

# International Conference on Nurturing Sustainability through Innovations in Science and Technology for Global Welfare



Contribution ID: 21

Type: Poster

## Autonomous Driving System: An Overview

The advancement of autonomous driving systems is categorized into five levels, ranging from Level 0, which represents no automation, to Level 5, where vehicles operate entirely without human intervention. This research explores the nuances of these five levels, highlighting the progressive shift from driver assistance to complete vehicular autonomy. Each level signifies a critical step in the development of self-driving technologies, with corresponding changes in control, monitoring, and decision-making responsibilities.

In addition to examining these levels, this study investigates three distinct operational modes of autonomous driving systems:

1. **Assisted Mode:** This mode includes driver assistance technologies that enhance safety and convenience but still require constant driver supervision and intervention. Examples include adaptive cruise control and lane-keeping assistance, which provide support without replacing the driver's active role.
2. **Automated Mode:** In this mode, the vehicle can perform certain driving tasks autonomously, though human oversight remains necessary. This includes systems that can handle more complex scenarios, such as highway driving with limited human intervention, but still require driver readiness to take control if needed.
3. **Autonomous Mode:** This mode represents full autonomy where the vehicle operates independently without any driver input. It encompasses the highest levels of automation (Levels 4 and 5), where the vehicle can handle all aspects of driving in defined operational domains or under all conditions without human involvement. This research aims to provide a comprehensive analysis of how these three operational modes interact with the five levels of automation. By exploring the technological capabilities, operational challenges, and practical applications of each mode across different levels, the study offers insights into the current state and future potential of autonomous driving systems. The findings contribute to a deeper understanding of the integration of autonomous technologies into real-world driving environments, addressing implications for safety, regulatory frameworks, and user experience.

**Keywords:** Self-driving, Autonomous, Driving, System, Vehicles, Artificial Intelligent, Safety, Innovation, Technology.

**Primary author:** SRINIDHI, Thulasi (Jain deemed to be University)

**Co-author:** K G, Dr Sagar (Jain Deemed To be University, FET Campus Kanakpura)

**Presenter:** SRINIDHI, Thulasi (Jain deemed to be University)

**Track Classification:** Innovation and Technology for Sustainability