**Presentation 1**

**Slide 1:**

* **Title:** Enabling Technology: Autonomous Systems with Vision Processing & AI Integration
* **Subtitle:** Harnessing AI and Computer Vision for Smart, Autonomous Solutions
* **Team Name/Logo: [Your Team Name]**
* **Date: [Presentation Date]**

**Slide 2:** Team Formation Exercise

**Slide 3:** Technology Definition & Communication

* **Definition:**" Autonomous systems with vision processing integrate a range of technologies to function effectively. High-resolution cameras, LiDAR, radar, and other sensors capture detailed visual and environmental data, which is processed by powerful edge computing devices like GPUs, FPGAs, or ASICs. Machine learning algorithms, especially deep neural networks, analyze this data in real time to detect objects, interpret scenes, and guide decision-making. Additionally, these systems leverage cloud computing for storage and intensive processing, while low-power communication protocols and energy-efficient designs enable battery operation or energy harvesting, and integrated user interfaces facilitate interaction with users and environments. "
* **Key Points for Non-Experts:**
  + **Smart Decision-Making:** Systems learn from visual data and can act autonomously.
  + **Real-Time Operation:** Immediate processing of sensor inputs ensures fast, accurate responses.
  + **Versatile Applications:** From industrial automation to smart cities, these systems offer broad functionality.
* **Objective:**Articulate the technology in clear, simple terms that highlight its benefits and enable stakeholders to see its market potential.

**Slide 4: Identification of Technology Features**

* **Core Building Blocks:**
  + **Vision Processing:**
    - Integration of cameras and image sensors.
    - Use of computer vision algorithms (e.g., object detection, tracking, scene understanding).
  + **AI Model Integration:**
    - Deployment of machine learning models (using frameworks like TensorFlow or PyTorch) to analyze visual data.
    - Continuous learning capabilities to improve decision-making over time.
  + **Sensor Fusion:**
    - Combining data from multiple sensors (e.g., cameras, LIDAR, ultrasonic sensors) for robust environment perception.
  + **Autonomous Navigation & Control:**
    - Real-time data processing for path planning and obstacle avoidance.
    - Use of algorithms such as SLAM (Simultaneous Localization and Mapping) for precise localization.
  + **IoT Connectivity:**
    - Enabling remote monitoring, updates, and coordination via wireless communication (5G, WiFi, LoRaWAN).

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Os conteúdos gerados por IA poderão estar incorretos.

**Slide 5: Identification of Application Areas**

* **Broad Application Opportunities:**
  + **Industrial Automation:**
    - Autonomous robots for manufacturing, warehousing, and quality control.
  + **Smart Cities:**
    - Traffic management, public safety monitoring, and urban infrastructure inspection.
  + **Healthcare:**
    - Robotic assistance in hospitals, patient monitoring, and diagnostics.
  + **Agriculture:**
    - Automated crop monitoring and precision farming using real-time vision analytics.
  + **Retail & Security:**
    - Customer analytics in stores and enhanced surveillance systems**.**
* **Ideation Tools Employed:**
  + **Mind Mapping:** Visualize diverse markets where autonomous vision systems can add value.
  + **TRIZ Analysis:** Identify and resolve contradictions in existing approaches to inspire innovative applications.

**Slide 6: Technology Push Process Overview**

* **Step 1: Technology Definition & Communication**
  + Clearly explain the technology to ensure stakeholders from all backgrounds understand its potential.
* **Step 2: Identification of Technology Features**
  + Break down the technology into core components and functions, highlighting how these features differentiate it from existing solutions.
* **Step 3: Identification of Application Areas**
  + Use ideation tools to match the technology’s capabilities with unmet market needs and uncover broad application possibilities.
* **Outcome:**A robust foundation that supports further development, commercialization, and market adoption of autonomous systems.

**Slide 7: Next Steps & Strategic Roadmap**

* **Prototype & Validation:**
  + Develop a proof-of-concept that demonstrates real-time vision processing and AI decision-making.
* **Pilot Studies & Partnerships:**
  + Collaborate with industry partners and research institutions to refine the technology.
* **Funding & Commercialization:**
  + Seek grants, venture capital, or strategic partnerships to support scaling.
* **Scaling & Market Rollout:**
  + Identify key markets and deploy targeted solutions that leverage the autonomous system's strengths.

**Slide 8: Q&A**

* **Invite Discussion:**
  + Open the floor for questions regarding the technology’s features, potential applications, and strategic next steps.
* **Feedback:**
  + Encourage stakeholder input on additional application areas and further improvements.