

Telcordia Applied Research Summer Intern Program

The Telcordia Applied Research Summer Intern Program provides internships for graduate students to work alongside top researchers in the telecommunications industry on various projects for both commercial and government customers. The program will run for ten weeks from June to August. We're seeking individuals who can demonstrate initiative and are creative, intellectually curious, and team-oriented with excellent analytical and critical reasoning skills. Projects available for internships are:

1. Develop a Web-based collaborative interface tool for modeling the mechanical interfaces between various network planning, design, and procurement systems.
Required background: Second year MS student in Software Engineering with good java implementation skills and good understanding of programming frameworks like Java Servlets.
2. Participate in development activities in preparation for interoperability testing, focusing on applications and client capabilities for priority voice and video services.
Required background: MS-level student with Java development experience, and preferably knowledge of VoIP protocols.
3. Cryptography – Engaging in research and innovative development in security/cryptography problems in challenging environments, including ad-hoc and vehicular networks.
Required background: Strong software development skills, cryptography and network/system security background, good understanding of IP networks, ad-hoc networks or vehicular networks a plus.
4. Policy management
Required background: Strong software development skills, good understanding of IP networking and wireless, and network management background. Experience with network simulation tools such as OPNET or ns2 is a plus.
5. Networking and automated network management for cutting-edge next generation networks. Key aspects of work involve performing research in security, routing, MANETs, wireless networks, QoS/signaling in wireless networks, or include software development of algorithms for provisioning and activation on the Telcordia leading service fulfillment product suite.
Required background: Strong development and computer science background with C/C++, Java and object oriented skills. Knowledge of Oracle or other SQL databases, Web Services and XML.
6. Wireless and Mobile Networking
Required background: Strong wireless and mobile networking expertise, including areas relating to system performance, mobility protocols, security, configuration, routing, etc. Sound knowledge of either mobile ad hoc networks (MANETs) or cellular wireless networks with an emphasis on IP networking, MAC/Link layers, and

software implementation skills. Familiarity with wireless network design and experience in developing prototype software (Java, C++, Linux, Mobile development, etc.), proof-of-concept demonstrations or simulation models (MATLAB, NS-2, OPNET, etc.).

7. Opportunity to assist on a large government-funded project, to develop methods for pervasive monitoring of a high capacity, optically transparent network, with an emphasis on detecting impairments which will require network reconfiguration.

Required background: Experience in optical networking and optical performance monitoring.

8. Opportunity to work on stability and optimization of complex opto-electronic control circuits in developing an optical circuit for coherent optical signal processing. Precise optical phase control in complex optical circuits, achieved using feedforward and feedback loops, is a critical part of this task.

Required background: Electronics skills at an advanced undergraduate or graduate level.

9. Implement a complex distributed algorithm to operate in a 100-node wireless network testbed. The algorithm to be implemented will be a portion of a geographic-based unicast or multicast routing protocol for mobile ad hoc wireless networks.

Required background: Possesses strong implementation and design skills and can apply them to an innovative distributed system that operates over mobile wireless ad hoc networks. IP protocol and networking knowledge is a plus.

10. Develop an overall system availability model for a highly available telecommunication application, plan experiments to collect data to parameterize the model, carry out experiments to estimate the parameters and solve the model to quantify the availability of the application.

Required background: Strong analytical skills in areas such as performance and reliability modeling or formal methods such as model-checking skills. Good implementation skills are required.