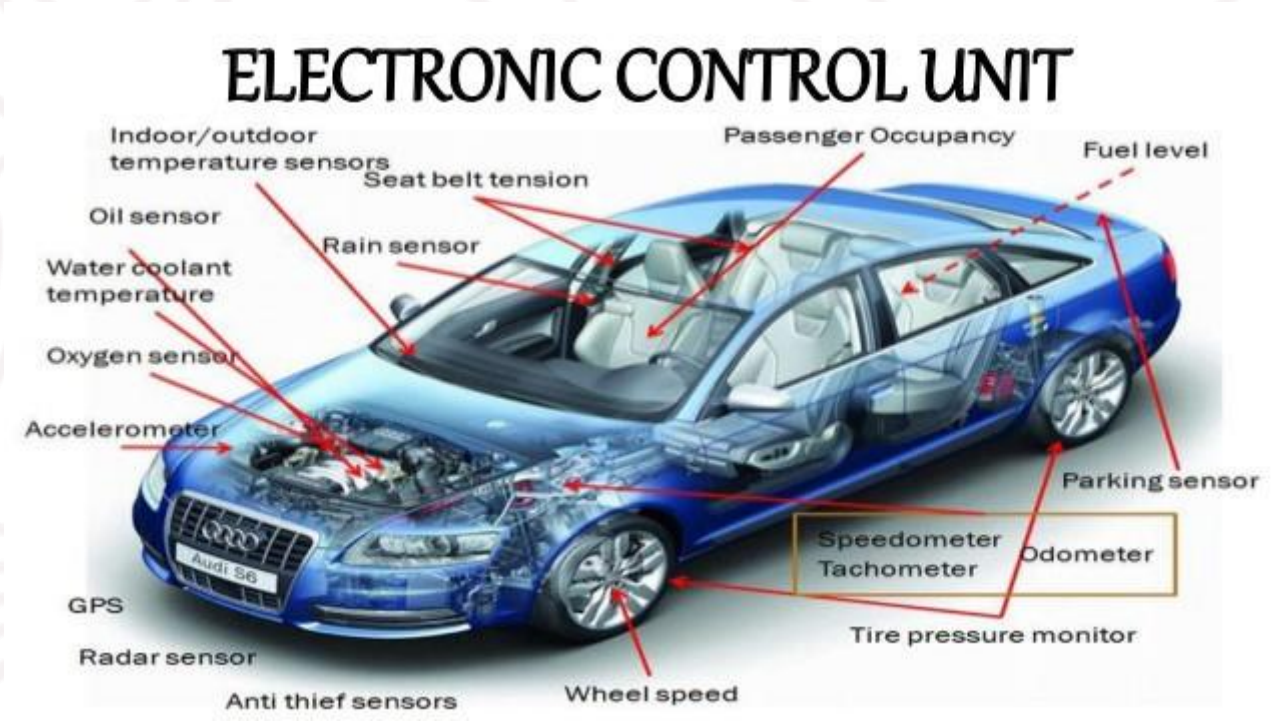

Automotive
Embedded
Systems

Embedded Systems in automotive

- ✓ AIRBAGS
- ANTI-LOCK BRAKING SYSTEM
- BLACK BOX
- ADAPTIVE CRUISE CONTROL
- DRIVE BY WIRE
- SATELLITE RADIO
- EMISSION CONTROL
- TRACTION CONTROL
- AUTOMATIC PARKING
- NIGHT VISION
- HEADS UP DISPLAY
- BACK UP COLLISION SENSORS
- NAVIGATIONAL SYSTEMS,
- TYRE PRESSURE MONITOR
- CLIMATE CONTROL

Tasks of ECU

- ✓ TODAY'S VEHICLES MAY CONTAIN 100 ECUS OR MORE, CONTROLLING FUNCTIONS THAT RANGE FROM THE ESSENTIAL (SUCH AS ENGINE AND POWER STEERING CONTROL) TO COMFORT (SUCH AS POWER WINDOWS, SEATS, AND HVAC), TO SECURITY AND ACCESS (SUCH AS DOOR LOCKS AND KEYLESS ENTRY). ECUS ALSO CONTROL PASSIVE SAFETY FEATURES, SUCH AS AIRBAGS, AND EVEN BASIC ACTIVE SAFETY FEATURES, SUCH AS AUTOMATIC EMERGENCY



REACTIVE SYSTEMS

- reacts to inputs from the environment by generating corresponding outputs
- programming of reactive systems typically requires the use of non-standard control flow constructs, such as concurrency and exception handling

REAL-TIME SYSTEMS

- a real-time computer system is a computer system in which the correctness of the system behavior depends not only on the logical results of the computations, but also on the physical instant at which these results are produced.

- you need assurance as a system designer no single operation will exceed certain timing constraints.

DEPENDABLE SYSTEMS

- Enter Integrated Safety Systems (ISSs), the latest paradigm in safety engineering allow safety components, like speed, steering or other sensors, to be available for a variety of applications.
- The development partnership AUTOSAR, is dealing with the standardization of software architecture for automotive applications

DISTRIBUTED SYSTEMS

- Automotive embedded systems are distributed throughout modern vehicles using multiple vehicle networks partitioned across a variety of different electronic modules.