Patrick A. Burgess

Software Engineer

Patrick A. Burgess
6615 West 800 South
West Point, Indiana 47992

Home: 1-765-538-2428
Mobile: 1-765-404-2277
Email: pburgess@tctc.com
Website: www.patburgess.com

Hello,

My name is Pat Burgess. I'm a Software Engineer working with Embedded Controllers in C and Assembly Language. I do have a B.S. in Electrical Engineering and a Microprocessor and Embedded Controller Certificate from Purdue.

In the past few years, I have had the opportunity to work on a wide variety of products. I first worked as a Hardware Engineer doing Integrated Circuit Design and Product Engineering. I have done ASICs (Application Specific Integrated Circuits) working for the ASIC Vendor and working for the ASIC Customer.

Later, I transitioned to Software Engineering. In Software Engineering I'm working with Embedded Controllers in C and Assembly Language. I have spent most of the last several years writing and validating communications software for embedded controllers in the automotive industry. I've also been writing PC programs to provide friendly GUI's (graphical user interfaces) to support these embedded controllers.

I have brought products from concept to volume production as both a Hardware Engineer and a Software Engineer.

I led the software development team that took Ford's (and the Automotive Industry's) first Integrated Trailer Brake Controller from concept to volume production on time and won the 2005 Henry Ford Technology Award for Technical Excellence.

My short-term goals include taking classes at our local college. I have taken three credit hour classes on Visual Basic, Advanced Visual Basic, C/C++, SQL, Linux, Web Site Development, Java and Android.

My long-term goals include working as a Software Engineer forever. I love it.

For hobbies, I write simple android apps and publish them on Google's Play Store. I also like playing with the Raspberry Pi.

If you have any questions, please call me at (765) 538-2428 or email me at pburgess@tctc.com.

Thank you,
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OBJECTIVE

My objective is to use my skills as a Software Engineer to put products into production. I love working with Embedded Controllers and PC applications in C, C# and Assembly Language. I enjoy playing with Android and the Raspberry Pi.

SKILLS

Embedded Controllers	C Programming	Vehicle Communications
Assembly Language	Linux (user)	CAN (Controller Area Network)
PC Applications	MISRA	Simple Android Apps (developer)
Raspberry Pi		

ACHIEVEMENTS

- Led the software development team that took Ford's first Trailer Brake Controller from concept to volume production on time for the 2005 Model Year Super Duty trucks. This product won the 2005 Henry Ford Technology Award for Technical Excellence.
- PC Programs to provide friendly user interfaces with air bag controllers. Written in Turbo C++ and x86 Assembly Language.
- PC Programs to provide friendly GUI's (graphical user interfaces) to the Vehicle's Suspension System (using CAN Communications Protocol). These programs were written in C# on the Microsoft Windows Visual Studio IDE.
- Published simple Android Apps on Google's Play Store. These Apps were developed using Java and XML on Eclipse and Android Studio IDE's. For more information regarding these apps, please search Google's Play Store for "Pat_Burgess".

EDUCATION

B. S.	Electrical Engineering	Purdue
Certificate	Microprocessor and Embedded Controller Certificate	Purdue

EXPERIENCE

Software Engineer - Responsible for development of Safety Critical Software for Commercial Steering Systems. The program involves writing MISRA compliant software in C. The controller communicates via J1939 CAN (Controller Area Network). This software requires writing XCP software to communicate with Vector CANtech's CANape. Responsibilities include writing and validating software. Responsibilities include use of Lauterbach Debugger Tools

2014 to Present ZF-TRW Automotive, Lafayette, Indiana

To play ZF-TRW Steering Controller Video, Go to:
http://www.patburgess.com/ZF-TRW_Steering_Controller_.gif

Embedded Controls Engineer - While at LiquidSping, I took their first active suspension system from about eighty percent complete to volume production.

Responsible for software development of an automotive suspension system. The program involves writing MISRA compliant software in C. The controller uses the Texas Instrument TMS320F2808 DSP. Responsibilities include designing algorithms (auto calibration routines, steering centering routines, etc.). The controller communicates in CAN (Controller Area Network, 500Kbps and 250Kbps). Responsibilities include writing friendly pc interfaces (written in C#) to the CAN bus. Responsibilities include writing and validating software. Responsibilities include validating hardware. Responsibilities include supporting Customer vehicle builds at their location.

2010 to 2014 LiquidSpring LLC Lafayette, Indiana

To play LiquidSpring Active Suspension Video, go to:
https://www.youtube.com/embed/nrA5uhfmm_4?wmode=transparent&autoplay=0&rel=0

Software Engineer - Responsible for the communications software development of an automotive embedded TCM (Transmission Control Module). The program involves writing software in C. The controller uses the Motorola MPC565PB microprocessor. The program also involves use of CANdelaStudio. The controller communicates in GMLAN (High Speed - Controller Area Network, 500 Kbps), J1939, UDS (Unified Diagnostic Service). Responsibilities include writing and validating CAN software.

2008 to 2009 Allison Transmission Indianapolis, Indiana

Software Engineer - While at Cequent, I led the software development team that took Ford's (and the Automotive Industry's) first Integrated Trailer Brake Controller from concept to volume production on time and won the 2005 Henry Ford Technology Award for Technical Excellence.

Responsible for the software development of an automotive embedded controller. The controller uses the Motorola MC68HC908AZ32A microprocessor. The program involves writing software from scratch. The software is written in C using the COSMIC compiler. The controller communicates using J2284-500 HS-CAN (High Speed - Controller Area Network, 500 Kbps). Responsibilities include writing and validating CAN software. Responsibilities require regular use of Vector CANtech's CAN-Gen Tool and daily use of the CANalyzer. Responsibilities also include supporting ATE (automatic test equipment) for Cequent Production's functional test and supporting the Customer's Production at the Vehicle Assembly Plant.
2002 to 2008 Cequent Electrical Products Tekonsha, Michigan

Contract Software Engineer – While working for Harman Becker Automotive, I took automotive audio amplifiers from about seventy percent complete to volume production on time.

Responsible for software for two automotive audio amplifiers. Each audio amplifier uses an Analog Devices SHARC DSP. The SHARC DSP code was written in assembly language and C. Also responsible for some PC software design and implementation using Borland's C++ Builder 5.0. PC projects involve writing windows-based software for the PC to communicate with automotive audio amplifiers via the J1850 and J2190 communications bus. Projects also involve writing some command line tools for the PC in C. Responsibilities include using PVCS configuration management system. (Customer = Harman Becker Automotive, Martinsville, IN)
2000 to 2001 Ascena Information Technology, Martinsville, Indiana

Software Engineer / Product Engineer - Responsible for software design and implementation using embedded C and assembly language on Motorola microprocessors. Projects involve PC software and microprocessor software for flashing microprocessors. Projects also involve setup and reading analog to digital inputs, digital recursive filters of A/D inputs and thermal protection routines. Responsibilities require bringing up systems that have new hardware, new software and new custom integrated circuits. Responsibilities also involve writing test software for systems that have new hardware and new custom integrated circuits. Responsibilities require daily use of configuration management software for PC and Unix workstations.

The time from 1991 to 1997 was spent working with air bag controllers. The time from 1997 to 1998 was spent working with pneumatic ABS (Anti-lock Brake Systems) for semi-trucks. These ABS systems used ALDL (Assembly Line Diagnostic Link), J1850 and CAN-J1939 (Controller Area Network) for communications. The time from 1998 to 2000 was spent working with EPS (Electronic Power Steering) systems. These EPS systems used Keyword 2000, J1850 and CAN-J2284 for communications. The Dearborn Group's VSI box was used to support J1850 communications. Vector's Canalyzer was used to support CAN communications. Position required daily use of Turbo C++ for PC to write programs that enabled a "user-friendly" communication with embedded controllers. As an Electronics Hardware Product Engineer, I put GM's first Driver/Passenger Air Bag Controller into volume production on time.
1991 to 2000 Delco Electronics, Kokomo, Indiana

PATENTS

U.S. Patent 10,040,437 Brake Control Unit
This patent is a continuation of U.S. Patent 8,746,812 (below).

U.S. Patent 8,746,812 Brake Control Unit
Towed vehicles can be extremely heavy. Accordingly, it is too much of a burden to the braking system of a towing vehicle to not have brakes on the towed vehicle. Controlling the brakes of the towed vehicle must be accurately applied otherwise undesirable conditions can be created. There is a need for a method for controlling braking of a towed vehicle. This method comprises receiving a first signal via a communication bus of a towing vehicle, the first signal relating to at least one operating condition of at least one the towing vehicle and a towed vehicle, sending a second signal to brakes of the towed vehicle, the second signal based on said first signal.

- One of twelve inventors on this patent.
- Approximately 300K units produced per year using this patent.

U.S. Patent 4,987,363 Electric energy meter with power outage recovery circuit
A time registering electric energy meter for measuring usage of an AC energy quantity includes primary and secondary DC power supplies and a microprocessor, having a real time clock maintained by the 60 Hz AC energy quantity, for maintaining real time and for generating AC energy usage information determined by a number of time-related events. The meter further includes power outage recovery circuitry for measuring the duration of an outage of the AC energy quantity and for restoring the amount of lost real time to the real time clock of the microprocessor upon resumption of the AC energy quantity. The power outage recovery circuitry includes apparatus for iteratively updating the microprocessor real time clock while comparing the updated real time with the clock calendar times of the number of time-related events to account for the occurrence of such events during the outage of the AC energy quantity.

- I was one of four inventors on this patent.
- Approximately 50K units produced per year using this patent.

U.S. Patent 4,633,220 Decoder using pass-transistor networks
A matrix comprised of pass transistor cells forms an address decoder circuit. By using pass transistor cells in a matrix format, a decoder which consumes a minimum of power and which may be constructed using a minimum of allotted space in an integrated circuit is achieved.

- I was the only inventor on this patent.
- Approximately 500K units produced per year using this patent.