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Summary

A multi-disciplinary / A SW/HW engineer with experience in a variety of positions and fields, including embedded hardware/software implementation, RF engineering, system architecture, DSP, test and debug with a great track record of accomplishing projects within limited budget and time.

Technical skills

* Microcontroller hardware and software
* Analogue, digital and mixed systems
* system architecture
* Ability to translate user requirements into technical solutions
* Predict future problems and providing best solutions during design stage
* Designing and implementing test jigs
* Safety-critical programming, fault trees, IEC and AS/NZ safety standards

Software

* C, C++ and assembly
* Embedded programming within limitations
* Test and debug
* Python
* Visual C# and C++
* Developing peripheral drivers
* Driving external data-acquisition parts and measuring technical parameters
* Agile methodology, Scrum
* TDD, unit testing
* Version control software; SmartGit, Gitlab
* Familiar with Jira, ProjectPlace, …
* GCC, Common IDE’s, Eclipse, Keil, IAR, …
* Controlling industrial equipment such as ultrasonic bath, pumps, valves, motors and sensors
* Serial and wireless communication standards like RS485, RS232 and Bluetooth

Analog

* Analog circuits; design and debug
* EMC and EMI
* PCB layout considerations for reducing interference and noise
* Power supplies, filters, signal shaping
* Noise challenges in mixed systems
* Schematic and PCB
* Developing communication protocols
* DC/DC converters and battery management
* Analogue circuits simulation with LTSpice

DSP

* DSP, SDR, implementing communication algorithms by DSP’s
* Modulations; AM, FM, FSK, OOK
* Filters, FFT, …
* Converting floating point algorithms to fixed point
* Implementing signal processing algorithms on DSP’s & MCU’s with maximum performance

RF

* RF design; RFIC’s
* Designing, simulating and evaluating RF modules
* RF amplifiers, filters, synthesizers, etc.
* Designing RF modules by MMIC’s
* Designing High power RF amplifiers
* Simulating RF blocks by AWR
* Electronic measurements; Spectrum-analyzer, network analyzer
* Superheterodyne, Single chip transceiver architecture, IQ modulator/demodulator
* Analog Devices solutions for sub-GHz short-range wireless communication

Soft Skills

**Problem solver:** Actively seeking and resolving technical and operational problems.

**Teamwork:** Extensive experience in team projects at different levels including small team leadership.

**Independent:** Able to work without being supervised; with preference for handle barriers in person.

**Supporter:** Eager to mentor colleagues and help them to debug their works.

**Hands-on Engineering:** Involving closely and directly in all tasks of projects.

**Time management:** committed to do the job in time with prioritising tasks and a fast pace

Attributes

* Action-oriented
* Co-operative
* Detail-oriented
* Tolerant
* Can-do attitude
* Creative
* Calm
* Avid traveller
* Logical thinker
* Seeking out new responsibilities

Experience

**R&D engineer** 2015-now

**Tru-test group, Auckland office**

Responsibilities:

* Embedded software programmer for a state-of-the-art energiser
* Signal processing; real-time pulse processing
* Ensuring compliance with safety standards; IEC,AS/NZ, EN
* Gathering data from field tests, simulating real data in lab
* Design architecture, HW design and SW implementation for independent safety module
* Working on legacy codes, debugging and improving
* Code reviewing

Achievements:

* Configuring Bluetooth Low Energy in advanced modes, e.g. master/slave simultaneously
* Suggested a new mixed SW/HW idea for safety module to reduce TMC and TTM
* Designed new signal processing method that enabled us to perform in-pulse calculations
* Provided ideas to increase software development pace
* Improved the cooperation between HW and SW team by a common understanding
* 3 times titled as “Engineer of the month”

**Embedded designer, system architecture, RF designer, Analogue designer** 2005-2015

**Pardazesh Basamad Ltd.**

An agile, small size, high-tech Company performing high-level R&D projects

Responsibilities:

* HW and SW designing for DSP systems, SDR platforms
* Designing RF modules using MMIC’s
* Simulating
* Designing mixed systems (HW&SW); schematic and PCB
* Programming embedded systems with C
* Performing some mechanical calculations and interfacing electronic concepts with mechanical requirements
* Choosing and setting up platforms; ARM, PIC and AVR microcontrollers, Piccolo and floating point DSP’s
* Developing GUI for control applications with visual C#
* Working with OLE databases with visual C++
* Designing and implementing serial protocols for wireless projects
* Technical negotiating with the costumer, providing solution and choosing platform
* Proof-of-Principle, Form Study and/or functional prototyping
* Replacing RS-232 and RS-485 communication with ISM-band wireless modules in some old control systems
* Designing, implementing and testing to meet military environment requirements
* Working on legacy codes, debugging and improving
* Professional testing and evaluating radio systems
* Designing RF modules using MMIC’s
* Simulating RF blocks using AWR
* Implementing battery management functions in hand-held products
* Utilising TI DSP’s and DSC’s for controlling high-power RF amplifiers and implementing telecommunication algorithms in handheld wireless transceivers

Achievements:

* Reverse-engineering for an old under-water communication system, in order to improve it for new requirements
* Designed and implemented a high-tech AD-HOC FH-SS handheld wireless radio, using TI DSP’s and Analog Devices ISM-band transceiver modules
* Designed and implemented a wide-band spread-spectrum radio link for safe and secure control of UAV’s
* Designed and implemented a secure FH-SS video down-link for UAV’s
* Proposed an under-ground communication system based on seismic signal processing
* Introduced a new idea of combining MAC and PHY layers in a frequency-hopping Ad-Hoc radio with a state-of-the-art robust routing algorithm
* Developed a low-cost reliable embedded system to control chemical and pharmaceutical manufacturing systems with complicated processes
* Eye-catching records of budget and delivery time for 4 embedded control projects
* Proposed and developed an innovative FH wireless link for remote-controlling a UAV, robust against interference, interception and jamming
* Successfully managed to develop a military product following some of “Mil-std-810A” and “Mil-std-810G part two” rules and methods
* Suggesting a new communication system in a parking management/guidance system, led to wiring costs being halved; using WSN, Ad-Hoc and wireless technologies
* Developed a low-cost reliable embedded system to control chemical and pharmaceutical manufacturing systems with complicated processes
* Developed an automatic system to test digital cards of up to 80 I/O’s
* Integrated power supplies of an aircraft, re-designed protection modules and halved occupied space
* Built a Hall-effect current sensor with full range of 50A for testing our products in steady-state and evaluating them in transients

**Digital electronics engineer, Driver/Firmware developer** 2002-2005

**Basamad Negar Ltd.**

Developer of laboratory and broadcast products

Responsibilities:

* Digital hardware designing; schematic and PCB
* Developing peripheral drivers for DSP and microcontroller in C and assembly
* Implementing simple GUI’s with visual C++ 6.0
* Designing signal processing algorithms
* Designing and testing analogue interfaces and high precision circuits
* Proof-of-Principle, Form Study and/or functional prototyping
* Planning and teaching costumers training courses

Achievements:

* Reached the record of 100MS/s sampling rate and 13.5 ENOB with an acquisition board
* Cut the hardware cost of future projects by 80% suggesting and developing a general purpose SDR platform

**Signal processing group member** 2000-2002

**Professor Hesabi organization (NGO)**

A scientific and research non-governmental organization

Responsibilities:

* PCB design, montage, primary tests
* Developing DSP drivers with assembly
* System test and evaluating

Achievement:

* As a team member, managed to develop a portable battery-powered DSP-based ANC (Active noise controller)

Education

**M.Sc. in Digital Electronics Engineering 2000**

**Sharif University of Technology**

Thesis: Debugging method for parallel-processing DSP systems

Implemented on a platform consisting 4 floating-point digital-signal-processors

**B.Sc. in Electronics Engineering 1998**

**Sharif University of Technology**

Final project: Implementing a narrowband FSK transceiver

Controlled and used by a MCS-51 microcontroller

Computer Skills

Altium/ Protel 99SE Microsoft office

Keil uvision Microsoft C#

TI code composer, Visual DSP Microsoft VC++

Xilinx ISE Analog Devices simulation programs

Code Vision, Keil uvision, Eclipse, AVR studio AWR (RF simulation)

Team viewer (remote teaching and controlling) Microsoft Visual Studio (.NET 2013)

Jira, Gitlab, Git, version control systems

Awards

3 silver medals from physics, mathematics and computer students Olympiads, 1993

2nd place in university scientific competitions among 150 students, 1998

8th place in national electrical/electronic engineering Olympiad, 2000

Outside interests

Chess (Fide Rating: 1624, Howick club team member) Team sports, volleyball

Physics Classical music

Psychology Travelling

Referees

Available on request\*