INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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GOOGLE CLOUD IoT TRAINING

- **Introduction to IoT:**
  - Understanding IoT concepts and applications
  - Overview of IoT architecture
  - IoT devices and sensors
- **Google Cloud Platform (GCP) Fundamentals:**
  - Introduction to Google Cloud Platform
  - GCP services relevant to IoT (Compute Engine, Pub/Sub, Dataflow, Big Query, etc.)
  - Setting up a GCP account and project
- **Google Cloud IoT Core:**
  - Overview of Google Cloud IoT Core
  - Device registration and management
  - Communication protocols (MQTT, HTTP)
  - Security best practices
- **Device Connectivity**:
  - Configuring devices to connect to Google Cloud IoT Core
  - Choosing appropriate communication protocols
  - Device authentication and authorization

- **Data Processing and Analytics**:
    - Data ingestion with Cloud Pub/Sub
    - Real-time data processing with Cloud Dataflow
    - Storing IoT data in Big Query
    - Analyzing IoT data with Data Studio and other visualization tools
- **Edge Computing and IoT Edge**:
    - Overview of Edge Computing
    - Google Cloud IoT Edge features and capabilities
    - Implementing edge computing solutions with IoT Edge
- **Machine Learning and AI at the Edge:**
    - Introduction to machine learning and AI
    - Integrating machine learning models with IoT devices
    - Edge AI applications and use cases
- **IoT Security and Compliance**:
    - Security considerations for IoT deployments
    - Implementing end-to-end security in IoT solutions
    - Compliance standards and regulations (GDPR, HIPAA, etc.)
- **IoT Solution Deployment and Management**:
    - Deploying IoT solutions on Google Cloud Platform
    - Monitoring and managing IoT devices and infrastructure
    - Scaling IoT deployments for large-scale applications
- **Advanced IoT Architectures**:
    - High availability and fault tolerance in IoT systems
    - Scalable IoT architectures for large-scale deployments
    - Hybrid cloud and edge computing architectures
    - Multi-cloud IoT solutions and interoperability

- **Advanced Device Management**:
    - Dynamic device provisioning and onboarding
    - Fleet management and over-the-air updates (OTA)
    - Device state management and synchronization
    - Advanced device monitoring and diagnostics
- **Advanced Data Processing and Analytics:**
    - Complex event processing (CEP) for real-time analytics
    - Advanced data transformations and enrichment
    - Predictive analytics and machine learning at scale
    - Optimization techniques for data storage and querying
- **Advanced Security Practices**:
    - Zero-trust security architectures for IoT
    - Identity and access management (IAM) for IoT devices
    - Advanced encryption and key management techniques
    - Security monitoring and threat detection for IoT deployments
- **Edge Computing Optimization:**
    - Optimizing edge computing resources for performance and efficiency
    - Edge caching and local data processing techniques
    - Latency optimization strategies for real-time applications
    - Edge-to-cloud synchronization and data consistency
- **Advanced Machine Learning Integration**:
    - Advanced ML model deployment strategies for edge devices
    - Transfer learning and federated learning for IoT
    - Edge AI model optimization and compression techniques
    - Edge-based anomaly detection and predictive maintenance

- **Compliance and Regulatory Considerations**:
    - Advanced compliance frameworks and regulations (e.g., ISO 27001, NIST)
    - Privacy-preserving techniques for IoT data
    - Data residency and sovereignty requirements
    - Compliance auditing and reporting for IoT deployments
- **Advanced IoT Solution Deployment**:
    - Infrastructure as code (IaC) for IoT deployments
    - CI/CD pipelines for continuous integration and deployment
    - Advanced monitoring, logging, and debugging techniques
    - Performance optimization and cost management strategies