

**Ministry of Higher Education**

**Pyramids High Institute (PHI) for Engineering and Technology**

**Electronics and Communication Engineering Department**

Graduation Project:

**Design and Realization of Car Tracking via AI Implementation**

Presented By:

Abdelrahman Shrief

Asmaa Mohamed

Mohamed Hossam

Mahmoud Gaballah

Sondos Reda

Mohamed Alaa

Mohamed Nageh

Moamen Mohamed

Supervised By:

Prof. Gamal El-Sheikh

Prof. Esraa Al-Rifa

Cairo 2024\_2025

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| Task | Category | Assigned | Status |
| Search on available GPS Modules | GPS | Mohamed Alaa |  |
| Search on how to get speed of car | GPS | Mohamed Hossam |  |
| Search on available modules which provide digital compass | GPS | Mahmoud Genesh |  |
| Search on how to save location data in local Server | GPS | Mohamed Alaa |  |
| Search on how to make a Safe Radius zone for the car | GPS | Mohamed Hossam |  |
| Search on how to make a path for the car to go to specific location. | GPS | Mahmoud Genesh |  |
| Make an Arduino code to get let and long data | GPS | Mohamed Alaa |  |
| Apply window size filter to enhance the data | GPS | Mohamed Hossam |  |
| Select Suitable Format of Speed (km per hour or m per sec) | GPS | Mahmoud Genesh |  |
| Select Suitable Module for speed | GPS | Mohamed Alaa |  |
| Test the compass on Self-Driving Car | GPS | Mohamed Hossam |  |
| Make an Arduino code to save data on SD card | GPS | Mahmoud Genesh |  |
| Integrate GPS tracking with Monitoring web application | GPS | Mohamed Alaa |  |
| Make an Arduino code to alert if moves out of the safe zone | GPS | Mohamed Hossam |  |
| Draw the path in web application tracking part | GPS | Mahmoud Genesh |  |
| Search on available SIM modules which provide  (2g , 3g or 4g) | GSM | Abdo Shrief |  |
| Select Suitable module with its antenna for our needs | GSM | Sondos Reda |  |
| Make An Arduino code to test AT commands In module | GSM | Abdo Shrief |  |
| Provide a list of useful AT commands | GSM | Sondos Reda |  |
| Make a function to perform AT commands | GSM | Abdo Shrief |  |
| Make a function to Send SMS to Specific numbers | GSM | Sondos Reda |  |
| Make a function to provide call making | GSM | Abdo Shrief |  |
| Test sending message to the owner in case of un-known driver | GSM | Sondos Reda |  |
| Send SMS with location data to the owner if required | GSM | Abdo Shrief |  |
| Make a function to read received SMS | GSM | Sondos Reda |  |
| Make a function to receive calls | GSM | Abdo Shrief |  |
| Send SMS emergency message is network is un-available | GSM | Sondos Reda |  |
| Make a connection with web endpoints | GSM | Abdo Shrief |  |
| Search on samples of required design | 3d | Moumen Murad |  |
| Select a demo size and shape for the project | 3d | Mohamed Alaa |  |
| Start design with blender or any 3d design apps | 3d | Moumen Murad |  |
| Specify the inner part design | 3d | Mohamed Alaa |  |
| Search on how to import the battery on design | 3d | Moumen Murad |  |
| Select suitable place for battery and antenna | 3d | Mohamed Alaa |  |
| Provide the overall design | 3d | Moumen Murad |  |
| Search on some 3d printing places to print the design | 3d | Mohamed Alaa |  |
| Make a cost plan for the design and materials | 3d | Moumen Murad |  |
| Perform the design and install the components | 3d | Mohamed Alaa |  |
| Add turn speed in corners to the Web app | S.D Car | Moumen Murad |  |
| Search on how to use Ultrasonic in the car and place them | S.D Car | Moumen Murad |  |
| Make an Arduino function to avoid obstacles | S.D Car | Sondos Reda |  |
| Apply obstacles avoidance in path part | S.D Car | Sondos Reda |  |
| Try applying obstacles avoidance in sequence part | S.D Car | Sondos Reda |  |
| Enhance the distance calculation | S.D Car | Sondos Reda |  |
| Search on available AI models for object detection | A.I | Asmaa Muhamed |  |
| Search on Neural Network and how to test and train models | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Animal detection | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Animal classification | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Car detection | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Car Classification | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Signs detection | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Signs Classification | A.I | Asmaa Muhamed |  |
| Provide a suitable model providing Traffic Lights detection | A.I | Abdo Shrief |  |
| Provide a suitable model providing Face detection | A.I | Abdo Shrief |  |
| Provide a suitable model providing Face recognition | A.I | Abdo Shrief |  |
| Train the model for known drivers | A.I | Abdo Shrief |  |
| Test if the model can detect un-known drivers | A.I | Abdo Shrief |  |
| Send a message to main controller if there is un-known driver | A.I | Abdo Shrief |  |

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| Search on GPS Theory | GPS |  |  |
| Search on available GPS Modules | GPS |  |  |
| Search on how to get speed of car | GPS |  |  |
| Search on available GSM Modules | GSM |  |  |
| Search on suitable battery system | Power |  |  |
| Search on Step-Down Modules | Power |  |  |
| Search on different microcontrollers | M.C |  |  |
| Design Home Page in Web App | Figma |  |  |
| Design Manual Control Page in Web App | Figma |  |  |
| Design Live Stream Page in Web App | Figma |  |  |
| Design Login Page in Web App | Figma |  |  |
| Design Register Page in Web App | Figma |  |  |
| Add turn speed in corners to the Web app Design | Figma |  |  |
| Code turn speed in corners to the Web app | S.D Car |  |  |
| Use Ultrasonic in the car and place them | S.D Car |  |  |
| Make an Arduino function to avoid obstacles | S.D Car |  |  |
| Apply obstacles avoidance in path part | S.D Car |  |  |
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**Phase 1 ( Weeks 1 : 4)**