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| **RASHIDUL HASAN**  **Software Engineer** | **M: +61 411 647 995**  **E: rashidul.hasan.md@gmail.com**  **A: 4A Barenco Pl, Willetton, WA 6155**  **www.linkedin.com/in/rashidul17**  **Australian Citizen** |

Hold hands-on experiences in software development, code debugging, modifications, prototype design and deployment in infrastructure and ad hoc based systems. Software development skills are integrated with initiative to resolve problems, underpinned by ability to contribute and participate in project operations.

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| * *Languages*: C | C++ | C#.NET | Python | Matlab * *Database Query*: MySQL | MS T-SQL | Oracle * *Web Technologies*: ASP.NET | HTML | CSS | JavaScript * Software development under Linux and Windows environment * Multithread, object oriented, and socket programming * Proficient in WiFi 802.11 MAC and TCP/IP stack * Experiences in large scale network infrastructure integrations and optimisations * Software release and versioning in SVN * Exposed to JIRA agile/Scrum based software development * Embedded Software: Embedded Linux | RTOS | eCOS | C | C++ | Microcontrollers | Bootloader | Digital Signal Processing | firmware upgrade | SPI | I2C | UART * Language Certification: C++ for C Programmers, Python Programming (coursera) * Database Certification: Managing BigData with MySql (coursera), Oracle SQL Fundamentals (oracle) * Networking Protocols: Understanding on TCP/IP | UDP | ARP | RARP | DHCP | DNS | ICMP | INAP | MAP | NAT/PAT | TELNET | SSH | IPSec | Signalling (SS7, SIGTRAN) | Switching (VLAN, VTP, STP) | Routing (RIP, EIGRP, OSPF, BGP) * Networking and Virtualisation certifications: Cisco CCNA, CCDA, CCNA Security, VMware VCP5-DCV |

**TECHNICAL SKILLS**

* ***C/C++:*** Developed *Personal Protection Device (PPD)* firmware for Minetec. PPD sends and receives WiFi and 125 Khz LF signals, processed by C based libraries. Added alarm logic in embedded system considering signal strength and user interrupt. While conducting research at Monash University, modified hundreds of object oriented C++ header and class files in ns2.33 network simulator, developed new header and class files, wrote functions to accommodate new concept for software defined radio communications. Developed video encoder and decoder for H.264 using C++ which fed as UDP traffic to data link layer.
* ***C#.NET:*** Developed Graphical *User Interface (GUI)* usingC#.NET WPFfor Minetec customers to configuring safe detect devices wirelessly. The GUI is connected to a WiFi module via serial cable that can send commands and receive responses from the end devices. I have added advanced features including batch processing, user authentication by querying SQL database, and over-the-air upgrading of firmware which reduced significant manual effort.
* ***Database and Web Technologies:*** Developed [www.rashidulhasan.info](http://www.rashidulhasan.info) website by applying various features using ASP.NET, C#, MS T-SQL, HTML, and CSS. In this website, a book database project has been created, where web user can add, delete, and search book category and author name, which has been implemented using C# and MS T-SQL database. Studying BigData management with MySQL at COURSERA.
* ***Unix/Linux/Ubuntu/Solaris:*** At Minetec, I have written code, compiled code, produced firmware, and debugged firmware in Ubuntu OS. Used Vi/Vim editor for editing files. While conducting research at Monash University, used Cygwin OS for scripting and running codes. At Grameenphone, most of the networked nodes were running on Solaris Machine. Received Solaris training and utilised advanced command sets for troubleshooting Ericsson billing system.
* ***Scripting Languages:*** Python – completed ‘Python Programming’ from COURSERA. At Minetec, automated performance reporting of proximity awareness devices by sending commands, listening on ports, processing received data and presenting it user readable format. While researching at Monash, collected raw files from simulations and then used Python scripting language to provide meaningful results. Also hold experiences on Shell, AWK, and TCL scripting languages.
* ***TCP/IP Networking and Data Link Layer Skill:*** Possess in-depth knowledge on TCP/IP and UDP protocols. In my current work at Minetec, modified network and data link layer stacks for developing customised network architecture. As a graduate researcher at Monash University, designed and developed advanced data link layer protocol for software defined radio networks. Used VLSM technique to allocated IPv4 addressing scheme for enterprise scale network at Grameenphone. Troubleshot Cisco devices for TCP/IP protocols.

**EMPLOYMENT NARRATIVE**

**Minetec Communications Pty Ltd, Australia**

***Embedded Software Engineer (Full Time)* Sep 2014– Current**

Responsible for developing, troubleshooting, version controlling of firmware for proximity detection system and tracking of vehicles and personnel for surface and underground mining using WiFi and 125k Khz LF signals. Strong use of C/C++, C#, Python, Linux OS for firmware and application development.

***Key Achievements:***

* ***Developed Personal Protection Device (PPD) Firmware:*** developed PPD firmware which can communicate with nearby devices over WiFi interface. Modifies C/C++ based WiFi libraries and added functionalities such as user interruption through push button, zone based alarm activation, sending WiFi message to nearby vehicles.
* ***Enhanced GUI Using C#.NET:*** improved existing GUI by adding new features using C# languages. Integrated MS SQL database to add user authentication. Added multiple commands to multiple devices and automated over the air firmware upgrade procedure by integrating tftp server using C# in Visual Studio 2013.
* ***Automated Factory Acceptance Test Procedure:*** developed Python based scripting to send command over WiFi interface, collected responses, and prepared decisive results for device performances.
* ***Bootloader Improvement:*** existing bootloader suffered from self-erasing codes and resetting watchdog timers frequently. Added code protection and new logic to overcome those difficulties.
* ***Wireless and LF Communications:*** retrieve signal strength and packet information from wifi 2.4GHz and 125KHz radio signals. Devices generate alarm and share information over these wireless networks.
* ***Modified Network Stack:*** troubleshot packet from application layer to TCP/IP to Data link layer. Examined packet level information like sequence number, data content within packet, and then modified open source libraries to address end-to-end communications.
* ***Code Merging from Broadcast to Unicast framework:*** reused useful C/C++ codes from past broadcasting based communications framework, and wrote new codes, and then merged together to develop robust and efficient network architecture.
* ***Programming in Linux and Windows Platform:*** wrote and debug C, Python, Shellcode in Ubuntu platform using Vi/Vim editor. Used Visual Studio 2013 professional IDE for C# based GUI development.
* ***SVN based Firmware Version Control:*** managed software versioning and revision control using Apache Subversion (SVN). Analysed version logs for change details and handled customer queries.
* ***Practising Agile Software Development Methodologies:*** used JIRA platform for managing sprint and scrum, creating task, logging work hours, updating new changes, and monitoring work progress.

**Monash University, Australia**

***Research and Development Graduate in ICT (Full Time)* Jun 2008 – Mar 2013**

Research current challenges in communications technology with emphasize on designing and developing data link layer protocols, encoding/decoding video signals, and modelling of system performances. Languages used: C++, Java, Matlab, TCL, AWK, Python.

***Key Achievements:***

* ***Researched and Developed Prototypes:*** researched a wide range of technical challenges for data communications in software radio networks and analysed scope of improvements using different traffic engineering models. Developed prototype software including video encoder-decoder, multichannel Wi-Fi protocols, queuing method and reporting tools to support research framework, using C++, Matlab, Java, and Python.
* ***Utilised Statistical methods:*** collected raw data from simulations and then used Python scripting language to provide meaningful results of different parameters including user bandwidth, system capacity and system loss. Applied probabilistic model including exponential, uniform and other random models for finding fitness of collected data.
* ***Formed IT Networking Lab:*** created lab environment by installing and configuring VMware workstation 8/10, windows OS, Unix OS. Utilised knowledge of switching, routing protocols and IPv4 in configuring simulation scenario.
* ***Constructed Simulation Tool:*** recognized inadequacy of available simulation tools for research problems, subsequently creating new frameworks using algorithms, programming languages (C/C++, Java, Matlab) and scripting languages (Python, AWK, TCL). Resulted in significantly reduced simulation time due to flexibility in changing configuration parameters and the publishing of 4 contributions to International conferences.
* ***Generated Superior Model for Data Link Layer:*** developed data link layer protocol for software defined radio networks to provision QoS guarantee for delay-sensitive services, having users equipped with multiple radio interfaces. Simulation results using ns-2.33 show improved strength to reduce video delay with fewer number of primary channel sensing.
* ***Collaborated, Documented and Published:*** collaborated research issues across team members, participated in research expos, seminars and poster presentations. Research outcomes were documented in professional format and published in international conferences including IEEE WCNC, NCA and PIMRC.

**GrameenPhone, Bangladesh**

***Senior System Analyst (Full Time)* Jul 2006 – Jun 2008**

***System Analyst (Full Time)* Jan 2005 – Jun 2006**

Responsible for monitoring network growth, infrastructure expansion, prepaid billing system integration and optimisation for 50 million subscribers. Required to design application, lead development team, and provide technical solutions for mobile products including voice, data, and sms based products.

***Key Achievement:***

* ***Analysed User Traffic Behaviour:*** wrote SQL queries and exported user data from system server to external database in readable format such as .csv, .xls, .txt. Analysed data with histogram and probabilistic models. Presented bi-weekly statistical reports to management which helped mitigating upcoming network constraints and hence improve customer satisfactions.
* ***Cross Checked Anomalies in Prepaid Transactions:*** prepaid mobile call traffic generates transactional records at different servers. Call undercharge and overcharge were reconciled by cross checking call details records.
* ***Prepared Batch files for User Provisioning:*** prepared batch file using scripting language Python for user service provisioning in registration server and scheduled tasks for automatic execution and error reporting. Resulted in real time provisioning time and reduced customer complaint resolution time by 80%.
* ***Designed Enterprise Scale Networks:*** knowledge of IPv4 allowed efficient use of IP blocks by appropriately assigning network mask with VLSM technique. Analysed user traffic statistics, planned network growth, designed distributed network capacity and assist system integrations during roll out phase.
* ***Administered and Integrated Multi-vendor Platform:*** managed multi-vendor network systems that included Ericsson switching and Billing, Cisco, Unix/Solaris, Windows Server 2003 and Comverse platform. Troubleshot TCP/IP, UDP, ARP, DHCP, DNS, NAT/PAT, IPSec, Switching (VLAN, VTP, STP), and Routing (RIP, EIGRP, OSPF) protocols to support ongoing challenges.
* ***Minimised Revenue Leakage through Data Integrity:*** logged onto prepaid system using SSH, taking traces in billing system to obtain call detailed record (CDR). Detected anomalies through post processing of CDR and then tuned the system parameters accordingly.

**EDUCATION**

* ***Graduated (PhD) in Information Technology (IT),*** Monash University, Australia, 2013
* ***BSc in Electrical and Electronic Engineering,***  BUET, Bangladesh, 2004

**RESEARCH PUBLICATIONS**

* Rashidul Hasan and Manzur Murshed, ***Unsaturated Throughput Analysis of a Novel Interference-Constrained Multi-channel Random Access Protocol for Cognitive Radio Networks***, IEEE PIMRC 2012.
* Rashidul Hasan and Manzur Murshed, ***Provisioning Delay Sensitive Services in Cognitive Radio Networks with Multiple Radio Interfaces***, IEEE WCNC 2011.
* Rashidul Hasan, Golam Rabbani, and Others, ***Speaker Identification Using Mel Frequency Cepstral Coefficients***, IEEE ICECE 2004.

**REFEREES**

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