Frankfurt University of Applied Sciences
Forschungsgruppe für
Tele-
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Aktuell offene Bachelor- und Master-Thesen sowie Studierenden-Projekte, Stand 13.03.2019
für Elektrotechnik- und Informatik-Studiengänge

Beginn jederzeit!

Zusätzlich zu den unten angegebenen Themen gibt es fortlaufend aktuelle Bachelor- und Masterarbeiten sowie Projektthemen zu Virtualisierung, Wireless-Netzwerken und Machine-to-Machine Communication/Internet of Things

1 Analysis of the energy consumption and resources usage during the VNF migration process (Thesis or Project)
- Implementation of the following network services inside a LXD container: DNS, DHCP, SIP Proxy Server
- Migration of a running network service (live migration using criu)
- Description of the migration process
- Measurement of the of the energy consumption and the migration duration
- Contact: M.Sc. Auberlin Paguem Tchinda, paguem@e-technik.org , 069/1533-3613

2 Implementation of a 2-layers routing architecture using a network simulator (Project + Thesis)
- Selection of a suitable simulation framework/library (OMNET++ or NS) for the implementation
- Deep description of the selected simulation framework/library for future student projects
- Implementation of the 2-layer architecture using the selected framework/library
- Definition of different communication scenarios and network topologies
- Analysis/comparison of the performance (protocol overhead) with the routing protocols HWMP, OLSR, DSDV, Babel (if possible)
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3 Design and implementation of a high throughput medium access control (MAC) **method for the multi-hops communication in WMN** (Project + Thesis)
- Literature review and description of the existing MAC methods in WMN
- Analysis/comparison of the existing MAC methods in WMN
- Implementation of the most promising method using a simulation framework/library (OMNET++ or NS)
- Performance analysis of the implemented MAC method in different communication scenarios and network topologies
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4 Evaluation of existing migration strategies for LXC/LXD containers (Project)
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5 Design and implementation of a VoIP call between two organisations in disaster scenario (Project)
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6 Implementation of Software Defined Wireless-Mesh Network (Project)
- Different SDN-Controllers?
- In-Band or Out-of-Band?
- Additional WMN routing protocol?
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7 Trust Evaluation of M2M Application Services
- Literature for trust evaluation in M2M
- Considering decentralised M2M application services
- Evaluation of existing trust metrics
- Implementation of trust metrics such as “service monitoring” and “service rating”
- Implementation of different M2M application services where the trust level is evaluated based on the defined trust metrics
- Knowledge of programming (JAVA)
- Contact: M.Sc. Besfort Shala, shala@e-technik.org , 069/1533-3613

8a Identity Management and Data Storage in M2M Communities
- Literature review for existing approaches and blockchain technology
- Analysing Blockstack and Hyperledger for identity management
- Analysing Storj and Sia for data storage
- Implementation of different M2M services with integrated identity management and data storage system
- Knowledge of programming and Linux
- Contact: M.Sc. Besfort Shala, shala@e-technik.org , 069/1533-3613

8b Identity-Management und Datenhaltung in M2M-Communities
- Literaturrecherche für existierende Lösungsansätze und Blockchain-Technologie
- Analyse von Blockstack und Hyperledger bezüglich Identity-Management
- Analyse von Storj und Sia bezüglich Datenhaltung
- Implementierung von verschiedenen M2M-Diensten mit integriertem Identity-Management und Datenhaltungssystem

- Kenntnisse in Programmieren und Linux
- Ansprechpartner: M.Sc. Besfort Shala, shala@e-technik.org , 069/1533-3613

9a Integration of IOTA into M2M Applications
- Literature review for blockchain technology
- Theoretical evaluation of IOTA in comparison with other blockchain approaches
- Implementation of an M2M application with integrated IOTA for transaction exchange
- Knowledge of programming and Linux
- Contact: M.Sc. Besfort Shala, shala@e-technik.org , 069/1533-2556

9b Integration von IOTA in M2M-Anwendungen
- Literaturrecherche für Blockchain-Technology
- Theoretische Evaluierung und Gegenüberstellung von IOTA und anderen Blockchain-basierten Ansätzen
- Implementierung einer M2M-Anwendung mit integriertem IOTA für Transaktionsaustausch
- Kenntnisse in Programmieren und Linux
- Ansprechpartner: M.Sc. Besfort Shala, shala@e-technik.org , 069/1533-2556

10a Implementation of an virtualized IMS in OpenStack
- Implementation of IMS in virtual machines (VM)
- Utilization of IMS from Project Clearwater
- Management of VMs with OpenStack
- Testing IMS
- Knowledge: Linux, further programming languages
- Contact: Prof. Dr. Armin Lehmann, lehmann@e-technik.org, 069/1533-3610

10b Implementierung eines virtuellen IMS in OpenStack
- Implementierung des IMS in virtuellen Maschinen (VM)
- Verwendung des IMS von Project Clearwater
- Verwaltung der VMs mittels OpenStack
- Testen des IMS
- Kenntnisse: Linux, weitere Programmiersprachen
- Ansprechpartner: Prof. Dr. Armin Lehmann, lehmann@e-technik.org, 069/1533-3610