YuQing (Eugina) Ding

Simulation Network/Software Engineer

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EDUCATION

- **Master of Computer Science** New Jersey Institute of Technology, 2022 (GPA 3.85/4.0)
- **Ph.D. Intelligent Transportation Simulation Modeling** New Jersey Institute of Technology, 2000 (GPA 3.7/4.0)
- **Bachelor of Electrical Engineering** Huazhong University of Science and Technology, China

PROFILE / SKILLS

- OOP Python, Java, Djangp, R, HTTP, CSS
- Data mining algorithms: Time Series, FP Tree, Apriori, KNN, ANN, random forest, etc.
- Database management using Spring boot, h2, MySQL, PostGreSQL
- Network design and cybersecurity
- Data analysis using Python/ big data, dataframe, graphframe, sparklyR, ggplot, statistics (Z Test, T Test, Bayes, Chi-square, Anova)
- System Design/Build, integration and verification, traceability matrix with IBM Rational DOORS

Eugina is a passionate engineer specialized in transportation simulation modeling, vehicle automation and software development. She has a Ph.D. degree in Intelligent Transportation Systems, master degree in Computer Science and E.E. degree in automation. She has extensive experience in system/network design and software development for transportation infrastructure projects.

WORK EXPERIENCE

1. Transportation Simulation Modeling networks (Ph.D. Dissertation)

Eugina simulated general vehicle operations in a multi-modal network (highway, transit, light rail) using Fortran/C++. The simulation model updated each vehicle in the roadway grid every 1/10 sec based on Origin-Destination pairs, vehicle behavior (lane changing and signalization) and driver behavior (aggressive or cautious). New Jersey Transit R&D has provided transit/roadway raw data for ANN training and prediction validation.

2. Company Payroll and Project Database Management and Web Applications *(play video)*

using Java , JDBC, MySQL, html, CSS, JSTL, Apache Tomcat

- Payroll paychecks, IRS tax forms and reports per employee, office, department, division, etc.
- Project management including budget, manpower and progress, real-time web applications

3. University Registration Database Management and Web Applications *(play video)*

using Spring Boot , JDBC, H2, html, Apache Tomcat

- Students can review courses, records, register a course, etc.
- Professors can review, add, delete students, courses, edit grades and review statistics, real-time web applications

4. CyberSecurity using Java's security library and Ubuntu bash *more details on Github*

- Big Integer based crypto algorithms including Diffie-Hellman, ElGamal, EclipticCurve, Secret Share, etc.
- Performed brutal dictionary attack using MD5 password hashing algorithm.
- Performed cross-site scripting (XSS) attacks (i.e. the Samy Worm), stealing cookies, propagate worms, corrupt user accounts and profiles, etc.
- Public Key Cryptography including digital signature, public-key certificate, certificate authority, and authentication based on PKI.

5. PSIM (Physical Security Information System) Asset Management Database System *more details on Github*

using PostGreSQL running Qognify PSIM platform for local/regional command centers:

- Sensors database of all IP devices in Subway stations and Bus depots
- Real-time operation status of network field switches and routers
- Alarm associations (camera sensors to activate investigations)
- Asset device maintenance records

CORE COURSES

- Python, Django, Java, JavaScript, R
- Advanced Database Management Systems
- Cryptography and Network Security
- CyberSecurity
- Data Structure and Algorithm Analysis
- Internet & Higher Layer Network Protocols
- Big Data and Data Mining
- (Diffie-Hellman, ElGamal,EclipticCurve, Secret Share/FHE-lopez, PKI, Kerberos Authentication,Web Security, SQL Injection, Rootkits XCP)

REFERENCE CONTACTS at Parsons Corporation (2000 - now)

Boro Dedeitch, PM, PE +1 (972) 816-1784 boro.dedeitch@parsons.com

Michael Fitzmaurice, PM, PE +1 (646) 465-0446 michael.fitzmaurice@parsons.com

Network Design/Build Projects *details on GitHub*

1. Network Design for Bus Rapid Transit (BRT) Services (Federal Transit Administration) *(see PDF)*
   - VIA, San Antonio, Texas (VIA Contract No. 12-394)
   - Omnitrans, San Bernardino, California (sBX Contract No. 23-1002891)

   Tools: CradlePoint, Cisco, Salient CompleteView VMS Software, Trapeze Bus Arrival Time Software.

   Eugina is a task lead in system design tests in the command facility center for the proposed BRT corridor. She provided network design to meet the agency's new TVA (threat and vulnerability Analysis) guidelines. The network system for each bus station includes IP-based CCTV Cameras, ACS, Intercom HPI, VOIP phone, Public Announcement, Digital Displays of Real-time Bus Arrival Times and Verizon Net Cloud Management and Control.
2. Network Design for Port of Entry (POE), U.S. Customs and Border Protection *(see PDF)*
   - Niagara Falls / Lewiston Queenston Bridge Plaza, New York (Import/Export Command Centers)

   Tools: Cisco, Vicon NUCLEUS VMS Software, Lenel ACS Software

   Eugina is a lead engineer in network design for command center joint-operated by Niagara Falls Bridge Commission and U.S. Customs and Border Protection, including POE network and HSDN homeland security data network operated by U.S. Customs and Border Protection.
3. Network Design for Site/Regional Command Centers
   - MTA Task Order CM-1550 (NYC Subway Stations at Columbus Circle, Rockefeller Center, South Ferry) *see PDF*
   - MTA Task Order CM-1409 (NYC Bus Depots at JFK Airport, LGA Airport, Spring Creek, East Chester) *see PDF*
   - MTA ISIM-B Module 1 (14 Subway Stations) *see PDF*

   Tools: Fujitsu Flashwave 9500/4500, Cisco, Etherwan, Genetec VMS Software, Qognify, Asset Database Management PostGreSQL

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