

**PROJECT – Radio Access Network (Project Code-T-01) & 5G RAN
(Project Code-T-02) Positions (approx.)-50**

WORK AREACODE	WORK AREA	SKILL SET	Experience/Qualifications
T-01	Leadership Position Covering aspects of RAN	<ul style="list-style-type: none"> • Knowledge of Wireless Technologies, Computer Networking, Data Networking, Signal Processing • Wireless network system architecture and subsystem design • 2G/3G/4G/5G Protocol understanding • Requirements development/management Process, • System Engineering Aspects, • Testing and debugging tools, Signal generator/analyzers, Logic Analyzers • Configuration Management, Scripting, Build and Development environment • Able to work on Product integration and testing like functional testing, load testing, Stability testing, Regression testing etc • Comfortable with organization processes • Interface with other teams and other organizations • Support for Field Trials and Testing • Lab building, maintenance <p>C/C++ programming</p>	<p>Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

<p>T-0101</p>	<p>Baseband HW</p>	<ul style="list-style-type: none"> • Computer Architecture, Digital Logic, Processor/FPGA/SoC interfacing • Expertise in hardware design (Circuit Design and Analysis, PCB, Devices, Signal and power integrity, interface with CAD/VDG/EPG) • Testing and debugging tools, Signal generator/analyzers, Logic Analyzers • Knowledge of industry standards, standardization • Good understanding of 3GPP wireless standards 	
<p>T-0102</p>	<p>RRH Analog & RF Hardware</p>	<ul style="list-style-type: none"> • Computer Architecture, Digital Logic, Processor/FPGA/SoC interfacing • Expertise in hardware design (Circuit Design and Analysis, PCB, Devices, Signal and power integrity, interface with CAD/VDG/EPG) • Ability to learn and use RF analysis and design tools • Testing and debugging tools, Signal generator/analyzers, Logic Analyzers • Knowledge of industry standards, standardization • Good understanding of 3GPP wireless standards 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>
<p>T-0103</p>	<p>RRH Signal Processing in FPGA</p>	<ul style="list-style-type: none"> • Computer Architecture, Digital Logic, Processor/FPGA/SoC interfacing 	

		<ul style="list-style-type: none"> • Knowledge in hardware design (Circuit Design and Analysis, PCB, Devices, Signal and power integrity, interface with CAD/VDG/EPG) • Expertise in FPGA Development – Tools for FPGA development, Timing analysis, Languages (VHDL/Verilog), Simulation, Modeling, Programming • Matlab and Simulink and equivalent tools • Ability to learn and use RF analysis and design tools • Testing and debugging tools, Signal generator/analyzers, Logic Analyzers • SDR concepts, Waveforms, Digital Filters, Interfacing with IP from other vendors. • Knowledge of industry standards, standardization • Good understanding of 3GPP wireless standards 	
T-0104	OS and Board Support Package	<ul style="list-style-type: none"> • System Engineering Aspects, • Testing and debugging tools, Signal generator/analyzers, Logic Analyzers • Configuration Management, Scripting, Build and Development environment • Able to work with Product integration and testing like functional testing, load testing, Stability testing, Regression testing etc 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

		<ul style="list-style-type: none"> • Processors, Devices, SoCs, FPGA, on-board devices and interface devices. • Operating Systems, distributions, packaging, devices, kernels, device drivers, data plane development, uboot, compilation, linking, loading • C/C++ programming skills along with scripting. • Power-on self test. 	
<p style="text-align: center;">T-0105</p>	<p style="text-align: center;">Physical Layer/Layer-1 Development</p>	<ul style="list-style-type: none"> • Knowledge of LTE / UMTS / WCDMA / HSDPA/ 5G or WLAN standards in the physical layer and future developments within 3GPP, OFDM, MIMO • Testing and debugging tools • Experience with handling of specific test equipment (signal generator, signal analyser, logic analyser and pattern generator) is beneficial • Expertise in FPGA Development – Tools for FPGA development, Timing analysis, Languages (VHDL/Verilog), Simulation, Modeling, Programming • Matlab and Simulink and equivalent tools • DSP Programming skillset preferred • C/C++ programming skills along with scripting. • Unix Network Programming • Data Structures and 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

		<p>Algorithms</p> <ul style="list-style-type: none"> • Good understanding of 3GPP wireless standards 	
T-0106	LTE Layer-2/Layer-3/RRM	<ul style="list-style-type: none"> • Testing and debugging tools • Configuration Management, Scripting, Build and Development environment • Able to work with Product integration and testing like functional testing, load testing, Stability testing, Regression testing etc • C/C++ programming skills along with scripting. • Unix Network Programming • Data Structures and Algorithms • Design Patterns • Familiarity with Protocol Stack Development • Good understanding of 3GPP wireless standards 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>
T-0107	System Management (OAM/FCAPS)	<ul style="list-style-type: none"> • Testing and debugging tools • Configuration Management, Scripting, Build and Development environment • Able to work with Product integration and testing like functional testing, load testing, Stability testing, Regression testing etc • C/C++ programming skills along with scripting. • Unix Network Programming • Data Structures and Algorithms 	

		<ul style="list-style-type: none"> • Design Patterns • Familiarity with Protocol Stack Development • Embedded Database based systems (mySQL, PostgreSQL) • System level understanding of network element. • Good understanding of 3GPP wireless standards 	
T-0108	Self Organising Network	<ul style="list-style-type: none"> • Testing and debugging tools • Configuration Management, Scripting, Build and Development environment • Able to work with Product integration and testing like functional testing, load testing, Stability testing, Regression testing etc • C/C++ programming skills along with scripting. • Unix Network Programming • Data Structures and Algorithms • Design Patterns • Familiarity with Protocol Stack Development • Good understanding of 3GPP wireless standards 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>
T-0109	Element Management System (EMS)	<ul style="list-style-type: none"> • Testing and debugging tools • Configuration Management, Scripting, Build and Development environment • Able to work with Product integration and testing like functional testing, load testing, Stability testing, Regression testing etc 	

		<ul style="list-style-type: none"> • C/C++ programming skills along with scripting. • Unix Network Programming • Data Structures and Algorithms • JAVA Language • Web Development (JSP,JavaScript,AJAX, HTML,Application Server, Web Server • Database (Knowledge of Oracle or MySql orPostgres) • ORM Framework • Framework (Sping Boot, Structs, BOOTSTRAP) 	
T-0110	Cabinet Power and Accessories	<ul style="list-style-type: none"> • Computer Architecture, Digital Logic, Processor/FPGA/SoC interfacing • Expertise in hardware design (Circuit Design and Analysis, PCB, Devices, Signal and power integrity, interface with CAD/VDG/EPG) • Testing and debugging tools, Signal generator/analyzers, Logic Analyzers • Knowledge of industry standards, standardization • Systems engineering, thermal engineering, batteries, power aspects. • Antennas • Good understanding of 3GPP wireless standards 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>
T-02	Leadership Position Covering aspects of 5G-RAN	<p>Experience in Wireless product development, system/sub-system design and architecting. Product Integration especially in the domain of 4G/5G RAN.</p> <ul style="list-style-type: none"> • Good understanding of 	<p>Essential- Minimum 5 years experience for</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

		<p>3GPP standards for 4G/5G, Open RAN architecture, O-RAN alliance specifications and protocols.</p> <ul style="list-style-type: none"> • Working knowledge of physical layer and higher layers of eNodeB/gNodeB including open RAN interfaces. • Experience in Wireless conformance testing and evaluation for eNodeB/gNodeB using industry standard test equipment. • Working Knowledge of design tools like Matlab/ADS/FPGA tool and knowledge of generic server hardware, Linux OS, Accelerator and Network Interface cards. • Working knowledge in System Engineering, Radio link calculations and RAN synchronization procedures. • Possess leadership skills to manage team of engineers and interface with other teams. Familiarity with project planning, monitoring and configuration management. 	
T-0201	(5G-RAN Software Development and Testing)	<ul style="list-style-type: none"> • Proficient in the C/ C++ language, Data Structures, Algorithms, Linux, multi-threaded system and scripting • Good understanding of 3GPP, O-RAN and SCF specifications of 4G / 5G and RAN architecture, 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

		<p>protocols, and procedures</p> <ul style="list-style-type: none"> • Experience in software development, system design and architecting of protocol stacks and interfaces. • In-depth knowledge of RAN software development for mobile networks, especially on 3GPP LTE and NR. Working experience of 4G/5G Layer-2/Layer-3 software design and development. • Experience in development of RAN Intelligent Controller (RIC) and RIC interfaces. • Hands-on experience in Software integration and debugging issues. Experience in debugging tools like Wireshark, gdb etc • Experience in Open stack, DevOps CI/CD, Cloud, Kubernetes, Pods, Dockers will be an add on. • Experience with working on 5G test tools such as UE Simulators, Core Network Simulators • Experience with working in cloud native environment, experience with test and automation tools. • Shall be able to develop, enhance 	
--	--	---	--

		<p>software protocols, interfaces and management software modules.</p> <ul style="list-style-type: none"> • Good understanding of IP networking • Analyze system logs, test tool logs and use this information for debugging issues and identifying accurate root causes for the problems seen on the system under test or in the network. 	
T-0202	(5G-RAN RF Unit development and Testing)	<ul style="list-style-type: none"> • Good understanding of 3GPP standards and O-RAN specifications of 4G / 5G and RAN architecture, protocols and procedures. • Working Knowledge of design tools like ADS/AWR essential. • Experience in Wireless conformance testing using industry standard test equipment will have added advantage. 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>
T-0203	(5G-RAN Baseband-DU Physical Layer)	<ul style="list-style-type: none"> • Good understanding of 3GPP standards and O-RAN specifications of 4G / 5G and RAN architecture, protocols and procedures. • Experience in 4G/5G physical layer development and testing • Working knowledge of FAPI and nFAPI 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/ M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

		<p>for L1 & L2 interface, and working knowledge of Openhaul 7-2x interface.</p> <ul style="list-style-type: none"> • Proficient in C and C++ Knowledge and MATLAB • Experience in 4G/5G eNB/gNB testing with UE simulators, VSG and VSA 	
T-0204	(5G-RAN Baseband-DU HW)	<ul style="list-style-type: none"> • Good understanding of 3GPP standards and O-RAN specifications of 4G / 5G and RAN architecture, protocols and procedures. • Experience in 4G/5G eNB/gNB testing with UE simulators, VSG and VSA. • Experience in programming in VHDL/Verilog for FPGA based designs and FPGA SOCs. • Working Knowledge in high speed interfaces like PCIe & eCPRI and Knowledge of TCP/UDP. • Hands on experience for porting and running L1 on generic server. Experience in Linux OS, Real time kernels, DPDK and multi core programming in generic server 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

		<p>hardware.</p> <ul style="list-style-type: none"> • Working Experience in PCIe accelerator cards and Network interface cards(NIC). • Experience in implementing IEEE 1588 PTP on server 	
T-0205	(5G-RAN Openhaul interface and Lower Physical layer development and Testing)	<ul style="list-style-type: none"> • Good understanding of 3GPP standards and O-RAN specifications of 4G / 5G and RAN architecture, protocols and procedures. • Knowledge of O-RAN front-haul interface specification (ORAN-WG4) • Experience in 4G/5G physical layer development and testing • Working Knowledge of simulation tools such as MATLAB and Digital signal Processing. • Working experience of OFDMA, MIMO, Beamforming, FFT/IFFT, Channel Estimation, channel equalizer and Carrier Aggregation implementation • Knowledge of NETCONF, SSH, TCP/IP, eCPRI, PTP and SyncE protocols • Working experience of FPGA based design and development 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

PROJECT – ITU COMMON ALERTING PROTOCOL (Project Code-T-03)

Positions (approx.) - 20

WORK AREA CODE	WORK AREA	SKILL SET	Experience/ Qualifications
T-03	<p>Leadership Position Covering aspects of ITU-Common Alerting Protocol</p>	<ul style="list-style-type: none"> ● Experience in building scalable, distributed, complex enterprise software systems that have been successfully delivered to customers. ● Experience in contributing to the architecture and design (architecture, design patterns, reliability and scaling) of new and current systems ● Experience in driving large projects from concept to prototype to production. ● Experience working with databases, data processing, and perceptive tools. ● Good understanding of common security threats and vulnerabilities and expertise to resolve and design secure software systems. ● Knowledge of Big data Applications such as Kafka, MongoDB, Hadoop etc. is preferred. ● Exposure to Machine Learning/Deep Learning projects and Knowledge of commonly used ML packages and libraries with MLOps concepts ● Experience in administration and troubleshooting for DevOps/Deployment, Orchestration 	<p>Essential- Minimum 5 years experience for B.Tech(CS/EC)/ B.E (CS/EC)/ M.Tech(CS/EC)/ M.E.(CS/EC) /PhD (in relevant areas)</p>

T-0301	<p>Software Solution Architecting and Development</p>	<ul style="list-style-type: none"> ● Experience in software design, development including delivering highly available services, excellent problem solving and system design skills ● Experienced in design, problem solving, experience with <i>MVC</i> and coding skills with a strong bias for quality and object-oriented languages like- <i>JAVA</i> and <i>Python</i> ● Should have experience in contributing to the architecture and design (architecture, design patterns, reliability and scaling) of new and current systems ● Work through all phases of the project lifecycle, including reviewing requirements, designing QA and support services for the new technology platform, building new test tools, developing test code ● Experienced in Agile or Scrum software development methodologies, microservices and influencing software engineering best practices within the team ● Driving the design and delivery of selected product features including collaborating with stakeholders on architecture, design/user experience, product structure and pricing strategy, and supportability ● Proficiency in <i>HTML</i>, <i>Javascript</i> (frameworks like- <i>Angular</i>, <i>React</i>, <i>Vue</i>), <i>CSS</i> (libraries like- <i>Bootstrap</i>, <i>Foundation</i>, <i>Materialize</i>) ● Good knowledge of distributed technologies for mobile 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/ B.E (CS/EC)/</p> <p>M.Tech(CS/EC)/ M.E.(CS/EC) /PhD (in relevant areas)</p>
--------	--	--	--

		<p>applications with real-time systems of high throughput, low latency, and highly scalable</p> <ul style="list-style-type: none"> • Deep knowledge of distributed SOA architecture and design patterns • Engaging with customers to understand their requirements, pain points, and develop features and solutions to address their needs • Coding experience with automated testing frameworks, tools, and services 	
T-0302	Cloud Technologies and Micro service Implementation	<ul style="list-style-type: none"> • Experience in administration and troubleshooting for DevOps/Deployment, Orchestration Management, and Configuration Management • Experience managing full application stacks from the OS up through custom applications • Deploying application into cloud using CICD(Continuous Integration and Continuous Deployment) process using docker, jenkins and kubernetes • Writing automation scripts to automate cloud deployment • Professional experience in architecting/deploying/operating applications on cloud • Experience in migration of conventional applications to the cloud • Advanced experience with System Administration with Linux (Ubuntu, CentOS, RedHat) 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/ B.E (CS/EC)/</p> <p>M.Tech(CS/EC) /M.E.(CS/EC) /PhD (in relevant areas)</p>
T- 0303	Software Security and Network	<ul style="list-style-type: none"> • Experience in web application security, secure application 	<p>Minimum 2 years in Research and</p>

	<p>Security</p>	<p>design and architecture, threat modeling, secure coding, and cryptography</p> <ul style="list-style-type: none"> ● Deep technical understanding of OWASP Top 10 and CWE Top 25 vulnerabilities ● Evaluating the impact of current security trends, and advisories and continuously updating the knowledge and skill set with rapidly changing threat landscape ● Good understanding of common security threats and vulnerabilities ● Ability to work with developers to resolve the security issues ● Experience in code reviews, vulnerability detection, and root cause analysis ● Experience in exploiting bugs and bypassing security mitigations in Operating Systems ● Knowledge for use of IP protocol packets debugging tools as Wireshark, tcpdump, ping, traceroute, nmap, hping etc. ● Knowledge of IDS/IPS (Intrusion Detection System/Intrusion Prevention System) monitoring and experience using at least one major SIEM system ● Need a combination of troubleshooting, technical and communication skills ● Should have strong sense of ownership, urgency and drive ● Certifications in the security domain like CEH are preferred 	<p>Development</p> <p>B.Tech(CS/EC)/ B.E (CS/EC)/</p> <p>M.Tech(CS/EC)/ M.E.(CS/EC) /PhD (in relevant areas)</p>
--	------------------------	--	--

T- 0304	Deep Learning and Natural Language Processing	<ul style="list-style-type: none"> ● Demonstrated proficiency in data extraction, analysis and scripting tools ● Experienced knowledge in Python with training and deploying machine learning models, using open source tools and libraries, such as: SciKit, TensorFlow, Pytorch etc. ● Knowledge and Experience in developing linguistic annotation projects like Text to Speech and language conversion suitable for Indian Vernacular languages ● Should have ability to analyze large datasets with text and image data, perform data visualizations, develop hypotheses, and make insightful recommendations ● Exposure to Machine Learning/Deep Learning projects and Knowledge of commonly used ML packages and libraries with MLOps concepts ● Knowledge of Big data Applications such as Kafka, MongoDB, Hadoop etc. is preferred. ● Should have good communication and interpersonal skills 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/ B.E (CS/EC)/</p> <p>M.Tech(CS/EC)/ M.E.(CS/EC) /PhD (in relevant areas)</p>
T-0305	Geospatial Solution Development and Image Processing	<ul style="list-style-type: none"> ● Experience in developing GIS mapping applications and using geoprocessing tools ● Experience using and working with imagery, mapping, and geospatial data and GIS location based software applications like tracking, route identification etc. ● Advanced level knowledge of Geoserver and GIS Data 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC) /B.E (CS/EC)/</p> <p>M.Tech(CS/EC)/ M.E.(CS/EC) /PhD (in relevant areas)</p>

		<p>Management Tools like QGIS, MapInfo, ESRI ArcGIS and expertise in Openlayers5</p> <ul style="list-style-type: none"> ● Experience on implementing various Map and directional APIs with expertise in open source GIS map server and GIS software development ● Expert level knowledge of Geodatabases and experience in design, and development of geospatial data models and geo-intelligent algorithms ● Should have good communication and interpersonal skills 	areas)
--	--	--	--------

PROJECT- Network Security (Project Code-04)

Positions (approx.) - 10

WORK AREA CODE	Work Area	SKILL SET	Experience/ Qualifications
T-0401	<p>Leadership Position in Field deployment, O&M support</p>	<ul style="list-style-type: none"> • Preferably person should have cybersecurity-related certification (e.g. Ethical hacking, Network forensic, Computer forensic etc.) course • Knowledge of shell scripting, Python scripting, Linux (CentOS/Ubuntu), Windows OS • Knowledge of TCP/IP Protocol, Routing Protocol as BGP, IPFIX protocol, DNS, DHCP, HTTP, HTTPs, SIP etc. • Knowledge for use of IP protocol packets debugging tools as Wireshark, tcpdump, ping, traceroute, nmap, hping etc. • Preferably knowledge of ICT device configuration like Router, Switches, PC, Servers etc. • Write effective documentation using MS Office & Open Office tools for Doc, XLS and PPT etc. <p>Knowledge of Big data Applications as Kafka, Spark, ELK stack, MongoDB, Hadoop etc.</p>	<p>Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>
T-0402	<p>FPGA Programming</p>	<ul style="list-style-type: none"> • Experience in FPGA software technology, from low-level hardware description languages like Verilog to high-level programming options like C, C++, and open computing language (OpenCL) • Knowledge of Xilinx FPGA cards, and tools like Vitis and Vivado for application development on FPGA • Good knowledge of Linux operating systems 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

		<ul style="list-style-type: none">• Coding knowledge of C, C++, shell scripting, Python scripting• Knowledge of TCP/IP Protocol, Routing Protocol as BGP, IPFIX protocol, DNS, DHCP, HTTP, HTTPS, SIP etc.• Knowledge of IP packet debugging tools such as Wireshark, tcpdump, ping, traceroute, nmap, hping etc.• Good knowledge of packet capture, packet stripping, packet de-duplication, compression & decompression, encryption & decryption etc. to be implemented in FPGA <p>Selected candidates will be responsible to work on FPGA hardware and development tools to accelerate various functions of an application and to offload the CPU</p>	
--	--	---	--

PROJECT- 4G/5G CORE (Project Code-T05)

Positions (approx.)- 50

WORK AREA CODE	Work Area	SKILL SET	Experience/Qualifications
T-05	Leadership Positions (Domain Experts) Covering aspects of 4G/5G Core and AI/ML/Analytics	<ul style="list-style-type: none"> • Shall have experience in development of 4G/5G network functions and CI/CD, • Shall have experience in algorithms, data sets and neural networks and concurrent/parallel programming • Shall have experience Design and development of communication networks analytics • Shall have experience in architecting products, leading products development and delivery and in managing large teams 	Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)
0501	4G/5G Technology Development	<ul style="list-style-type: none"> • Shall have experience on Mobile Technologies (4G/5G) • Shall have experience of protocol software development • Shall have experience of large database-oriented application development • Shall have good expertise in development of Internet Protocol based applications • Shall have good knowledge of networking concepts 	Minimum 2 years in Research and Development B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)

		<ul style="list-style-type: none">• Should have experience in developing software utilizing various coding languages including C/C++, goLang, rust, java, web technologies etc.• Should have experience in analyzing code for weaknesses and errors, and on how to improve them.• Should have experience in Data Analytics Software• Should have experience in developing customized code for multiple projects simultaneously• Should have experience in developing secure software systems based upon industry specifications• Should have experience in software design using large data sets• Should have experience in using cybersecurity• Should have experience in using open source technology• Should have experience of Management Interface development• Should have experience working on large-scale software projects• Should have good knowledge of CI/CD• Should have worked cloud based software development• Should possess eagerness to explore	
--	--	---	--

		<p>and learn new technologies</p> <ul style="list-style-type: none"> • Should possess outstanding teamwork spirit, collaboration and communication skills • Preference would be given for candidates having knowledge of 4G/5G protocols • Preference would be given to candidates having containers / virtual machine-based application development experience. 	
0502	AI/ML/Analytics	<ul style="list-style-type: none"> • Shall have expertise in Mathematical Software, Linear Programming, Linear Algebra and Optimization, AI, ML and Analytics • Shall have experience in developing mathematical software, parallel programming, multi-processing and high-performance computing • Should have experience of large database-oriented application development • Should have experience in developing software utilizing various coding languages including C/C++, goLang, rust, java, web technologies etc. • Should have experience in analyzing code for weaknesses and errors, and on how to improve 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

		<p>them.</p> <ul style="list-style-type: none">• Should have experience in Data Analytics Software• Should have experience in developing customized code for multiple projects simultaneously• Should have experience in software design using large data sets• Should have experience in using open source technology• Should have experience working on large-scale software projects• Should have good knowledge of CI/CD• Should possess eagerness to explore and learn new technologies• Should possess outstanding teamwork spirit, collaboration and communication skills	
--	--	---	--

PROJECT- QUANTUM COMMUNICATION (Project Code-06)

Positions (approx.)- 05

WORK AREA CODE	Work Area	SKILL SET	Experience/Qualifications
0601	Leadership Position Covering aspects of Quantum Mechanics	<ul style="list-style-type: none"> • Strong Theoretical Background in Quantum Communications • Expertise in analysing QKD Protocols (& security proofs for the same) and support teams implementing the same • Practical QKD implementation experience desirable • Good understanding of various types of attack strategies on different QKD protocol implementations • Should have thorough knowledge of Quantum Mechanics in general and all aspects related to Quantum Communications in particular • Strong documentation and presentation skills; must be proficient in relevant software tools used in the same 	Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)
0602	FPGA Programming	<ul style="list-style-type: none"> • Experience in FPGA design, from low-level hardware description languages like Verilog/VHDL to high-level programming options like C, C++, and open computing language (OpenCL) • Knowledge of Xilinx FPGA cards, and tools like Vivado for application development on FPGA, IP Core development and integration • Experience of working on Optical Communication products desirable • Strong digital design concepts 	Minimum 2 years in Research and Development B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)

		<p>as well as knowledge of Linux operating system</p> <ul style="list-style-type: none"> • Coding knowledge of C, C++, shell scripting, Python scripting • Knowledge of Ethernet & other telecom protocols, error correction, privacy amplification, synchronization etc. • Experience in handling lab instruments for debugging e.g. Mixed Signal Oscilloscope, signal generators etc. • · Experience in FPGA Timing closure • · Experience working with SoC based systems and knowledge of protocols such as SPI, UART, I2C, USB. • Strong documentation and presentation skills; must be proficient in relevant software tools used in the same 	
0603	Optical Communication	<ul style="list-style-type: none"> • Strong optical communication fundamentals • Experience of designing optical communication products • Good theoretical and practical knowledge of optical devices used in Optical Communication and Quantum Communications • Good Board design skills and proficiency in tools used for the same • Strong analog design concepts and proficiency in tools used for the same <p>Strong documentation and presentation skills; must be proficient in relevant software tools used in the same</p>	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

PROJECT- Post-Quantum Cryptography (ProjectCode-07)

Positions (approx.) - 05

WORK AREA CODE	Work Area	SKILL SET	Experience/Qualifications
0701	Embedded Software	<ul style="list-style-type: none"> • Embedded Programming with different embedded MPU and MCUs , C and ARM assembly programming, GNU toochain, Bootloader and Secure Boot development, Board bringup, Buildroot, RTOS and FreeRTOS based development • Experience in Baremetal software development, Linux kernel and Device Driver programming, Open Source Software development, TCP/IP stack development • Experience working with FPGA or SOC based systems, Yocto, Python scripting, GUI development using Qt/QML • Experience working with lab tools (Oscilloscope, Debuggers etc.), Linux and RTOS based system programming experience 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>
0702	FPGA Design & Implementation	<ul style="list-style-type: none"> • Good Verilog/VHDL programming skills, FPGA design development experience • Exp. with FPGA synthesis tool- Xilinx Vivado, Altera Quartus II or similar, IP Core development and integration • Experience with Mixed Signal Oscilloscope usage • Experience in FPGA Timing closure • Experience in TCL/Tk and Python scripting, Good C programming skills • Experience in Linux kernel and Device Driver 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

		<p>Programming, Experience in Baremetal and FreeRTOS based system development</p> <ul style="list-style-type: none"> • Experience working with SoC based systems • Lab experience probing boards and debugging. Protocol knowledge of peripherals: SPI, UART, I2C, USB. 	
0703	<p>Post-Quantum Cryptography Algorithms Implementation & Testing</p>	<ul style="list-style-type: none"> • Experience in Design, Implementation & Testing of Post-Quantum Cryptography (PQC) Algorithms, Side-Channel Analysis & Testing • Experience in working in Security Projects. 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>
0704	<p>Post-Quantum Cryptography Algorithms Theoretical Analysis & Cryptanalysis</p>	<ul style="list-style-type: none"> • Strong Theoretical background in Cryptography. Experience of Theoretical Analysis on Lattice and Code based PQC algorithms, analysis of security strengths • Study of security attacks, cryptanalysis, Side-channel analysis etc. 	<p>Minimum 2 years in Research and Development</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)</p>

PROJECT- Validation and Field Support (ProjectCode-08)

Positions (approx.) - 15

WORK AREA CODE	Work Area	SKILL SET	Experience/Qualifications
0801	Networking Domain	<ul style="list-style-type: none"> • Working knowledge of TCP/IP protocol Suite, networking devices like Router , Switch(L2 & L3) , • VoIP, Firewall , Access Points etc. • Network Configuration and testing. • Understanding of IP/MPLS and Ethernet technologies , Switching and Routing protocols (STP, RSTP, MSTP, OSPF, BGP, RIP, EIGRP etc.), SIP protocols etc. • Network Administration, Systems/network Integration, Troubleshooting, Operation & Maintenance, understanding of networking security • CCNA/CCNP certification preferred. 	<p>Minimum 2 years in Research and Development / Field Support/Validation in relevant area</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>
0802	Field Support (Telecom & IP Network)	<ul style="list-style-type: none"> • Candidate shall have experience of installation, deployment and support of different elements of 2G/3G/4G network • Candidate shall have experience of working on Network management and troubleshooting. • Hands-on experience of working on UNIX/Linux environment, shell scripting will be an additional advantage • Candidate shall have 	<p>Minimum 2 years in Research and Development/ Field Support/Validation in relevant area</p> <p>B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC) /PhD (in relevant areas)</p>

		<p>experience of working on Cloud environment.</p> <ul style="list-style-type: none">• Knowledge of Architecture of EPC & IMS as well as different Call flows in 4G/Volte Network• Good grasp on different Debugging Tools like Wireshark, Tcpdump, Tethereal• Knowledge of VOIP, SIP, Megaco, Diameter, MAP, GTP etc.• Knowledge of Networking Protocols i.e. OSPF, BGP, ACL, MPLS etc.• Comfortable with frequent Travelling/Field Visit at Customer sites• Good verbal and oral communication skill	
--	--	---	--

PROJECT- Artificial Intelligence (ProjectCode-09)**Positions (approx.) - 5**

WORK AREA CODE	Work Area	SKILL SET	Experience/Qualifications
0901	Leadership Position in AI backend pipeline design and development	<ul style="list-style-type: none">• Kafka and spark architectures• Experience in AI backend pipeline design and development• C/C++, Java, Python, R and Scala	Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)
0902	Leadership Position in Natural Language Processing	<ul style="list-style-type: none">• Should have sound knowledge of machine learning and deep learning concepts, NLP, should have acquaintance in various frameworks like tensorflow, keras, pytorch, Java, Python etc.	Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)
0903	Leadership Position in Security evaluations and test automations and load testing tools	<ul style="list-style-type: none">• Experience in handling security issues, protocols and mechanisms, security evaluations, server high-availability, load-balancing, proxy configurations; development of load testing tools, performance, health monitoring and service recovery scripts , docker/container configurations for server solutions is preferred.	Essential- Minimum 5 years experience for B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)
0904	Computer Vision using Deeplearning	<ul style="list-style-type: none">• Deeplearning Architectures,• C/C++,• Python,• Caffe,• PyTorch, Keras and Tensorflow, OpenCV	Minimum 2 years in Research and Development B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)
0905	Big Data Search over Metadata generated by AI engine/ Augmented Reality/Visual Positioning	<ul style="list-style-type: none">• HADOOP, MongoDB & Elastic Search• Augmented Reality Application Development• Visual Positioning application Development	Minimum 2 years in Research and Development B.Tech(CS/EC)/B.E (CS/EC)/M.Tech(CS/EC)/M.E.(CS/EC)/PhD (in relevant areas)