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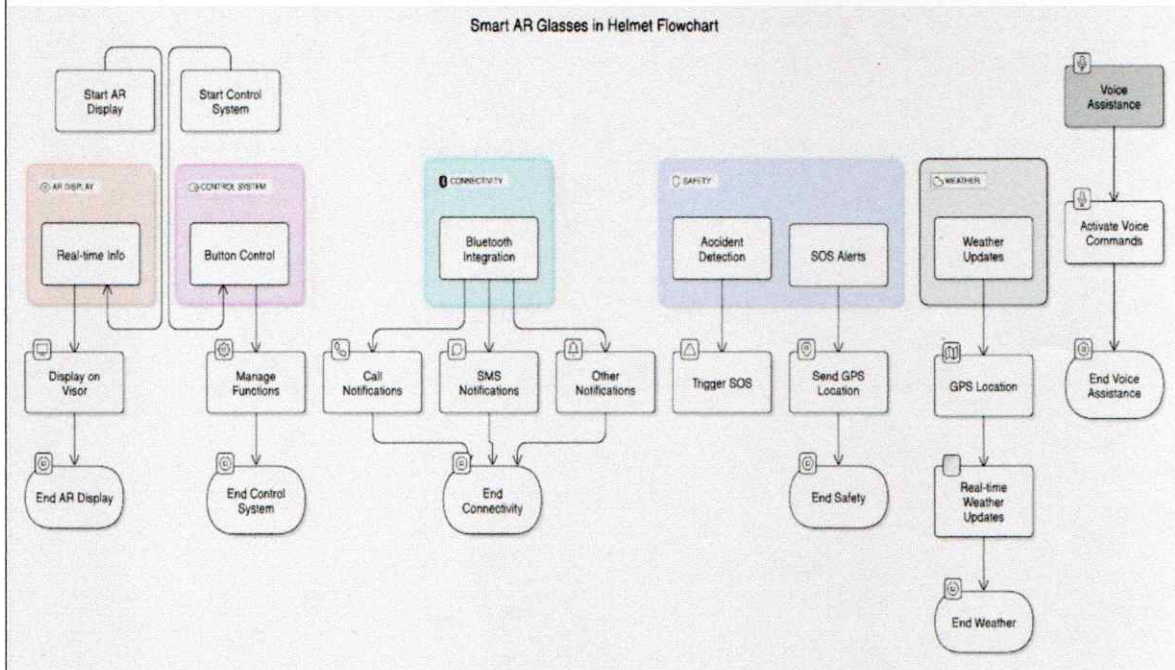
**STUDENT PROJECT PROPOSAL FOR THE**  
**48th SERIES OF STUDENT PROJECT PROGRAMME**

1.	<b>Name of the College:</b> SAMBHRAM INSTITUTE OF TECHNOLOGY
2.	<b>Project Title:</b> "ARmor: Ride with Augmented Safety"
3.	<b>Branch:</b> Computer Science and Engineering
4.	<b>Theme:</b> Robotics (assistive aid)
5.	<b>Name of project guide:</b> Name: Prof. Jyothi S S. Email id: jyothistanik@gmail.com Contact No.: 9449705175
6.	<b>Name of Team Members:</b>  Name: DARSHAN R. USN No.:1ST21CS057 Email id: darshanrajanna07@gmail.com Mobile No.:8618917040   Name: DEEKSHA M. USN No.:1ST21CS058 Email id: deekshamanjunath24@gmail.com Mobile No.:8147274560   Name: M KUSUMA USN No.:1ST21CS105 Email id: varalm1981@gmail.com Mobile No.:8660112123 

7.	<p><b>Team Leader of the Project:</b></p> <p><b>Name:</b> DARSHAN R  <b>USN No.:</b>1ST21CS057  <b>Email id:</b> darshanrajanna07@gmail.com  <b>Mobile No.:</b>8618917040</p>
8.	<p><b>Processing Fee Details:</b></p> <p><b>Transaction ID:</b> CICAgPDyvsecfQ  <b>Reference Number:</b> 432754735118  <b>Date of Payment:</b> 22-NOVEMBER-2024  <b>Amount:</b> 1,180/- Rupees.</p>
9.	<b>Date of commencement of the Project:</b> 28-September-2024
10.	<b>Probable date of completion of the project:</b> 16-March-2024
11.	<p><b>Scope / Objectives of the project:</b></p> <ul style="list-style-type: none"> <li>• <b>Smart AR Display and Mobile Connection:</b> The helmet visor will have a see-through screen that shows important information like directions, messages, and weather updates right in front of the rider's eyes. It connects to smartphones using Bluetooth, so you can see calls and texts without using your hands.</li> <li>• <b>Safety Features and Navigation:</b> With GPS, the helmet gives step-by-step directions using Google Maps. It also has crash detection sensors that send an emergency message with your location if there's an accident. Bright LED lights and sound alerts make riding safer, especially in emergencies.</li> <li>• <b>Easy Controls and Weather Updates:</b> A simple button or sensor lets riders do tasks like checking calls or reminders without getting distracted. The helmet also shows live weather-updates so riders can prepare for changing conditions. The design is affordable and can be easily improved for more uses.</li> </ul>
12.	<p><b>Methodology:</b></p> <ul style="list-style-type: none"> <li>• <b>System Design and Hardware Selection:</b> Choose a Raspberry Pi as the main controller, adding Bluetooth, GPS, and motion sensors (accelerometer and gyroscope). Pick a clear AR display that fits well on a helmet visor for showing real-time information like directions and alerts.</li> <li>• <b>Hardware Integration and Safety Enhancements:</b> Attach the AR display to the visor and place the Raspberry Pi for minimal space usage. Add a tactile button or sensor for hands-free control and connect Bluetooth and GPS for seamless smartphone integration. Install LED lights and sound alerts for better visibility and safety during rides.</li> <li>• <b>Software Development and Emergency Features:</b> Use Python on Raspberry Pi OS to handle data, communication, and AR display functions. Set up Bluetooth for syncing notifications, calls, and task lists from smartphones. Integrate Google Maps API for live navigation and program sensors to detect crashes, sending emergency SOS alerts with the rider's location.</li> </ul>



- **Testing, Optimization, and Cost Management:** Test all features, including navigation, connectivity, and emergency alerts, under real-life conditions to ensure smooth performance. Improve AR display clarity and button responsiveness for distraction-free riding. Evaluate costs to keep the design affordable and allow easy future upgrades.




The flowchart outlines the Smart AR Glasses system integrated into a helmet, designed for safety, connectivity, and convenience. It features an **AR Display** to project real-time information like navigation and notifications onto the visor, while a **Control System** with a tactile button allows hands-free operation. **Bluetooth Integration** syncs with smartphones to display calls and messages. **Accident Detection** sensors trigger SOS alerts with GPS location during crashes, and **Weather Updates** provide real-time environmental data. An optional **Voice Assistance** ensures further hands-free functionality, making the system efficient and rider friendly.


### 13. **Expected Outcome of the project:**

- **AR Display and Hands-Free Control:** Transparent AR display projects navigation, notifications, weather, and tasks directly in the rider's view, while a tactile button allows distraction-free control of calls and tasks.
- **Connectivity and Navigation:** Bluetooth syncs with smartphones for calls and notifications, and GPS provides accurate real-time navigation.
- **Safety and Emergency Features:** Collision detection triggers automatic SOS alerts with location sharing, enhancing emergency response.
- **Modular and Cost-Effective Design:** The scalable, affordable system sets a new standard for rider safety and connectivity.

14.	<p><b>Is the project proposed relevant to the Industry / Society or Institution? : Yes</b></p> <p><b>Sambhram Institute of Technology</b>  <b>Hesaraghatta Road, Jalahalli East,</b>  <b>Bengaluru-560097</b>  <b>Name: Prof. Jyothi S S</b>  <b>Email id: jyothistanik@gmail.com</b>  <b>Contact No.: 9449705175</b></p>																
15.	<p><b>Can the product or process developed in the project be taken up for filing a Patent? : Yes</b></p> <p><b>Prior Art search done? : Yes</b></p>																
16.	<p><b>Budget details :</b></p> <table border="1"> <thead> <tr> <th>Budget</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>a) Materials</td> <td><b>14300.00</b></td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Core Processing Unit (Raspberry Pi 4)</li> <li>AR Display Module (Transparent AR display)</li> <li>Sensors (GPS, Crash / Impact detection sensor, Accelerometer &amp; Gyroscope, Tensile buttons)</li> <li>Connectivity modules (Bluetooth &amp; Wifi)</li> <li>Voice Module (communication module)</li> <li>Power Supply (Lithium ion Chargeable Rechargeable Battery and BMS)</li> <li>Helmet &amp; mounting,</li> <li>Cables and connections</li> <li>Software API's</li> </ul> </td> <td>           5000            2500            1500            800            1000            1500            1500            500            0         </td> </tr> <tr> <td>b) Labor (Assembly and Testing)</td> <td><b>700.00</b></td> </tr> <tr> <td>c) Travel (Property Procurement and Field Testing)</td> <td><b>1000.00</b></td> </tr> <tr> <td>e) Miscellaneous</td> <td><b>2000.00</b></td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>PCB &amp; Protective case</li> <li>Soldering materials</li> <li>Documentations</li> </ul> </td> <td>           1700            300            500         </td> </tr> <tr> <td><b>Total</b></td> <td><b>18000.00</b></td> </tr> </tbody> </table>	Budget	Amount	a) Materials	<b>14300.00</b>	<ul style="list-style-type: none"> <li>Core Processing Unit (Raspberry Pi 4)</li> <li>AR Display Module (Transparent AR display)</li> <li>Sensors (GPS, Crash / Impact detection sensor, Accelerometer &amp; Gyroscope, Tensile buttons)</li> <li>Connectivity modules (Bluetooth &amp; Wifi)</li> <li>Voice Module (communication module)</li> <li>Power Supply (Lithium ion Chargeable Rechargeable Battery and BMS)</li> <li>Helmet &amp; mounting,</li> <li>Cables and connections</li> <li>Software API's</li> </ul>	5000 2500 1500 800 1000 1500 1500 500 0	b) Labor (Assembly and Testing)	<b>700.00</b>	c) Travel (Property Procurement and Field Testing)	<b>1000.00</b>	e) Miscellaneous	<b>2000.00</b>	<ul style="list-style-type: none"> <li>PCB &amp; Protective case</li> <li>Soldering materials</li> <li>Documentations</li> </ul>	1700 300 500	<b>Total</b>	<b>18000.00</b>
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17.	<p><b>Any other technical details:</b></p> <ul style="list-style-type: none"> <li>Core Processing Unit: Raspberry Pi 4 Model B &amp; Connectivity module(Bluetooth)</li> <li>Augmented Reality Display</li> <li>Location and Navigation: GPS module</li> <li>Sensors for Safety Features: Accelerometer and Gyroscope , Tactile Sensor/Button</li> <li>Emergency and SOS System</li> <li>Software and APIs: Google Maps API, OpenWeatherMap API, Custom Python Scripts</li> </ul>																

18.	<b>SPP Coordinator :</b> <b>Name: Dr. Ravishankar C V</b> <b>Email id: echodsait@gmail.com</b> <b>Contact No.: 9986155861</b>
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