**Graduation Project Proposal:**

**Submitted to:** College of Artificial Intelligence, AAST (Alamein Campus)  
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**Project Title:** Pepper Medical Assistance Robot

**1. Introduction:**

We, a team of final-year students at the College of Artificial Intelligence, propose the development of the **Pepper Medical Assistance Robot** as our graduation project. This initiative leverages robotics and artificial intelligence to address real challenges in the healthcare sector.

Our vision is to collaborate with **Andalusia Hospital** to test and validate the robot in a real hospital environment. This will not only enhance patient care but also position AAST as a leader in impactful AI and robotics innovation in healthcare.

**2. Project Overview:**

The **Pepper Medical Assistance Robot** will act as a **bilingual (Arabic/English) hospital assistant** that interacts with patients and staff through speech, gestures, and a tablet interface.

**Core functions include:**

* **Reception & Check-in:** Appointment confirmation using ID/QR.
* **Queue Management:** Display wait times and notify patients.
* **FAQs & Guidance:** Answer hospital-related questions (visiting hours, insurance, policies).
* **Wayfinding Assistance:** Guide or provide directions to departments.
* **Simple Triage & Alerts:** Ask structured health questions (non-diagnostic) and alert nurses in urgent cases.
* **Accessibility:** Elder-friendly, Arabic/English support, voice + touch interface.

**3. Objectives:**

* Apply AI and robotics knowledge in a real-world healthcare setting.
* Support patients and hospital staff by improving efficiency and accessibility.
* Strengthening AAST’s reputation in applied AI and robotics.
* Establish a bridge between academia and industry through collaboration with Andalusia Hospital.

**4. Methodology & Technical Approach:**

* **Pepper Robot** → Tablet UI, speech output, gestures, short-range navigation.
* **Edge Computing Unit** (mini-PC or Raspberry Pi 5) → Speech recognition (Whisper), NLU/Dialog system, hospital FAQ RAG, triage engine, nurse alert system.
* **Privacy & Safety First** → Consent-based interaction, minimal data storage, non-diagnostic triage.
* **MVP Focus** → Reception, FAQ, simple triage, nurse alert. Additional modules (navigation, telepresence, vitals) can be added later.

A diagram of a medical assistance

AI-generated content may be incorrect.**5. Pepper’s Use Case Diagram:**

**6. Pepper Class Diagram:**

A diagram of a work flow

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A diagram of a medical system

AI-generated content may be incorrect.**7. Pepper Flow Diagram:**

A screenshot of a computer

AI-generated content may be incorrect.**8. Pepper Component Diagram:**

A computer screen with a robot on it

AI-generated content may be incorrect.A screen with a robot on it

AI-generated content may be incorrect.A screen with a robot on it

AI-generated content may be incorrect.**9. Pepper User Interface:**

A screen with a white robot on it

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**10. Expected Outcomes:**

* A functional **Pepper assistant** deployed in a demo hospital setting.
* Pilot collaboration with Andalusia Hospital for testing.
* Usability results and performance metrics (accuracy, response time, patient satisfaction).
* Academic publications or presentations showcasing AAST’s leadership in healthcare robotics.

**11. Support Requested from AAST**

To ensure successful execution, we request the College of AI to support us with:

1. **Approval** of this project as our official graduation project.
2. **Facilitation of partnership** with Andalusia Hospital for pilot deployment.
3. **Access to Pepper Robot** and relevant development resources.
4. **Faculty mentorship** to guide both technical and practical implementation.

**12. Support Requested from Andalusia Hospital**

To ensure the successful development and validation of the Pepper Medical Assistance Robot, we kindly request Andalusia Hospital’s support in the following areas:

1. **Pilot Environment Access**
   * Allow limited deployment of the robot in reception or waiting areas for controlled testing.
2. **Workflow & Data Sharing**
   * Provide non-sensitive hospital information (FAQs, visiting hours, check-in workflows, department maps).
   * Share sample anonymized patient flow data (appointment process, queue system) for simulation.
3. **Staff Engagement**
   * Assign medical/administrative staff to give feedback on usability, safety, and workflow integration.
   * Support evaluation by nurses during triage-lite alert scenarios.
4. **IT & Integration Support**
   * Temporary access to hospital Wi-Fi or a secure local network for edge–Pepper communication.
   * Guidance on compliance with hospital IT/data protection policies.
5. **Ethics & Compliance**
   * Approve consent forms, disclaimers, and ensure the system aligns with hospital regulations.
6. **Visibility & Collaboration**
   * Support joint branding (AAST × Andalusia) during the demo.
   * Consider co-authoring academic or industry papers showcasing this innovation.

**13. Conclusion**

The Pepper Medical Assistance Robot represents an opportunity for AAST to lead in applying AI and robotics to real-world healthcare challenges. With your approval and guidance, we aim to deliver a high-impact project that benefits patients, supports medical staff, and strengthens our university’s industry partnerships.