Department of Technical Education
Capstone project

Work Breakdown Structure

Capstone project Name: AI Smart Mirror Using Raspberry PI 3B+

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Capstone project Objective(s):

1. To design and develop an AI smart mirror using Raspberry Pi 3B+.
2. To integrate voice recognition and facial recognition features into the smart mirror.
3. To enable the smart mirror to display real-time weather and news updates.
4. To create a user-friendly interface for the smart mirror.
5. To ensure the smart mirror is easily upgradable and customizable.

Work Breakdown Structure – Deliverables

Week 1-2: Project Initiation

Define project scope and objectives

- Identify user and their needs
- Conduct market research on existing smart mirror products
- Establish project goals and objectives

Create project charter and project plan

- Define project scope and deliverables
- Develop project timeline and budget

Assign project team roles and responsibilities
Identify project risks and mitigation plan

- Conduct risk analysis
- Develop risk management plan

Week 3-5: Planning and Design

Design hardware components and order materials

- Research and select hardware components
- Develop hardware design specifications
- Order hardware components

Design software architecture and user interface

- Define software requirements and specifications
- Develop software architecture and flow diagram
- Design user interface and user experience

Create detailed project schedule and task list

- Break down project tasks into specific work packages
- Develop project schedule and resource plan

Establish quality assurance and testing plan

- Define quality objectives and performance measures
- Develop test plan and test cases

Establish acceptance criteria for the smart mirror

- Obtain necessary approvals and sign-offs
- Obtain stakeholder buy-in and sign-off on project plan and schedule

Week 6-11: Development

Build hardware prototype and perform testing

- Assemble and test hardware components
- Develop prototype enclosure and mounting system

Install operating system and Develop voice recognition program

- Install and configure operating system on hardware
- Develop voice recognition and natural language processing software

Develop face recognition software

- Research and select appropriate face recognition algorithms
- Train the face recognition model using sample data
- Integrate face recognition software into the smart mirror system

Develop user interface and perform testing

- Develop smart mirror user interface
- Conduct user experience testing and feedback sessions

Integrate software and hardware components

- Integrate hardware and software components
- Perform integration testing

- Perform integration and system testing
- Test all system components together
- Address any issues or bugs found during testing

Week 12: Documentation and Quality Assurance

Create user manual and installation guide

- Develop user manual and installation guide
- Conduct user acceptance testing on the documentation

Develop test plan and perform unit testing

- Develop test plan for individual software and hardware components
- Conduct unit testing and debug issues
- Perform integration testing and system testing
- Test all system components together

Perform acceptance testing

- Conduct user acceptance testing to ensure the system meets user requirements

Week 13-14: Deployment and Support

Deploy the smart mirror into production

- Install the smart mirror in the designated location
- Conduct system testing in the production environment
- Provide user training and support

Develop training materials and conduct user training sessions

- Establish support procedures and channels
- Perform ongoing maintenance and upgrades

Date

Signature of the student

Signature of the cohort owne