Ying Song

Staff Engineer

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**PROFESSIONAL SUMMARY:**

* Computer Science Master’s Degree from Tianjin University
* Long IT industry working experience cross many fields: Firmware development and verification, Battery Management Systems, MedTech, Consumer Products, Power & Energy Management, Banking, Communication & Web Application

1. 10 years embedded development experience(EDK2+UEFI) using C, the ability to read and understand circuit schematics and datasheets.

* 5 year IPhone/IPad factory hardware test engineer experience and NPI manufacture test experience
* 8 years’ system and integration test experience, Deep Knowledge of Hardware Servers, In depth understanding of architecture from server system perspective, software, frameworks and APIs
* 10 years Siemens working experience
* 5 Years of Experience in Python, MATLAB and scripts languages
* Two certificates: Oracle DBA and PMP(PMI)
* Strong understanding of Databases: Oracle and SQL server, others database & SQL
* PCB online test for master’s degree thesis, Design and test Mutil-font Chinese word processor board, MP(mass production) in Hong Kong
* Be fluent in Chinese(Mandarin) and English

**Technical Skills:**

* Python, MATLAB, PHP, JavaScript, JSP, HTML, JavaScript, CI/CD
* C, C++, NET – C#, ASP.NET, JMP, Unix scripts and Commands, Assembler Language
* Oracle DB, MySQL, Postgre Database, DB2

**WORKING EXPERIENCE:**

# Cepheid Company San Jose, CA,USA 2022.10 to present

# Staff Firmware and Manufacturing Software Verification Engineer

* Project: G2N/G2B Project
* HW TOOLS: PC, Base Board, Module，JLINK
* SW TOOLS: Agile, Python, MATLAB, Helix ALM, JIRA
* Project Description:
* Design, develop test scripts, test plans, test cases, test results, and test reports, on module and system level of whole software development lifecycle. Following software requirement specification document, embedded systems, mathematical analysis and data acquisition to verify firmware and manufacturing software applications.
* Define, implement, and execute structural, environmental, functional and End-to-End tests to validate Hardware/Software for Thermal Control Systems on G2B/G2N modules products. Testing device performance in 45C & 65C Chambers in environment test lab. Testing Virtual Temperature equation accuracy, calibration. Analyze data collected during the tests to generate reports to provide quantifiable feedback to the engineering teams that will allow them to optimize their designs.
* Handle fluids test in cartridge, control Temperature. Handle Valve, Syringe, Icore, Sicore, Horn and Sensors different components’ behavior control parameters and running status.
* Develop and execute automation test script based on Python, MATLAB, automatic load test scripts to run and read test log from Linux system, analyze log and automatic continue or stop test, according to test results, automatic draw pics to show managers test trend and calibrations. Automatic upgrade or downgrade software’s.
* Using source control tools：GitHub to control code versions in CI/CD pipelines
* Perform failure analysis. Establishes strong, structured, and consistent FA processes at vendor sites providing analysis and data from ORT (ongoing reliability), NPI and field returns. Conduct RMA (Reliability, Maintainability, Availability) Analysis.
* Continuously improves process and work methodologies and software by collaborating with peers/multi-functional groups and analyzing activities to improve workflow and work processes.
* Record, report and verify software defects in defect tracking tool. Using Helix ALM and JIRA.
* Performing risk assessments and developing mitigation strategies to address potential product risks.
* Using PCB/FW debug technologies (like JLINK, JTAG, multi-meter, oscilloscope. Etc.)

Work with communication technologies (like SPI, I2C, CAN, TCP/IP...etc.), robotics, and system engineering.

* Provide technical leadership and mentorship to junior team members in software architecture and testing best practices.

# KeLie Company Nanjing. China 2021.4 to 2022.8

# Staff Firmware Engineer and Hardware Tester

* Project: KeLie power storage system
* HW TOOLS: PC, HMI board**,** High-voltage components
* SW TOOLS: QT Object C++
* Project Description: Development Power Storage system using QT C++, BSMU(3-level) general control for whole system, Strong understanding of Qt GUI using Qt Widgets, Understanding of Qt classes and hands on experience in using UI/API.
* Strong understanding of C++ concepts，Maintenance two versions: one is for windows and another is for Linux, very familiar with Linux script, commands, using VMware to compile and build system version. using the V-Model development process.
* To control BCMU(2-level) and display all system data, using IEC104, Modbus to communication with Other EMS system. Inside using CANBUS and RS485 to control IO and bus. Do FA analysis and data collection, continuously monitor system FA status.
* Conduct Hardware-in-the-loop (HIL) testing with data acquisition techniques and LabVIEW
* Write device driver and interface in X86 assembly language, perform DSP development. Write printing drive and modem drive-to-drive printer and modem, develop communication software to drive RS-232 port to receive and send data.
* Design Chinese Mutil-language board and do verification testing for different phases and execute test cases and trace defects and fix it and MP(mass production) in HongKong. Utilize appropriate lab equipment (oscilloscopes, logic analyzers) for testing. read and understand circuit schematics and datasheets.
* Develop code in a team environment; be responsible for all software development cycle phases. Understand design methodology and software development life-cycle.
* Create test report and report defects. Using GitHub to store code and make branch using CI/CD methodologies.
* Define electrical validation methodologies for PCB and different subsystems by working with the system integration EE team and technology teams.
* Define and track detailed test plans for the different modules and top-level systems. Validation coverage includes SoC, low-speed signal interface (I2C, Can bus, Modbus drivers..etc), I/O signals, high-speed differential interface, electrical performance of subsystems such as optical sensors, microphones, battery, charger, and RF, JTAG, SPI, I2C, and UART using Bluetooth protocols wireless technologies.
* Using small audio device to record user’s incoming voices, to record battery status, monitor it and support user in case emergency happened. Test hearing, speakers, headphones, digital-to-analog converters (ADC) etc.
* Work with ODM/OEM vendors as needed to define the product specifications, development plans & test plans, develop test Strategy and test plan around integration testing and acceptance test criteria.
* Using Error Injection aspect of Hardware to test error handling, Fix bugs and run unit test. Add new functions and new requirements. Using JIRE to record bug and test cases
* Capturing lessons learned for issues in Production and creating test cases to address those issues in future hardware platforms  
  Experience triaging, testing, developing, and debugging hardware platforms.  
  Demonstrated technical skills and experience creating documentation for users of all levels.
* Assign tasks to team members and tracing their progress and help them to fix problems occurs.

# Fox Conn Shenzhen, China 2019.3 to 2021.2

# Factory Hardware Test Engineer

* HW TOOLS: Mac book, Mac mini, test station, Network card,
* SW TOOLS: Xcode, MATLAB, Python, C/C++/Object-C
* Project Description: Keep test station stable and improve and optimize station performance during factory NPI / IQC Test for iPad/iPhone camera component.
* In Foxconn factory, monitor daily factory test status and collect test data and send daily test report
* Familiar with fixture design and integration, different system components interactions.
* According to ERS, engineering requirements to modify test program(overlay) for different configuration files and MATLAB and fixture controller program.
* Analyze large amount of test data and analyze problem and correlation for related items and draw pictures to analyze and find root cause.
* Deploy calibration and performance verification system throughout the NPI/IQC and SA, plotting and processing data in JMP/MATLAB/Python，Test fixtures using Reference design kits, cables, and connectors to facilitate testing of the hardware IP.
* Using Python, and LabView for data processing and automation.
* Git SW version control and store program in GitHub and use python to create pdana calibration report for IQC and SA
* Define EVT/DVT parameters, do IQC GRR and DOE for different components.
* Coordinate SW upgrades with Foxconn CM, fixture provider and HWTE team
* Co-work with cross function teams (quality and hardware design) and HWTE experts in US
* Convert test program from 32bit to 64bit, modified different parameters and functions to make program to run on 64bit platform, and on-site debug and testing

# Siemens Nanjing, China 2010.12 to 2019.3

**Staff System and Integration Tester**

* Project: SIP5 5th generation protection device
* HW TOOLS: PC, SIP5 device, Venus, Omicron, Network card
* SW TOOLS: PAS, TTCN-3, ASE-2000, Digsi5, IBM Clear Case, IBM Clear Quest
* Project Description:
* SIP5 5th generation protection device system and integration test under globe environment
* Responsibilities:
* Be responsible for test for all kinds of versions, using TTCN-3, PAS, ASE-2000 and Digsi 5, test communication protocols, T103, T104, DNP, RSTP, 61850, Modbus, NTP (Time Syn Protocol), and ThermoBox for Temperature.
* Using Wireshark to catch TCP/IP, UDP workflow and data packages and get parameters from package, analyze them, using multimeter and Tektronix oscilloscope to analyze problems. Assistance developer to find root cause for defects and errors. record all test cases into IBM ClearCase,record all defects all into IBM ClearQuest.
* According to test results and requirements changes, update and add test cases, review test cases.
* Following Siemens procedure to conduct all test activities, using agile lean process, daily standing up meeting.
* Using Python and JavaScript, to write program to create test report and diagram.
* Increase automation test rate by setting cron(scheduled task) job and test controller, to run test cases automatically during the night to increase test productivity and efficiency.
* Daily meeting with German colleagues using English to discuss all kinds of problems, cooperation with them with shared test development and execution workload.
* Responsibility for training 3 new staff, and training them to familiar with test environment and test tools and work procedure, etc.
* Make 3~4 recommendations each year for process improvements and workflow improvements.

# Staff Software Validation Engineer

* Project: PowerLink/SWT3000 Communication Solution
* HW TOOLS: PowerLink, SWT3000,vMUX
* SW TOOLS: MCM tester,PC,PowerSys,SNMP mib browser
* Project Description: PowerLink uses the high-voltage line between transformer substations as a communication path for data, protection signals, and voice. PowerLink has numerous outstanding features and functional units, many of them are patented.
* Battery test and monitor using Tektronix oscilloscope. And FA analysis and data collection and min average system failure time.
* Be responsible for testing for all kinds of versions, using PowerSys configure tool based on PowerLink and SWT3000, finding bugs in system, prepare test cases, perform integrate test and system test, create test report, help developer to find bugs root cause, using MTS8000, Acterna E1 and data Tester EDT-135, Tektronix oscilloscope, SY5111A and SY5111B Level meter, IXIA networking tester, MCM test automation system to execute test cases. Using lean process, daily standing up meeting.

# Sr. Firmware Engineer

* Project: 7SJ686 Smart Device
* SW TOOLS: Vxworks6.8, C
* Project Description: Develop 7SJ686 smart device for China Power Industry
* Develop smart device driver part: RTC, LCD, Keyboard, Serial port, Switch, RSTP protocol using c language, based on Vxworks6.8 real time operation system and using Wind River development tool (ICE). Configure switch for goose telegram and TCP/IP telegram, modify TCP/IP protocol for switch configuration, read Motorola MCU 8313 data sheet and program registers for I2C, RTC, LCD, Uart.
* Using UNIX script to write test script to test network storm.

# Software Developer

* Project: Nokia Siemens Networking 3GPP I&V wbts project
* HW TOOLS: 3GPP WBTS SW TOOLS: Python, Rprotal, Django, PostgreSQL, Matplotlib
* Project Description: Develop automatic test tool and add more automatic test cases to increase automatic test case coverage for 3GPP WBTS I&V.
* Handover Rportal project from Europe, using python, Django, PostgreSQL, Matplotlib to create report and draw charts according to test result.
* Add new automatic test cases using C# language on existing .Net platform, make manual test cases as automation cases add software download, RF module, RF reset test cases, configure 3GPP WBTS, upgrade software, provide automatic test tool support for testing team

# Sr. Firmware Engineer

* Project: LOGO! 0BA6 and 0BA7 Project for Siemens A&D Numerical Control Ltd., Nanjing
* HW TOOLS: ARM9, JLINK SW TOOLS: C,
* The main task is to develop HMI (Human Machine Interface) communication module to control main module, LOGO! is Siemens's famous product. HMI for LOGO! is brand new part. Totally 50 communication interfaces has been developed. 0BA6 and 0BA7 are first serial products developed in China.
* Participate development team to develop communication firmware, use PPI(SIMATIC S7-200 Point-to-Point Interface Communication) protocol, realize communication for HMI and basic module in order to exchange information. Use heartbeat mechanism to know basic module's status. Communication RS232/RS485 driver and interruption are written.
* MCU: IS ARM9 Development tool: Jlink .Development language: C
* Assist system test, release software to system test team. Fix bug and trace bug status, discuss solution and so on.

# Project Manager and Team Leader

* Project: PDS V1.0 and V2.0(based on HIPATH, for COM SBCS)
* Project Description: Lead the development of a dispatching solution for Chinese Power and Air industry.
* Project management and Team management
* Collect and analyze all kind of user requirements, mapping them into user stories, according to user stories, define use cases and write software specification, according to software specification, translate it into technical architecture, then write to implementation document.
* a general understanding of end-to-end market data flow and system level understanding of data processing, Experience of CMMI formal software development lifecycle, with a solid understanding of software development, testing methodologies and tools in theory and practice.Following DO178 B/C process. using doors.
* Lead PDS V2.0 development, PDS V2.0 has following features: Chinese GUI, Conference machine, Radio integration, Multiple servers hot backup and load balance
* Development environment: Windows

# TYCO International California, USA 2008.1 to 2010.12

# Sr. Website Software Developer

Web site design, development and maintenance.

* As a Web Developer for the Internet Technology Group, design and develop the Learn Management System Web Site for internal ADT employees where internal employees and managers can register/drop courses online, modify employee's development plan, also add waiting list function to the site.
* Develop the web site using Coldfusion, Java, Jsp, PHP, EJB, Servlet, JavaScript, XML with SQL- server as the back end. Write a stored procedure on SQL Server to speed up reports 3 times. Use access db to store and modify vendor course's data and user information.
* Write schedule task to create reports every week. Host and develop Tyco signal monitor web site, where the user can search signal monitor manual on-line according to manufactories.

# IBM China Beijing, China 2004.5 to 2008.1

**Systems & Software Engineer**

* Project: Banking Retail System Implementation – System Development
* As a System/Software Engineer for the Department of Banking, Finance, Security and Insurance, lead and assist customers in installing, upgrading, developing and customizing IBM banking solution E-teller (client/server) and ATM, according to customer's transactions demands. Analyze, write specs, write and modify programs in JAVA/C and X86 assembly language to coordinate, facilitate and track finance application methods and procedures.
* Test ATM hardware, deposit money, withdraw money, check mainframe inbound/outbound transactions information, check hardware capabilities to handle money, test keypad, scanner reader, touch screen to make sure all hardware works fine.
* Insert a valid card and check if different banking options appear on the screen.
* Ensure that no option to continue and enter credentials is displayed when the card is inserted incorrectly.
* Look for any suspicious attachments or pinholes on the ATM, especially near the light.
* Wiggle any equipment that seems out of place; if it moves, it might be a skimmer.
* Handling exceptions, for example: out of power, out of network, full of container for money.

**TRAINING & CERTIFICATIONS:**

* PMP (Project Management) Certificate
* ORACLE DBA Professional Certificate
* System Design Basics
* VxWorks6.8 Fundamental
* Java Sun Certification Training (USA)

**TECHNICAL SKILLS:**

* Python, XML, XCode, MATLAB, GitHub
* JSP, HTML, JavaScript
* C / C++, NET – C#, ASP.NET, HTML, JMP, Unix scripts, Assembler Language
* Oracle, DB2, MySQL, Postgre Database

**EDUCATION:**

* Master of Science in Computer Science
  + Tianjin University
  + Thesis: PCB online test，to test all components of resistor,diode,triode, capacitance online and analyze using German test machine
* Bachelor of Science in Computer Science
  + Tianjin University
  + Major in computer hardware