SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

19EEE305 / EMBEDDED SYSTEMS
III YEAR / VI SEMESTER

UNIT-IV: RTOS BASED EMBEDDED SYSTEM DESIGN

ZIG BEE VS BLUE TOOTH

ZigBee vs Bluetooth – Basic Comparison

- ZigBee: Designed for control and monitoring
- Bluetooth: Designed for audio, file transfer, and short-range data
- ZigBee supports more devices per network
- Bluetooth offers higher data rates
- ZigBee is optimized for power efficiency

ZigBee vs Bluetooth – Technical Specs

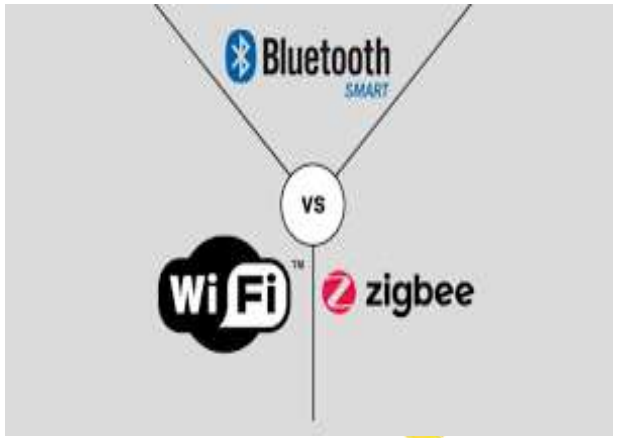
- ZigBee: 250 kbps, Bluetooth: up to 3 Mbps (Classic), 2 Mbps (BLE)
- ZigBee range: up to 100m, Bluetooth: typically 10m
- ZigBee uses DSSS, Bluetooth uses FHSS
- ZigBee mesh networking vs. Bluetooth piconets
- ZigBee uses AES-128 encryption, Bluetooth has stronger authentication

ZigBee vs Bluetooth – Power and Use Case

- ZigBee ideal for battery-powered IoT devices
- Bluetooth more common in mobile/wearable devices
- ZigBee has longer battery life (years)
- Bluetooth is better for real-time communication (e.g., audio)
- Use case drives technology choice

ZigBee vs Bluetooth – Application Domains

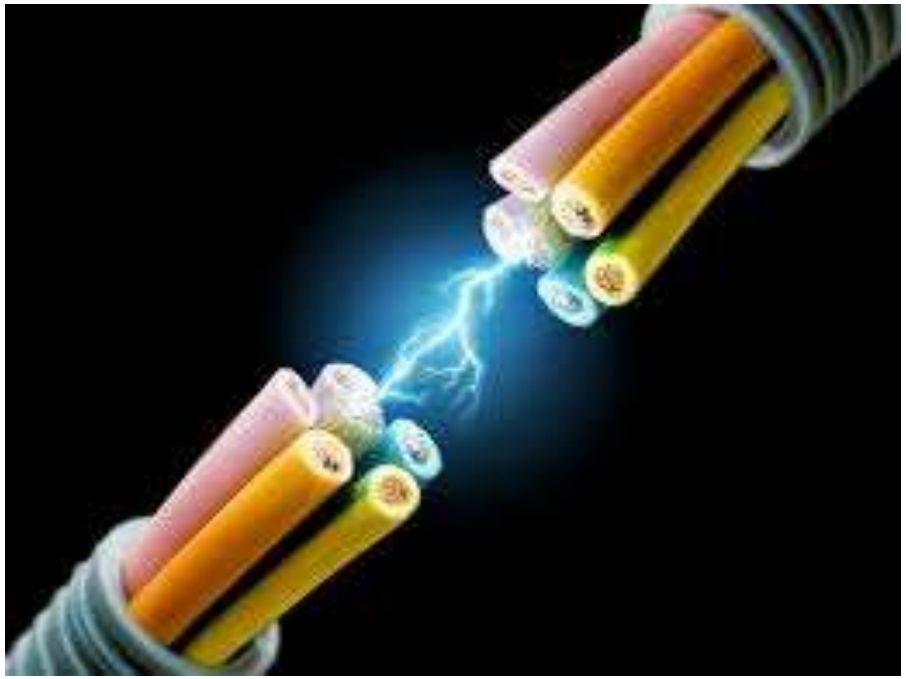
- ZigBee: smart homes, industrial automation, metering
- Bluetooth: headphones, smartwatches, keyboards
- ZigBee excels in static sensor networks
- Bluetooth dominates consumer electronics
- Both technologies serve complementary roles



RECAP: ZigBee vs Bluetooth

- ZigBee prioritizes scalability, low power, and reliability
- Bluetooth prioritizes speed and ease of connectivity
- ZigBee supports mesh; Bluetooth supports limited scatternets
- Both support secure communication
- Choice depends on range, power, speed, and application needs

RECAP….



…THANK YOU