farmers can easily control the system because it uses a strong processor technology to provide real-time data. This study shows that farmers continue to practice conventional farming methods, which results in a lack of product development. By monitoring the effectiveness of the soil, moisture, humidity, and field pressure. It can expect an improvement in production at a cheap cost while reducing energy waste. In the future, these technologies will allow improving productivity through the sustainable cultivation of food, as well as to take care of the environment thanks to the efficient use of water and the optimization of inputs and treatments[2].  IoT is trying to fill the gap between farmer and advanced technology which is using today`s world. In Nepal, a lot of farmers don’t know about the advance technology which is using in other country. IoT is helping them to understand the technology and used in the agriculture field. It helps to understand about the field, and it teaches how to use the soil, moisture, humidity, etc. in the agriculture field to the farmer. IoT-based devices are the use of mobile cameras or other scan devices to verify the quality of different food. Agriculturalists can make the best utilization of their resources such as farm vehicles, the number of fertilizers, water, and electricity[5]. There is different contribution that agriculture field to be offer to the society. They are food production, economic development, innovation, energy production, etc. I think this project mainly focuses on food production through the research because it describes and implements the food through the agriculture which was described in the project. The limitation of this project depending on the field and its marketing way in the area. In the wheat agriculture, it is focus on the soil, moisture of environment, climate and other small detail which is used to check the wheat status in the field. In the market area it is focus on the customer which they want from the agriculture area. In the past research, it shows that it is important about the fertility of the soil and moisture around the surrounding area. In writer mainly focus on the soil, moisture, humidity, and field pressure which is important factor during the agriculture. The writer did not explain all the way to solve the problem about the soil and agriculture in proper way. So, I will mainly focus on the author weak spot and solve the problem in the future. | | |
| Methodology  *300 or more words with at least 3 paragraphs* | The Methodological purpose of this research will be agriculture and technology research which is used in the agriculture sector. This method was chosen because it is used to collect the data of the agriculture and implement the IoT-based system in the field to find the resource of that field and make the field better and better fertilize the field to help the crop or other vegetable grow perfectly. As research of this project of the field I found there are different problems and different solutions which are described in the article or newspaper.  This study was carried out by implementing the IoT system in agriculture. IoT systems help to improve the agriculture sector day by day. The IoT system used the mobile camera software to check the food about its quality and it is also checking the method of farming fertilized through the internet sector. The specific procedures are climate condition, precision farming, data analytics and green house which is used in agriculture. Climate condition and data analytics is the main factor of agriculture which is used daily. There are different data used in agriculture like checking the soil, moisture, humidity, etc. from the field. It is checking the food quality through the camera application and checking the climate from the weather application on the internet.  The study was quantitative because Nepal had 68% of the total economy in the agriculture field. This method is used to measure the quality of soil through the IoT based system. There are agricultural monitoring systems that transmit live video to carry out such processes remotely through IoT-based devices that integrate cameras [5]. There are different disadvantages and advantages in this field. The disadvantage is people are slowly moving to the IoT based system but previously they were using old generation systems in the agriculture field. In Nepal, farmers did not take advantage due to the less knowledge of this technique and implementation also. The advantage is utilizing resources for technology and software as well as vast amounts of data, community agriculture is practiced in both urban and rural settings. Crop surveillance that lowers expenses and prevents machinery theft. It is helping to find out the quality of food and condition of weather through the system. Currently, I am in Japan learning the technology sector which is implement later the agriculture field. The agriculture is connected to the internet sector itself which make me join atomically to the field. The study will be conduct through collecting the data about the project field which main important factor in this project then after the collecting the data I will implemented or apply the data through the process in the field. The data will be process and give the result based on the project or field. If the data is valid then I will be processed to move another step to complete the project or data. If the data is invalid, then I will try other data until the data will be valid in the output. This is way to minimize damaged or risk to take the invalid data because invalid data will be error on the further process show to minimized risk we should take data correct way. | | |
| Summary of Work Plan  *200 or more words with at least 2 paragraphs* | Master project 2 is the basic plan for future master projects in use of Infrastructure IoT in wheat agriculture in Nepal. There are different step by step which is used to complete the master project.  There are basically four phases in the project which is used during the master project that are planning, collecting, analysis and presenting. Planning is implemented while searching the question and answer of the project. After the planning we start to collect the data of the project and use it on the project and after applying the data in the project we analyze the data and check whether it is right or wrong. After the data analysis is correct, we start to give a presentation of our project through the presentation.  In the project they describe a lot of the IoT sector which is used in agriculture. In the first part of the literature review, I found that there is a lot of new technology which is used in agriculture and after I read more and more the paper, I discover there is a lot of IoT technology which is still not implemented in agriculture in Nepal. After I am collecting the data of all papers, I start to analyze whether it is right or wrong during that field. After all the data analysis is done, I move to the next phase and present to them as correct data. This paper helps me to gain all the knowledge and I will lead the project to paper even in the further way. The Gantt chat show the date and milestones of the master projects. | | |
| References  *References up to 5 or more articles such as Journal, Conference papers, news*  *articles etc.* | [1] Anup Acharya. 2022. Smart Farming Based on IoT: Nepal Perspective. *IJSR* 11, 2 (February 2022), 861–864. DOI:https://doi.org/10.21275/SR22219104359  [2] Raquel Gómez-Chabla, Karina Real-Avilés, César Morán, Paola Grijalva, and Tanya Recalde. 2019. IoT Applications in Agriculture: A Systematic Literature Review. In *ICT for Agriculture and Environment*, Rafael Valencia-García, Gema Alcaraz-Mármol, Javier del Cioppo-Morstadt, Néstor Vera-Lucio and Martha Bucaram-Leverone (eds.). Springer International Publishing, Cham, 68–76. DOI:https://doi.org/10.1007/978-3-030-10728-4\_8  [3] Anup Acharya ijsr International Journal of Science and Research (IJSR). Abstract of Smart Farming Based on IoT: Nepal Perspective. *International Journal of Science and Research (IJSR)*. Retrieved November 28, 2022 from https://www.ijsr.net/  [4] Anjay Mishra and Sreeramana Aithal. 2022. *Industry 4.0 Concept for Nepal -Operating Virtual Farming Industry*. DOI:https://doi.org/10.5281/zenodo.7215189  [5] 2021. Information Technology in Agriculture Business IoT - GTN. Retrieved November 28, 2022 from https://gtn.com.np/2021/01/iot-technologies-application-in-agriculture-industry/ | | |

Gantt chart:

