



Cover page

Project Title:

Academic Year: 2024-2025

Group Members: Amer Ahmad Qaddoura

Department Name: Department of Mechatronic

Majd Abdulhameed Hoshiyah

Abdulhamid Bader Bane Gamea

Supervisor Name: Dr. Mohammad Abuabiah

Format:

- Single space, Times New Roman.
- 12 pt,
- Maximum 1 page.

Abstract Body:

Items must be provided in the Abstract:

- Why do you think this project is important? Please explain the significance of this Project in brief.
- In your point of view what are the important aspects that should be covered in the project?
- Objective(s): In your view, please explain the main objectives of the project.
- Methodology: Give a brief outline of the application development process.
- Had this project been done before? Are there any similar applications available today?
- **Note:** Please deliver this abstract early to ensure that your Project has been approved by the department's projects committee. **Registration will not be done without this approval.**



Project's Abstract: The importance of the project is that it seeks to develop innovative methods for studying and treating diseases of the central nervous system such as Alzheimer's, Parkinson's, and depression. The spread of which is rapidly increasing, making the search for new treatment strategies extremely important. The project aims to establish a center for behavioral and automated in vivo testing using specialized equipment at a lower cost, which will contribute to accelerating the development of new and effective treatments for these complex diseases.

There are several important aspects to cover in the project including: Proper mechanical design for reliable behavioral tests, integration of high-precision sensors to collect data accurately, automation to reduce human error, and cost-effective development are essential to make the devices widely available, and collaboration between pharmacy and mechatronics will ensure that the devices meet the requirements of clinical research.

The main goal of the collaboration is to develop low-cost robotic devices for behavioral models of central nervous system diseases such as Alzheimer's and Parkinson's. The devices improve data performance through compact and compact sensors via graphics. The project also aims to foster collaboration between pharmacy and mechatronics, contributing to the development of magical research solutions. Furthermore, the project aims at offering cheaper and more efficient devices compared to those that are in the market today, and thus making their availability easier.

The application development process involves:

1. Planning and analysis: Determine the required tools, materials, and project needs
2. Design: Collaboration between pharmacy and mechatronics to determine the initial form of the project
3. Implementation: Manufacturing the devices and ensuring that they work correctly and meet the needs
4. Programming: Programming the device to perform the required functions
5. Testing: A practical examination of the project to determine its efficiency and effectiveness
6. Improvement: Solve problems (if any) after examining the project
7. Dissemination: Disseminate the project, educate people, and monitor feedback for benefit

Similar projects have been done before using commercially available live behavior testing devices, but what sets this proposal apart is the collaboration between engineering and medicine to create custom devices at lower costs. Several companies are offering preclinical testing applications, including Harvard Apparatus, Pan lab, and Med Associates, which provide automated and specialized equipment for testing animal behavior, memory, anxiety, and motor activity.