**Formation of Synopsis**

1. **Title of Project**

IoT based Smart Assistance (Spoon) for Parkinson Patients.

1. **Team Member**

This section should contain name of team members:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No. | Name of Student | Registration number | Faculty | Branch/Program | Year of student |
| 1. | Vivek Raj | 169105217 | Ms. Anubha Parashar | B.Tech/CSE | 3rd |
| 2. | Wasim Ekram | 169105218 | Ms. Anubha Parashar | B.Tech/CSE | 3rd |

1. **Problem Statement**

The technology for assisting people who are functionally challenged has improved over the recent decades. A group that suffer from this ailment are people with Parkinson’s disease. Parkinson’s disease (PD) is a neurological degenerative disease that causes uncontrollable shaking and makes it difficult for the affected person to eat.

There is no cure for PD, but there is technology and potential for new technology that can help people who carry the disease with their daily lives.

The aim of this project is to make a machine that can feed the said patient with no efforts needed that will pick the food and spoon feed it to the patient. With a low budget, the goal is to make a highly efficient prototype that consists mainly of a microcontroller and servo motors.

1. **Objective of work**

With today’s technology, people with Parkinson’s disease can, with a device on their wrist, be able to draw pictures. And such stabilizing techniques have been used to make stabilizing spoons to assist people who need assistance during their eating process.

The pros and cons of existing technique is

|  |  |
| --- | --- |
| **Pros** | **Cons** |
| It helps functionally challenged people to eat with more ease | The person has to hold the spoon in his hands that is still inefficient. |

We are aiming to design a machine that is mu more functional and easier for the patient to use.

1. **Target specifications if any**
2. **HOME AUTOMATION: -** Smart assistance spoon will be able to help patients diagnosed with Parkinson’s by aiding them to feed themselves. It will eliminate the need of requiring a nurse all day at home.
3. **MEDICAL FACILITIES AND OLD AGE HOMES:**- Smart assistance spoon will be commercially available to all hospitals and old age homes so that less human effort is required in assisting physically challenged patients.

**6. Functional partitioning of project**

* Setting up microcontroller (Raspberry Pi).
* Controlling multiple motors.
* Robotic Arm.
* Camera Module.
* Image Detection .

1. **Methodology**

Following is our plan of actions:

1. Procurement of necessary parts for assembling the setup.
2. Create a blueprint and do the necessary project planning.
3. Placing the display behind the acrylic mirror which is to be enclosed around a wooden frame.
4. Programming on Raspberry Pi and controlling multiple servo motors.
5. Designing Robotic arm and getting it printed from the 3D printing Lab.
6. Setting up the model along with the servo motors.
7. Linking other hardware components.
8. Setting up the camera module.
9. Applying Image Detection and making the arm work accordingly.
10. Testing the entire setup.
11. Making the necessary modifications (as further needed).
12. **Tools required**
    1. Raspberry Pi
    2. Servo Motors
    3. Stepper motor
    4. Robotic arm
    5. Breadboard
    6. Jumper Cables
    7. Other modules like camera module, microphone, motor driver, proximity sensor
13. **Work schedule**

Proposed Duration For the Project: 5 Months .

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| --- | --- | --- | --- | --- |
| Requirement | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
| Project Planning and Designing |  |  |  |  |
| 3D Modeling and Physical Prototype |  |  |  |  |
| Algorithm Development |  |  |  |  |
| Module Connections and Setup |  |  |  |  |
| Optimisation and module development |  |  |  |  |
| Testing |  |  |  |  |

1. **Budget**

|  |  |  |  |
| --- | --- | --- | --- |
| S. No. | Requirement | Cost | Reference |
| 1 | Raspberry Pi 3 Model B+ | 3000₹ | <http://bit.do/eHJtF> |
| 2 | Camera Module | 1899₹ | <http://bit.do/eHJue> |
| 3 | Robotic Arm | 1899₹ | <http://bit.do/eHJt3> |
| 4 | Servo Motors x3 | 535₹ | http://bit.do/eHJum |
| 5 | Stepper motor | 899₹ | http://bit.do/eHJuB |
| 6 | Proximity sensor | 2250₹ | http://bit.do/eHJuM |
| 7 | Jumper cables | 200₹ | http://bit.do/eHJuU |
| 8 | Breadboard | 100₹ | <http://bit.do/eHJvy> |
| 9 | Other components and sensors | 800₹ |  |
| Total | ----------xxx---------- | ~11,500₹ |  |