# Saad Khan

RF Engineering & Network Analytics
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## CAREER PROFILE

- Seasoned Professional with more than 12 years of experience in wireless technologies.
- Extensive experience with multi-vendor telecommunication vendors.
- Well versed in network architecture along with automation & AI/ML.
- Knowledge of communication & networking protocols with basic understanding of IoT technologies.
- Self-motivated & willing to learn quickly to deliver results individually or through collaborative teamwork.

## TECHNICAL SKILLS

- 5G (LB + mmWave), C-RAN, 4G, 3G
- RF Design & Optimization
- ATOLL, ASSET, Arieso ACP
- MapInfo, RMAP (AT&T tool)
- XCAL/XCAP, Agilent E6474A
- ActixOne Analyzer, TrueCall
- Python, R, MySQL, Java, HTML
- MS Office, MS Visio, R-Studio
- Power BI, Tableau, Alteryx
- AI/Machine Learning, SQL Server

## CERTIFICATIONS

- Mirantis OpenStack (OCM 100)
- R Programming by Coursera
- Intro to Python by DataCamp

## TRAININGS

- Introduction to 5G RAN
- Introduction to LTE RAN
- IoT Foundations: Fundamentals
- OpenStack (Linux Academy)
- R for Data Analysis
- Python for Data Wrangling

## EDUCATION

**MS IN COMPUTER SCIENCE**
Georgia Institute of Technology
Specialization: ML/AI
Graduated: Dec 2018

**DATA ANALYST NANODEGREE**
Udacity
Online, graduated: Aug 2015

**BS IN ELECT. ENGINEERING**
University of Engineering & Technology, Lahore, Pakistan
Graduated: Mar 2007

## WORK EXPERIENCE

### T-MOBILE US, INC. | Sr. RF & Network Analytics Engineer
January 2019 – Present | Spokane, WA

- Learned key requirements for RF network design and optimization for the Inland Northwest region at T-Mobile.
- Main responsibilities include VoLTE/LTE/UMTS RF macro/5G/C-RAN/4G/Unlicensed band design and optimization.
- Experience of generating monte-carlo simulations, predictions & KPI Reports for new and existing cell sites using Teoco ASSET.
- Experience of using various T-Mobile internal tools such as iCSNE, Starling, OneData, ONE Score dashboard, IMNOS, Element database, Liberty reports, etc.
- Ownership of creating new and maintaining visually impactful dashboards in Tableau and Power BI based on network performance data extracted from OneData and the OSS.
- Experience of creating python scripts to facilitate with the creation of Tableau and Power BI dashboards.
- Experience of generating data flows for various dashboards using tools such as Alteryx.
- Responsible for optimizing through-puts and other LTE KPIs after new site integration and ensuring timely approval of SSV, SSS reports submitted by Nokia.
- Experience of performing worst cell analysis, analyzing the alarms/fault detection, troubleshooting issues like hardware swaps, abnormal releases, X2/S1 handover, access and setup failures.
- Able to perform traffic sharing among different RAN technologies to improve network leakage and customer experience.
- Considerable experience of analyzing and planning PCI and PRACH parameters for new and existing sites.
- Familiar with analyzing and resolving customer complaints in the designated cluster.
- Experience of analyzing drive test logs to review RSRP, RSRQ and evaluate sector swap based on serving PCIs using ActixOne Analyzer.
- Ability to create RFDSs using the T-Mobile RFDS tool for individual site as well as multiple sites using the bulk feature.
- Familiar with analyzing, evaluating and finalizing new site candidates based on site search rings and site candidate information packages.
- Creating presentations for T-Mobile Management based on UMTS and LTE Optimized KPIs, plots pertaining to SCIPs, COW scenarios, special events, walk tests, etc.

### TTS WIRELESS INC. | RF Engineer
July 2012 – January 2019 | Minneapolis, MN

- Learned key design requirements for RF network design in the midwest region for AT&T.
- Main responsibilities included VoLTE/LTE/UMTS RF macro/5G/C-RAN/4G/Unlicensed band design using Forsk ATOLL and AT&T internal databases.
- Considerable troubleshooting skills in maintaining RF design KPIs along with good understanding of design fundamentals.
- Familiar with AT&T internal tools such as CSS, FileNet, Siterra, Quantum, RMAP and AutoForms and able to extract, create, upload and update site/sector information.
- Ability to create Autoforms RFDSs using individual site update and bulk upload feature.
- Created a python script to quickly populate appropriate UseID information and minimize time required for RFDS bulk creation.
- Experience of creating python scripts to auto-populate antenna information in the RFDS template and minimize time required for RFDS bulk creation.
- Good understanding of scoping documents, plumbing diagrams and hardware such as duplexers, diplexers, TMA etc.
- Experience of creating CMA/BTA level LTE Field Service Agreements (FSAs) for AT&T with the aid Spectrum Landscape & FCC License information.

### T-FORCE INC. | LTE Design Consultant
December 2010 – November 2011 | Plano, TX

- As part of the Ericsson's RF design team learned key design requirements for the AT&T LTE nationwide RF design.
- Main responsibilities included providing remote LTE RF design support to various AT&T Markets utilizing Forsk ATOLL.
- Performed audit & validation of the UMTS RF design project put forward by A&T as the baseline and determined suitable conversion to LTE for 10/5 MHz bandwidths as per spectrum availability.
- Proficient with ATOLL parameters, project set-up and design aid tools as Path Profile, Point Analysis, etc.
- Generated UMTS monte carlo simulations and KPI reports for specific AT&T markets to be used as reference for the optimized LTE RF design.
- Created KPI reports for specific AT&T markets to be used as reference for the optimized LTE RF design.

### LCC INTERNATIONAL INC. | WiMax Network Consultant
December 2009 – December 2010 | Herndon, VA

- Main responsibilities included handling access performance issues through centralized support for various commercial Clearwire markets.
- Conducted FDD-LTE tests using 2.5 GHz LTE spectrum. Performed mobility tests for KPIs such RSSI, RSRP, SINR/CINR, MCS & throughput, using Accuver XCAL.
- Performed stationary & mobility baseline tests for performance critical indicators such has Signal Strength (RSSI), Reference Signal Received Power (RSRP), Interference (SINR/CINR), MCS Usage, peak/average throughput, using Accuver XCAL (LTE + WiMAX).
- Developed good understanding of TCP/IP and UDP layer 3 messages for troubleshooting critical performance issues.
- Hands on experience of generating, analyzing and processing tabular and graphical data pertaining to RSSI, RSRP, SINR, throughput, etc.

### ABACUS CONSULTING | WiMAX Planning Consultant
February 2008 – December 2009 | Lahore, Pakistan

- Learned key basics of WiMAX RF design and optimization services provided by Motorola to Wateen Telecom.
- Planned WiMAX RF network for 400+ nodes using Motorola diversity access points (DAPs) to meet customer requirements.
- Worked on design/analysis of the WiMAX RF network based on coverage, interference & modulation using ATDI RF design tool.
- Contributed in detailed RF design pre-sales proposals/response to RFPs for different customers in Pakistan which included capacity dimensioning and detailed coverage analysis to meet RF requirements.
- Monitoring critical KPIs such as UL/DL utilization, dropped packet rate, total AP sector usage, DL/UL data and control channel utilization, total AP Sector Throughput, initial ranging failures, etc using Maxzilla (Motorola Internal Network monitoring tool).

### ERICSSON PAKISTAN (PVT) LTD. | Services Engineer
March 2007 – February 2008 | Lahore, Pakistan

- Learned key basics of GSM RF and transport network design and optimization services provided by Ericsson to Warid Telecom.
- Performed drive tests at customer premises and suggesting nominal coordinates for new sites based upon signal strength (SS) and C/I plots extracted in MapInfo using TEMS Investigation.
- Created link budgets and interference analysis using TEMS link planner encompassing important link design parameters.
- Maintenance of important documents such as microwave scope of work, MUX plan (Microsoft Visio), detailed RBLT assignment (BSC termination points) diagrams, etc.
- Regular maintenance of transmission network design using MS Visio and MapInfo for the new and existing sites in the network.

## PROJECT EXPERIENCE | DATA SCIENCE / MACHINE LEARNING

### Linear Regression to Predict Gross Revenue for Movies
April 2017 | GEORGIA TECH - Masters in Computer Science — Language: R

- Linear regression in R was applied to selected, transformed features of the movies database for movies released after the year 2000.
- Both Numeric and Non-numeric features along with there interactions were tried out to improve the RMSE for gross revenue.

### Logistic Regression to Predict MNIST digits
March 2017 | GEORGIA TECH - Masters in Computer Science — Language: R

- R was used to implement logistic regression from scratch to predict MNIST digits by comparing performance for training and test sets.
- Further performance improvement was conducted by tuning parameters such as learning rate, initial $\theta$'s, convergence criteria, etc.

### Data Analysis with R
May 2015 | Udacity - Nanodegree — github markdown — Language: R

- Using R, applied exploratory data analysis to find relations between variables of white/red wine data taken from samples of Vinho Verde wines.
- Analysis was carried out with relations in one variable to multiple variables along with exploration of selected data set outliers and anomalies.

### Wrangling using MongoDB
March 2015 | Udacity - Nanodegree — github report — Language: Python

- Scripted in python to analyze/clean open street maps data in xml format and converted it to json for better data storage in MongoDB.
- Applied data munging techniques such as assessing the quality of the data for validity, accuracy, completeness, consistency and uniformity.