INFOSOFT IT SOLUTIONS

Training | Projects | Placements

Revathi Apartments, Ameerpet, 1st Floor, Opposite Annapurna Block, Infosoft It solutions, Software Training & Development Institute, **+91 - 9059683947 | +91 - 9182540872**

5G Network

Introduction to 5G Networks

- Evolution from 4G LTE to 5G
- Key features and objectives of 5G
- Use cases and applications of 5G technology

5G Network Architecture

- Core network (5GC) architecture
- Radio Access Network (RAN) architecture
- Network slicing and virtualization concepts

Radio Access Technologies in 5G

- New Radio (NR) interface and spectrum bands
- Massive MIMO (Multiple-Input Multiple-Output) technology
- Beamforming and beam management techniques

Network Functions and Protocols

- Network Function Virtualization (NFV) in 5G
- Software-Defined Networking (SDN) principles
- Protocols: NGAP, Xn, PFCP, N1/N2 interfaces

5G Core Network (5GC)

- Components of 5G Core: AMF, SMF, UPF, NRF, etc.
- Service-based architecture (SBA)
- Network function orchestration and management

Network Slicing in 5G

- Concept of network slicing for customized services
- Slice management and orchestration

5G Security

- Security challenges in 5G networks
- Authentication and encryption mechanisms
- Securing IoT devices and edge computing

5G Performance and Quality of Service

- Enhancements in data rates and latency (e.g., ultra-reliable low latency communication, URLLC)
- Quality of Service (QoS) management in 5G
- Service Level Agreements (SLAs) and performance monitoring

5G Deployment Scenarios

- Standalone (SA) vs. Non-Standalone (NSA) deployment
- Cloud RAN (C-RAN) and virtual RAN (vRAN)
- Edge computing and multi-access edge computing (MEC)

5G Spectrum and Regulatory Aspects

- Spectrum allocation for 5G networks
- Regulatory requirements and standards (e.g., 3GPP)
- Global harmonization efforts

5G Use Cases and Applications

- Enhanced mobile broadband (eMBB) applications

- Industrial IoT and automation
- Augmented Reality (AR), Virtual Reality (VR), and gaming

Integration with Other Technologies

- Integration with Wi-Fi 6 and beyond
- Interworking with existing 4G networks (LTE)
- Cross-technology and cross-domain interoperability

Business and Economic Implications

- Economic impact of 5G deployment
- Business models and monetization strategies
- Industry adoption and digital transformation

5G Testing and Validation

- Testing methodologies for 5G networks and devices
- Performance testing and benchmarking
- Certification and compliance testing

Ethical, Legal, and Social Issues (ELSI)

- Privacy concerns in 5G networks
- Ethical considerations in AI and automation
- Social implications of ubiquitous connectivity

Case Studies and Practical Applications

- Real-world examples of successful 5G deployments
- Case studies across industries (telecommunications, healthcare, automotive)

Training and Education

- Courses and certifications in 5G technology
- Educational resources and workshops

- Skills development for engineers and network architects

Community and Resources

- Participating in 5G communities (forums, conferences, industry associations)
- Accessing online resources and research publications

Future Trends in 5G

- Emerging technologies and innovations in 5G
- Predictions for the future of mobile communications

Global Collaboration and Standardization

- Role of international organizations (ITU, IEEE, 3GPP)
- Collaborative initiatives and standardization efforts