中文简历：

姓名：刘永刚， 1976 年生，Email：liu.yonggang@139.com

1998.9 – 2001.7 北京工业大学 硕士 软件工程

1994.9-1998.7 内蒙古大学 本科 计算机系

主要技术栈：5G gNB 系统仿真，LTE eNB 系统工程师（产品需求和规范，主要是 cplane 方向），
          LTE eNB 系统仿真。Python (numpy / pandas / matplotlib)，C++

亮点：

- 为提升工作效率开发了友好浏览 LTE/5G 信令面消息的软件，以 5G RRC（38331）消息为例，在浏览器页面，对每一个消息 IE，将关联的描述、定义、涉及章节的内容和关联 38306 的内容，汇总于一处阅读，还能导出 excel 格式，直接用于需求内容，节省大量编辑排版工作。可参见：https://liuyonggang1.github.io
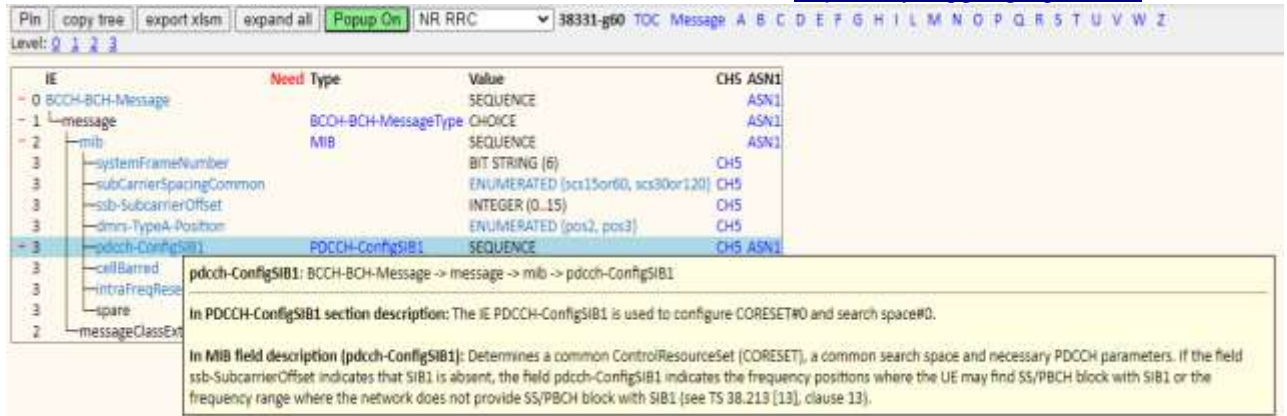
- 结合上面工具，还开发了一个利用 plantuml 画消息时序图的工具，选择消息、IE 生成时序图。支持导入/导出（JSON 格式）。这样将图形文本化和便于版本控制。参见: https://liuyonggang1.github.io.

- 进入 LTE 的后期和 5G 时代，各厂家都不甘落后，经常出现 3GPP 标准还不稳定，就启动产品开发，但这给做系统设计、需求、规范的人带来很大的不确定性。为此我开发了一个 TDOC 查询浏览工具，能够方便及时的跟进最新的提案，来决策系统需求的调整。这个工具需要服务器端的动态脚本，无法在 github.io 上展示，如有面试机会可以演示。

- 以上工具对做 3GPP 标准化工作非常有用，所以有这样的工作机会我觉得自己能胜任还可以做的很好。

- 有一个 filed 的专利："DEVICE, METHOD, APPARATUS AND COMPUTER READABLE MEDIUM FOR INTER-MASTER NODE HANDOVER " filed on 27 Sep 2019 with application number PCT/CN2019/108418。对应 3GPP 提案：R3-197555，R3-197556。可以从 https://netovate.com/3gpp-tools/ 快速查询找到。

工作经历：

Nokia：

- 2020.1 - ： 5G gNB 系统仿真。精通 38901 的 pathloss 和 slowfading 系统建模，wraparound 方法。Beam forming 的增益计算和可视化。

- 2015.6 – 2019.12：LTE eNB 系统工程师，主要工作是输出 nokia eNB feature 设计，需求和规范，精通的领域有：eMTC/NB-IoT/系统消息/随机接入/寻呼/4G-5G 互操作等等。

- 2013.1 – 2016.6：LTE eNB 系统仿真，自己单独开发（用 python）的仿真器，仿真内容设计小区负载均衡、切换门限参数自动优化。（英文简历部分有配图和更详细的描述）。

- 2011.4 – 2012.12：作为 Nokia GSM R&D 前端，支持 Nokia 市场部向运营商客户展示 Nokia 的新 feature。汇总运营商的需求，带到 R&D 内部，提供 raodmap 的输入。

Motorola：

- 2008.8 – 2011.4 : GSM 系统工程师，负责系统需求规范，比如 feature： Abis over IP.
- 2006.6 – 2008.8：手机部测试工程师 lead
- 2002.10 – 2006.8：GSM BSC/BTS 测试工程师/lead

中兴：

- 2001.7 – 2002.10 : CDMA1X 基站开发工程师

英文简历
First Name: YongGang.   Last name: Liu
Birthday: 1976
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Education:

1998.9-2001.7 MS CS, Software Engineering, Beijing University of Technology（北京工业大学）
1994.9-1998.7 BS CS, Computer Application, Inner Mongolia University （内蒙古大学）

Highlight:

- 5G RAN simulation, (2020 – now)
- LTE simulation, eNB system design and architecture engineer (2013 – 2019)
- Develop tool with skillset in Python, Web, VBA, browser addon.

Work:

Nokia, 2011.05 - Now

2020.1- Now, 5G RAN (system simulation)
5G gNB simulation: 38.901 pathloss and slow fading model, wraparound method, beamforming gain calculation and visualization, high speed railway etc. C++ and python.

2015.6- 2020.1, LTE RAN SDA (system design and architecture)
LTE eNB feature system design and requirements.

- Expert in LTE cplane for eMTC/NB-IoT/system information/random access/paging/security/4G-5G interworking features.
- Develop a tool to browser LTE/NR message at: https://liuyonggang1.github.io. It includes messages of LTE RRC/S1/X2/M2/M3/LPPa, NR RRC/NG/Xn/E1/F1, LTE NAS, NR NAS.

- Develop a tool for MSC (message sequence chart), which is a wrapper of plantuml and with enhancement for LTE/NR RAN message selection. At: https://liuyonggang1.github.io.

2013.1 – 2015.6, LTE RAN SDA (system design and architecture team)
LTE system simulation work. Since 2013.8, I started from scratch to develop a new simulator for LTE eNodeB system simulation with Python by myself only.

This tool is used for load balance and mobility robust optimization features with following functions:

- LTE FDD Macro propagation
- WCDMA Macro propagation
- LTE idle model mobility
- WCDMA idle model mobility
- Measurement (all types)
- Handover (A3, A4, A5, B1, B2)
- Intra, inter frequency handover
- Inter-RAT MRO (Mobility Robust Optimization)
- DL and UL scheduler
- Load balance
- Traffic model: ftp, http, streaming etc.
- Example figures output from tool

- Event Map
- SINR histogram of all map points
- SINR distribution map
- Shadow map
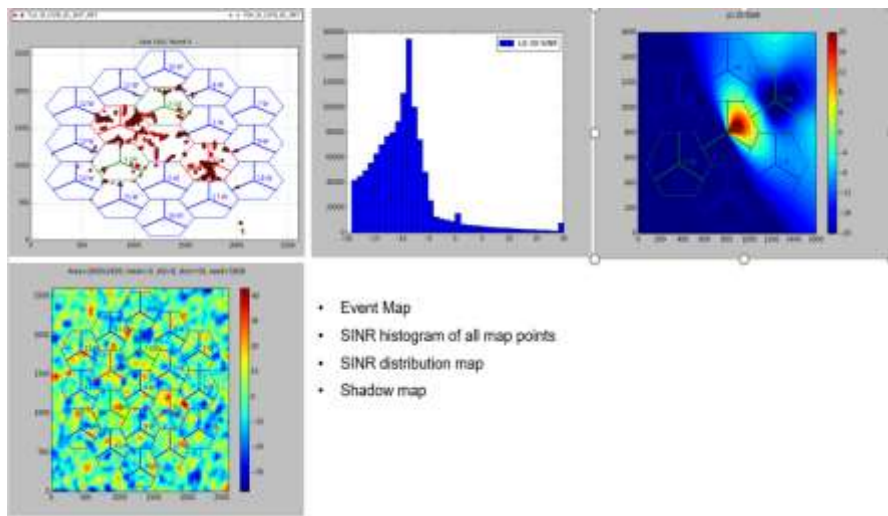
2011.5 – 2012.12, GSM Technical customer interface for CMCC
- Co-work with PdM for roadmap and feature screening.
- Exchange/prioritize CMCC requests between CMCC and back-end global team.
- Present feature solution and product to CMCC.

Motorola, 2002.10- 2011.4 (acquired by Nokia)

2008.8 – 2011.4 GSM RAN System Engineer

Responsibility for feature requirements and security policy.

features and function areas:
- Sun M5000/4000 as new OMC platform.
- A5/1 security hardening for air interface (3GPP Um interface).
- Solaris 10 security hardening for OMC platform.
- Abis over IP function areas: security, transportation topology, IP over E1, planning guide, owner of interface specification with third party partner.
- Security: threat identification, risk assessment, vulnerability management for features and releases.

2006.8-2008.8. Mobile Phone Tester/Lead

I planed and performed in following technical functionality:
- DVB-H, which is one solution for mobile TV.
- OMA-DataSync, Email, SMS, MMS, OMA-DM, OMA-DRM etc.

2002.10-2006.8. GSM RAN Test/Test Lead

Responsibility for test plan, task assignment, control schedule, risk assessment, test report author, release notes author.

ZTE Corporation, 2001.07-2002.10

software development engineer for ZTE CDMA1X BSS.
- Involved an embedded database management system based on top of pSOS with C++.
- Involved Forward Supplemental Channel Scheduler algorithm for high speed packet data service.