* Routing Protocols for Flying Ad-hoc Networks (FANETs) with a Focus on 3D Scenarios

Points to explore and find papers on:

1. Comparison of 2D and 3D routing protocols:
   * How do traditional MANET routing protocols perform in 3D FANET scenarios?
   * What are the key differences and challenges in 3D routing?
2. Mobility models for FANETs:
   * What mobility models best represent drone movement in 3D space?
   * How do different mobility patterns affect routing performance?
3. Energy-aware routing in FANETs:
   * How can routing protocols consider the limited energy of drones?
   * What are the trade-offs between optimal routes and energy conservation?
4. Delay-tolerant routing for FANETs:
   * How can routing protocols handle intermittent connectivity in drone networks?
   * What are the applications of delay-tolerant networking in FANETs?
5. Cluster-based routing approaches:
   * How can clustering techniques improve scalability in large-scale FANETs?
   * What are the challenges in maintaining clusters in 3D environments?
6. Geographic routing in 3D:
   * How can geographic routing protocols be adapted for 3D scenarios?
   * What are the limitations of position-based routing in FANETs?
7. QoS-aware routing for FANETs:
   * How can routing protocols ensure QoS for different types of drone applications?
   * What metrics are most relevant for QoS in 3D drone networks?
8. Security considerations in FANET routing:
   * What are the unique security challenges in FANET routing protocols?
   * How can secure routing be achieved without compromising performance?
9. Cross-layer design for FANET routing:
   * How can information from other layers (e.g., physical, MAC) improve routing decisions?
   * What are the benefits and drawbacks of cross-layer approaches in FANETs?
10. Performance evaluation metrics for 3D routing:
    * What metrics are most suitable for comparing FANET routing protocols?
    * How can simulation environments accurately model 3D FANET scenarios?

* Security and Privacy in Internet of Things Networks for Smart Cities

Points to explore and find papers on:

1. Threat landscape in smart city IoT:
   * What are the most prevalent security threats in smart city IoT deployments?
   * How do these threats differ from traditional network security challenges?
2. Privacy-preserving data collection:
   * How can IoT devices collect data while protecting citizens' privacy?
   * What are the trade-offs between data utility and privacy in smart city applications?
3. Secure communication protocols:
   * What lightweight encryption methods are suitable for resource-constrained IoT devices?
   * How can key management be handled effectively in large-scale IoT networks?
4. Authentication and access control:
   * What are effective methods for device and user authentication in IoT networks?
   * How can access control be implemented in distributed IoT environments?
5. Intrusion detection and prevention:
   * How can anomaly detection be applied to IoT traffic in smart cities?
   * What are the challenges in implementing IDS/IPS in heterogeneous IoT networks?

* Energy Harvesting Techniques for Sustainable Wireless Sensor Networks

Points to explore and find papers on:

1. Energy harvesting sources:
   * What are the most promising energy harvesting techniques for WSNs?
   * How do different environmental factors affect the efficiency of energy harvesting?
2. Energy-aware routing protocols:
   * How can routing protocols be optimized to utilize harvested energy effectively?
   * What are the trade-offs between energy efficiency and network performance?
3. Energy storage technologies:
   * What are suitable energy storage solutions for energy harvesting WSNs?
   * How can the charging and discharging cycles be optimized for longevity?
4. Prediction and adaptation:
   * How can energy harvesting patterns be predicted to improve network planning?
   * What adaptive techniques can be used to balance energy consumption and harvesting?
5. Applications and case studies:
   * What are successful deployments of energy harvesting WSNs in real-world scenarios?
   * How does energy harvesting impact the overall lifecycle cost of WSN deployments?

* Low-Power Wide-Area Networks (LPWAN) for IoT Applications

Points to explore and find papers on:

1. LPWAN technologies comparison:
   * How do different LPWAN technologies (LoRa, Sigfox, NB-IoT) compare in terms of performance and use cases?
   * What are the trade-offs between range, data rate, and power consumption in LPWANs?
2. MAC layer protocols:
   * What MAC protocols are most suitable for LPWAN scenarios?
   * How can MAC protocols be optimized for energy efficiency in LPWANs?
3. Coverage and capacity analysis:
   * How can LPWAN coverage be modeled and optimized in urban and rural environments?
   * What are the limits of LPWAN capacity and how can they be overcome?
4. Integration with existing infrastructure:
   * How can LPWANs be integrated with cellular and other existing network infrastructures?
   * What are the challenges in achieving seamless connectivity across different network types?
5. LPWAN for critical IoT applications:
   * How suitable are LPWANs for critical IoT applications requiring high reliability?
   * What techniques can improve the reliability and latency of LPWAN communications?

* Quality of Service Mechanisms for Real-time Applications in Vehicular Ad-hoc Networks (VANETs)

Points to explore and find papers on:

1. QoS requirements in VANETs:
   * What are the specific QoS requirements for different VANET applications?
   * How do these requirements differ from traditional mobile networks?
2. MAC layer QoS mechanisms:
   * How can MAC protocols in VANETs be designed to support QoS?
   * What are the challenges in providing channel access guarantees in high-mobility scenarios?
3. Routing protocols for QoS:
   * What routing metrics are most effective for ensuring QoS in VANETs?
   * How can multi-path routing be utilized to improve QoS in VANETs?
4. Cross-layer QoS approaches:
   * How can information from different layers be leveraged to improve QoS?
   * What are the trade-offs in implementing cross-layer QoS solutions?
5. QoS in heterogeneous VANET environments:
   * How can QoS be maintained when transitioning between different network types (e.g., V2V to V2I)?
   * What are the challenges in providing end-to-end QoS guarantees in VANETs?

* Secure and Energy-Efficient Communication Protocols for Body Area Networks (BANs)

Points to explore and find papers on:

1. Lightweight encryption for BANs:
   * What encryption methods are suitable for resource-constrained BAN devices?
   * How can key management be handled efficiently in BANs?
2. Energy-efficient MAC protocols:
   * What MAC protocols are most energy-efficient for BAN scenarios?
   * How can duty cycling be optimized for different BAN applications?
3. Secure routing in BANs:
   * How can routing protocols in BANs be designed to be both secure and energy-efficient?
   * What are the trade-offs between security strength and energy consumption in BAN routing?
4. Privacy preservation in health data:
   * How can patient privacy be protected while allowing necessary data sharing in BANs?
   * What are the regulatory considerations for secure BAN deployments in healthcare?
5. Trust management in BANs:
   * How can trust be established and maintained between BAN devices?
   * What are effective methods for detecting and isolating compromised nodes in BANs?