MITRE is seeking an engineer who is passionate about communications networks to perform research, design, analysis, hands-on prototyping, testing, experimentation, and/or modelling and simulation of communications networks in support of various US government initiatives. Your specific duties will depend on the networking knowledge and experience that you already have while also providing you with the opportunity to gain new skills through exposure to aspects of networking that are still unfamiliar to you. You will work with a team of engineers who specialize in providing networking expertise on a wide variety of projects to solve our nation’s most complex problems.

Key Functions:
Perform research, design, analysis, hands-on prototyping, testing, experimentation, and/or modelling and simulation to address complex questions regarding network design, security, and performance that are faced by a variety of MITRE’s customers. As the government’s not-for-profit, trusted, unbiased advisor, MITRE performs advanced networking research that is very different from the type of standard, operational networking support that is typically provided by DoD contractors. We focus on difficult, interesting, and crucial leading-edge research topics, some of which turn out to be game-changers. Here are two examples of the many ongoing advanced networking projects at MITRE:

- Integrate new, advanced network quality of service concepts into standard routing protocol implementations
- Create a conceptual network architecture for securing networks using new, research-oriented network protocol alternatives to standard TCP/IP protocols

This position will require the candidate to make use of his or her fundamental understanding of and interest in networking protocols and principles. Specific duties include one or more of the following:

- Develop and program prototypes in C/C++, Java, or Python
- Build lab-based testbeds and conduct proof-of-concept experiments
- Develop and execute experiments in a prototype environment
- Evaluate the performance of operational networks, protocols, and experimental systems
- Perform systems-level programming, IP packet processing, and TCP/IP sockets programming
- Work with Linux and Windows development tools
- Design and test apps on an Android smartphone
- Build and use virtualized networks using Software Defined Networking and Network Function Virtualization

To be clear, this is not the type of network engineering position that involves administering, configuring, managing, updating, operating, troubleshooting, or otherwise maintaining a production network to support the work of other analysts.
**Qualifications:**

**Required:**
B.S. in Computer Science, Electrical Engineering, Information Systems, or a related field

Coursework, experience, or skills as well as a strong interest in several of the following areas:
- TCP/IP, and related standard networking protocols
- Cloud-based technologies, including network virtualization, network overlay, Software Defined Networking (SDN), and Network Function Virtualization (NFV)
- Industrial control systems (ICS) design, deployment and operations
- Configuring of commercial IP routers and Ethernet switches
- Firewalls, VPNs, IDSs and other network security technologies
- Cryptographic protocols and OpenSSL programming
- Deployment of IP network time synchronization protocol (e.g., NTP, PTP) or time-dependent applications;
- GPS, synchronous networks, frequency standards and counters, and precise time interval measurement
- Traffic flow analysis and network application troubleshooting using tool such as Wireshark
- Network performance testing and measurement tools and techniques
- Performance evaluation of communications networks
- Network security analysis
- Development of prototypes or models of communications networks
- Modeling and simulation tools e.g., OPNET/Riverbed, MATLAB, NS-3
- Commercial and open-source network testing tools
- Linux kernel/module development
- C, C++, Java, Python, and/or Perl

Candidate should also possess the following:
- Excellent written and verbal communication and presentation skills
- Ability to work well in a collaborative team environment
- Be self-motivated to learn new technologies and be flexible to support tasking in a variety of areas
- Ability to obtain/maintain a DoD Secret Clearance (U.S. Citizenship required)

**Desired Degree Level:**
* MS or PhD