## Ashraf El-Wakeil

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**Profile**

**Software Engineer** with over 30 years of experience in software development, embedded systems and hardware design. Highly motivated and enthusiastic, strong mix of analytical and practical experience.

Strong experience in the full product development cycle in fast-paced R&D environments.

**Employment History**

**November 2016 – present Senior Software Engineer**

**Hypermotive Ltd.**

**Lutterworth, Leicestershire.**

Deliver Firmware/Software for BMS (Battery Management Systems) for Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV), High power Chargers.

**Responsibilities**

* Design & Implementation of embedded firmware and test solutions primarily in C.
* Develop/Maintain PC based support applications in Visual Studio in C#.
* Working with low level GPIB, UART, CAN-BUS, SPI…

**Key Achievements**

* Software for various Power Distribution (PDU) controllers
* Software for Sunamp Heat Battery Controller.
* Software Power Train for IMechE Formula Student racing car.
* Met software requirement in a very tide timescale, to develop a firmware in C for OBC (Off Board Charger) with microcontroller board, and multiple device.
* Battery Balancer for small truck up to four below 50-volt batteries, including DCDC up to 100 Amp.

**December 2011 – October 2016 Senior Embedded Software Engineer**

**Vayon Group - Ashwoods Energy - Exeter UK.**

**Vayon Group - VES** (Vayon Energy Storage)

**Woodford Halse, Northamptonshire.**

Deliver Firmware/Software for BMS (Battery Management Systems) for Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV).

**Responsibilities**

* Analyse and upgrade existing software designs using several tools
* Participate with team to develop safety-critical system (AMPLiFII) according to standard ISO 26262 (Automotive) for High Voltage BMS
* Write API interface High Level to Low Level code.
* Responsible for the design and development of software / firmware for automotive electronics.
* Develop Firmware for current BMS including BMM (Battery Management Module), CCS (CAN bus Current Sensor), SIM (System Interface Module), BHM (Battery Health Module) and BIM (Battery Interface Module)
* Develop Firmware for Vehicle Battery High Voltage Charger up to 600V DC
* Develop Software in VB.NET and C#.net mainly using CAN bus interfacing, test, calibrate and analyse (charting) for Battery chargers and BMM modules
* Build test boards for interfacing and testing BMS systems
* Manually calibrate and test various BMS modules and charger
* Assist in design and construction of test equipments.

**Key Achievements**

* Developed Firmware for test RIG, includes voltage / temperature simulation for testing BMS’s firmware and hardware.
* Upgraded Interface to work with up to 20+ Linear LTC6811 based battery monitor / balance boards with ISOSPI interface.
* Managed to develop code for Battery Management System for several test RIGs that contain three different microcontroller boards and windows application communicating with CAN bus to analyse and test BMS product boards. The rest rig has multiple test points and multiple voltage levels as well as ADC capturing. And state machine with serval modules to manage several test functions.

**March 2009 – September 2011 Principle Embedded Software Engineer**

**Sonex Group**

**Cairo, Egypt.**

**Key Responsibilities**

Brought in to lead a new design team tasked with upgrading shooting range electromechanical equipment, microcontrollers, control units, and data logger system.

**Key Achievements**

* Developed design concept from requirements
* Developed communication protocol for communicating and controlling large outdoors shooting range equipment using protocols (e.g. RS485 and TCP/IP)
* Researched hardware and algorithms for automated target scoring system using pulse width and amplitude from number of sensors.
* Completed coding of microcontroller peripherals and communications devices (LCD, RT Clock, SPI, RS232, RS485, I2C, Ethernet and SD cards), Real-Time embedded applications in C, Assembly and embedded stacks
* Completed Network Power Management System: saves data by shutting down servers/PCs before UPS's batteries discharge completely, using dsPIC33 16-bit and TCP/IP or WIFI technologies
* Maintenance and customer support.
* Travelled to perform maintenance & customer support, and conduct training.

**March 2008 – March 2009 Software Web Developer Engineer**

**BIG TEX Productions**

**London, UK.**

BIG TEX Productions is an independent film productions company for films and plays.

* Developed website projects, animation and worked on trailers, clips visual/graphical effects
* Maintained advanced digital infrastructure

**March 2007 – February 2008 Research and Development Engineer**

**Aviation Information Technology, (Airport)**

**Cairo, Egypt**

Brought in to develop the R&D department, and to apply high level analysis and techniques to develop the following:

* Researched Automated Passenger Counting System: is to gather information from hundreds of existing terminal in server airports without interfering with the system operation
* Conducted a technology assessment study on building and operating of large LED display/screens using the latest technologies e.g. Pulse Width Modulation (PWM).

**June 1988 – January 2007 Software Research and Development Engineer**

**R&D Software Centre for Aviation**

**Cairo, Egypt**

Worked in several phases of R&D, enabling me to quickly gain knowledge of the full software lifecycle.

**Key Responsibilities**

Work within fast paced environment to build and analyse software bugs, fix them, then test.

**Key Achievements**

* Embedded C programming 8051 microcontroller
* Designed and implemented software project of, object (2d aircraft) image recognition system using Neural Networks (Neocognitron neural network) and image signal processing.
* Completed software development of several projects in visual studio, C/C++ and Delphi under Windows OS, VAX/VMS, and Unix OS
* Developed Hardware prototype systems: 3D glass driven by computer, Internal Image grabber PC card using fast A/D converter grab image from video camera and A/D data acquisition system.
* Maintained and modified Power Motor control board, Power Heaters control boards, Power supplies, and Projector screens.
* Helped identify and resolve customer issues and complaints.

**Education / training**

1997 - 2001 MSc in Electrical and Computer Engineering: **Faculty of Engineering, Military Technical College - Cairo, Egypt**

Project: Pattern Recognition Using Neural Networks, objects 2d airplanes, applied using Neocognitron Neural Network Model and Digital image processing.

1983 - 1988 BSc in Electrical and Computer Engineering: **Faculty of Engineering, Military Technical College - Cairo, Egypt**  
Project: Computer PC video image grabber Card with A/D converters and static RAM

**Training**

June 2002 Advanced Radar Tracking protocols in Assembly programming

July 2005 Advanced VC++ and OO programming techniques

**Personal Information**

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| **Marital Status** Married | **Date of Birth** 18rd August 1965 (51) | **Passport UK** |
| **Nationality** British | **Children 3** | **Driving Licence** Full Automatic and clean UK |

**Interests and activities**

* Innovation (2009): fibre optics rotating LED display <http://www.youtube.com/watch?v=aE7mrsS-khs>
* POV rotating LED display from TV card, using FPGA developed using Vivado in VHDL.
* Graduation project was selected as university’s best technical project, 1988
* Sports: Running, basketball, Table Tennis, Biking and Swimming.