



SNS COLLEGE OF TECHNOLOGY

**Coimbatore-35
An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF AUTOMOBILE ENGINEERING

AUTOMOTIVE SAFETY & INFOTRONICS

UNIT V – INFOTRONICS FOR AUTOMOBILES

TOPIC 4 & 5: AUTOMOTIVE VISION SYSTEM & ROAD RECOGNITION





PRESENTATION OUTLINE



- Introduction
- Principle of Operation
- Working
- Advantages
- Disadvantages





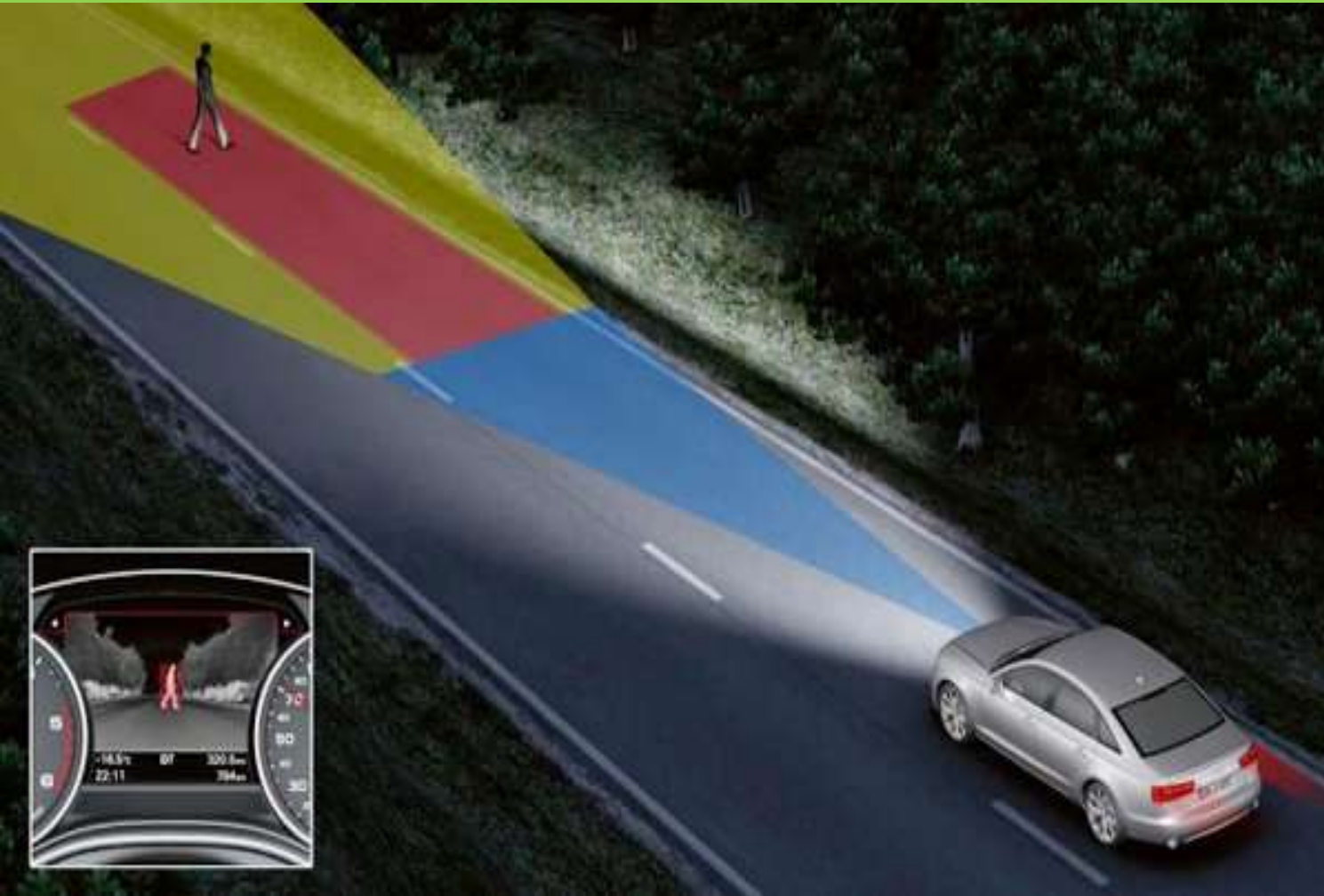
INTRODUCTION



- In automotive night vision system is a system to increase a vehicle driver's perception and seeing distance in darkness or poor weather beyond the reach of the vehicle's headlight
- The first car night vision system was implemented on the Cadillac 2000 DeVille, which used infrared technology to detect pedestrians



PRINCIPLE OF OPERATION



- Active Illumination
- Thermal Imaging



ACTIVE ILLUMINATION



- This system can detect pedestrians up to four times farther than the typical headlight range even in penetrating dense smoke
- It actively detects the people near the roadway, highlighting potential hazards and allowing drivers to have more time to react to them
- Its high beam illumination warns the pedestrians as well



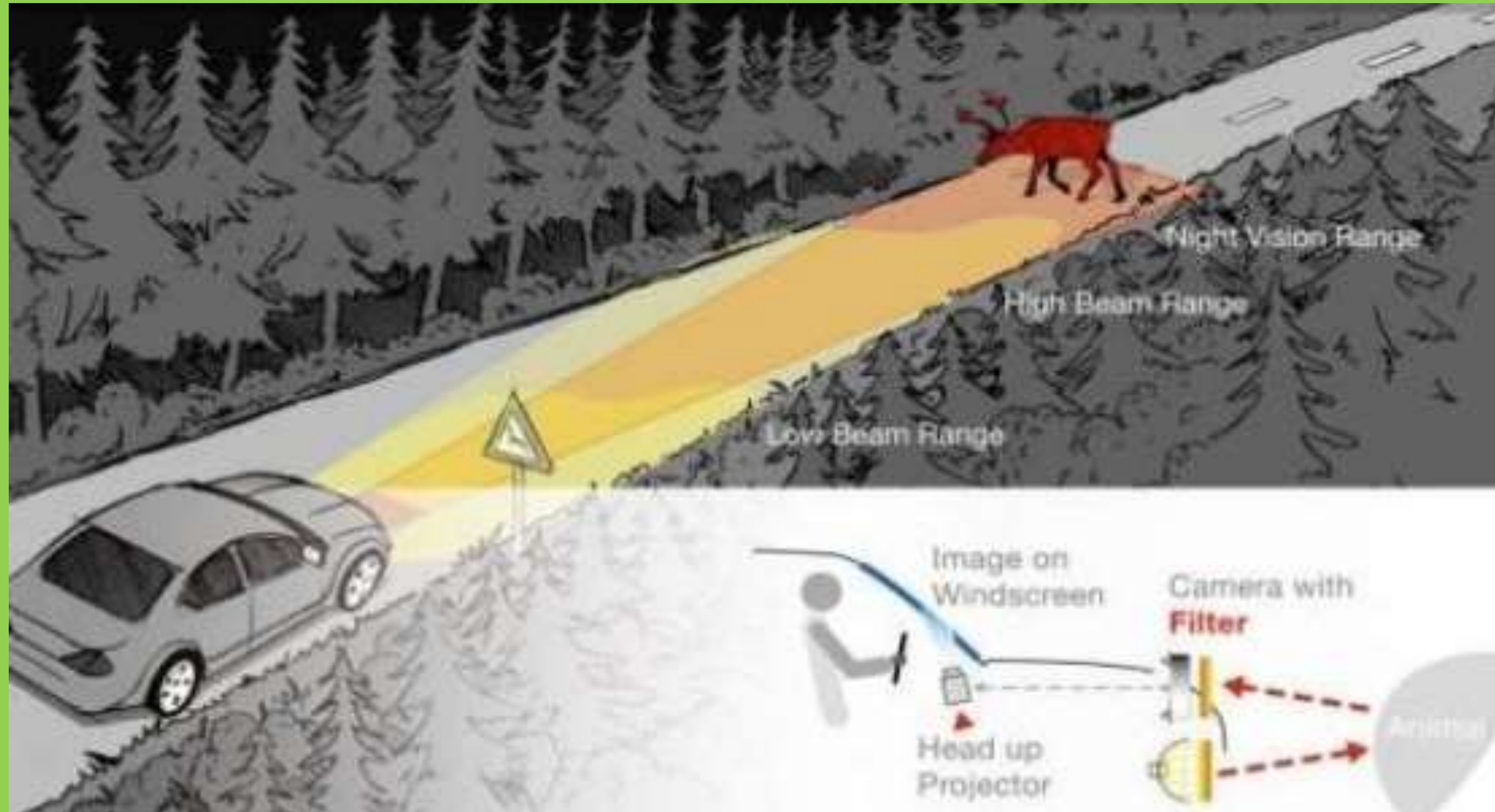
THERMAL IMAGING



- Thermal imaging is a heat sensing technology that can see in complete darkness using temperature difference
- Electrical pulses are sent in the form of temperature values to an image signal processor that turns them into video data for presentation on a display



CAR WITH NVS MECHANISM





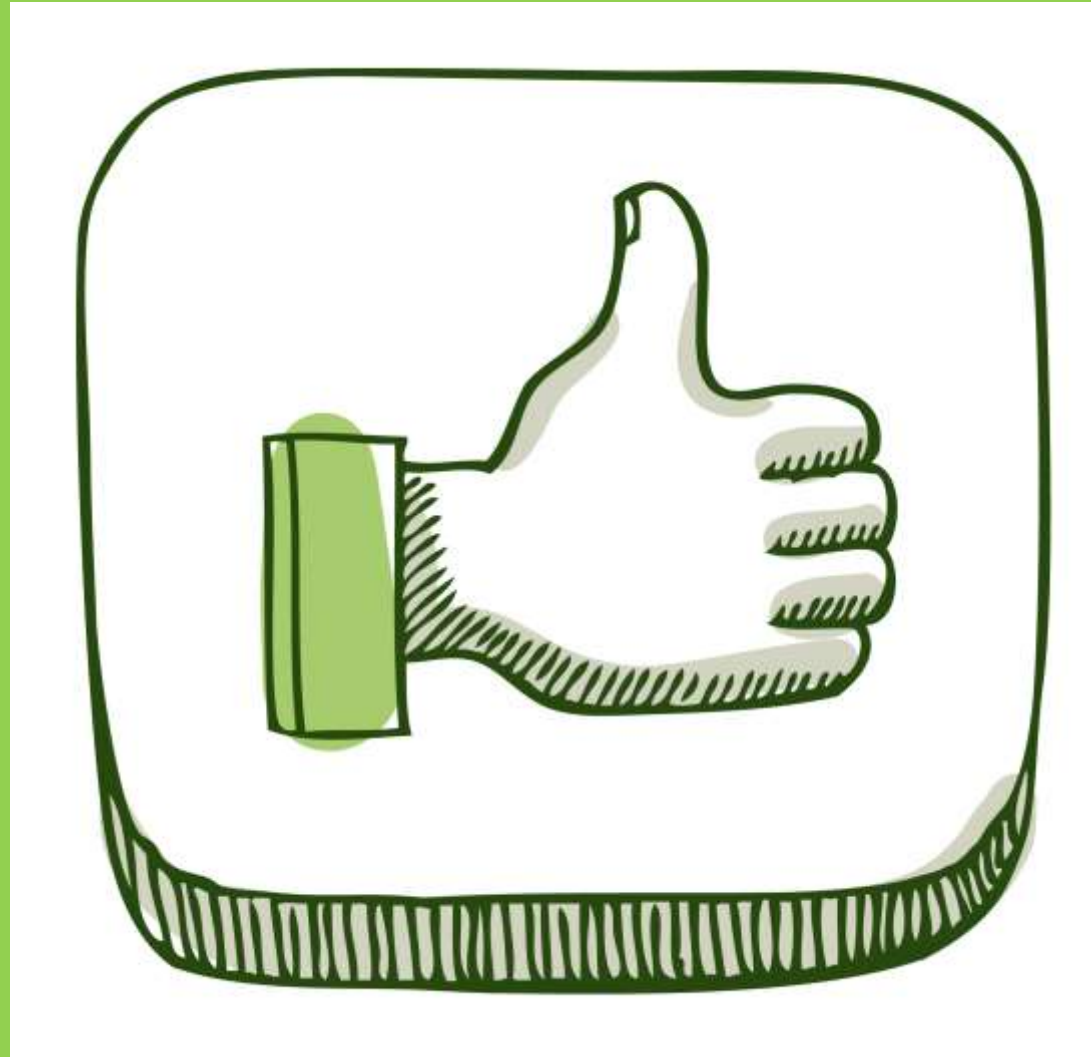
WORKING



- Systems use an LCD that's mounted on the dash, in the instrument cluster, or integrated into the head unit
- The front thermo graphic sensors detects the heat and processes the thermos grams to display images on LCD
- The IR Sensor attached in Vehicle's grille illuminates very high beam



ADVANTAGES



- Reduce Accidents
- Greater range of about 300 meters 1000 feet
- Can be Switched OFF and ON and doesn't affect driving style
- Works in almost every weather condition



DISADVANTAGES



- Higher Costs
- Large Quantity of Costly and Complex equipment's
- Works poorly in warmer weather condition
- Large Sensors are required



REFERENCES



- George A. Peters, Barbara J. Peters, “Automotive Vehicle Safety” CRC Press, 2002
- Richard Bishop, “Intelligent Vehicle Technology and Trends” Artech House, 2005

Thank you