FUNDAMENTALS OF FOG AND EDGE COMPUTING SYLLABUS

Module 1: Internet of Things (IoT) and New Computing Paradigms

- Introduction
- Relevant Technologies
- Fog and Edge Computing
    - Completing the Cloud
    - Hierarchy of Fog and Edge Computing
- Business Models
- Edge Computing Platforms
- Opportunities and Challenges

Module 2: Challenges in Federating Edge Resources

- Introduction
- Methodology
- Integrated C2F2T Literature
    - By Modeling Technique
    - By Use-Case Scenarios
    - By Metrics
- Threads
- Standards

Module 3: Orchestration of Network Slices in Fog, Edge, and Clouds

- Introduction
- Background
- Network Slicing
    - Network Slicing in Software-Defined Clouds
    - Network Slicing Management in Edge and Fog
- Internet of Vehicles (IoV)

    - Architecture
    - Protocols
    - Seven-Layer Security Model Architecture for IoV
- IoV: Network Models
    - Challenges
    - Future Aspects

Module 4: Optimization Problems in Fog and Edge Computing

- Preliminaries
- The Case for Optimization in Fog Computing
- Formal Modeling Framework for Fog Computing
- Metrics
- Further Quality Attributes
- Optimization Opportunities
    - Along the Fog Architecture
    - Along the Service Life Cycle
- Toward a Taxonomy of Optimization Problems in Fog Computing

Module 5: Middleware for Fog and Edge Computing

- Need for Fog and Edge Computing Middleware
- Design Goals
- State-of-the-Art Middleware Infrastructures
- System Model
- Case Study

Module 6: Technologies in Fog Computing

- Fog Data Management
- Smart Building
- Predictive Analysis with FogTorch
- Machine Learning in Fog Computing
- Data Analytics in the Fog

- Data Analytics in the Fog Architecture

Module 7: Applications of Fog and Edge Computing

- Exploiting Fog Computing in Health Monitoring
- Smart Surveillance
- Video Stream Processing at the Edge for Real-Time Human Object Tracking
- Fog Computing Model for Evolving Smart Transportation Applications
- Testing Perspectives of Fog-Based IoT Applications
- Legal Aspects of Operating IoT Applications in the Fog