George Alphonso Mitchell

https://www.linkedin.com/in/georgealphonsomitchell/

George A. Mitchell
4898 Worthington Cir
Rockledge, FL 32955
Bus (949) 302-9867

Website: https://mcdpinc.com

George.Mitchell@mcdpinc.com
Bus (949) 302-9867
Fx (321) 338-7447
CP (949) 302-9867

Senior Real-Time Embedded Safety-Critical Systems Engineer
ONC/HNC EE/ME, BS EE/CS, MS Mgt/Fin (MBA+), PPL (Private Pilot License).

GOAL
To obtain a C2C contract as a Remote Full-time contributor position in a Safety-Critical Embedded Systems Group.

COMPETENCE OVERVIEW
20 years of Real-Time Embedded Systems/Software/Firmware Development:

Safety-Critical Systems Development/V&V/Testing/ to ARP4754 (System Development), ARP4761 (System Safety Assessment), DO-178C (S/W Dev), DO-254 (H/W Dev) Requirements**:** ●CAN; ●AFDX, ●(TCP/TTP Fly/Drive By Wire); ●Ethernet (TCP/IP, UDP); ●RS422; ●RS232C; ●Linux O/S Kernel; ●Ether-Cat (Industrial Ethernet); ●I2C Bus , ●SPI Bus, ●UEFI/Legacy Device/Bios Drivers, ●SCSI/iSCSI. ●Fibre Channel (Storage Area Network), ●Storage Systems, ●FPGA, FADEC & EEC Controller Software.

Safety-Critical Systems Design, Automated & Manual Test Development, Verification & Validation to ARP4754 (System Development), ARP4761 (System Safety Assessment), DO-178C (S/W Dev), DO254 (H/W Dev) Requirements**:** ●High-Level Requirements; ●Low-Level Requirements; ●Test Case/Procedures; ●RTOSs. ●RISC & ARM Microprocessors; ●Microcontrollers ●TMS-5700 Micro-Controllers with Inter-Processor Communications (IPC); RS422, RS232C, SPI, I2C, A2D/D2A, EEPROM, timers, GPIO, RTC and other functions for managing ●Data Acquisition, ●Digital & Analog Signal Processing, ●3-phase Electronic Power Switching; ●Aviation Health Maintenance Systems, ●ARINC-**429/615/653** protocol**s**.

Tool Chains & Environments compatible with ARP4754 (System Development), ARP4761 (System Safety Assessment), DO-178C (S/W Dev), DO-254 (H/W Dev) Requirements**:** ●Texas Instruments Code Composer and Board Support Package (BSP); ●Eclipse environment; ●VxWorks Tornado, ●GreenHills Multi; ●ClearCase, ●ClearQuest, ●DOORS, ●Rhapsody; ●Intel Assembly, ●C/C++, ●Linux, ●LynxOS, ●many RTOSes, ●BareMetal ●Python, ●PERL, ●AGILE environment.

Other Industries (20 years): ●Industrial/Utility Stationary Power Systems; ●Aviation Flight Management Systems (FMS); ●In-Flight Entertainment System (IFE); ●Internet Cafes; ●Aviation Power Systems; ●Train Management Systems (Positive Train Control (PTC) Systems) and Incremental Train Control Systems (ITCS).

Education: ONC/HNC EE/ME, BS EE/CS, MS Mgt/Fin (MBA+), PPL (Private Pilot License).

TECHNICAL EXPERIENCE

Safety Systems Engineer
Avionics Electrical Power Generation Systems (Contract):
Oct 2022 – Dec 2, 2023: **Boeing** , Everett, WA.
Performed Safety-Critical Analysis on Boeing 777-x model airplane in accordance with FAA ARP4754 "Guidelines for Development of Civil Aircraft and Systems" and ARP4761 "Guidelines and Methods for Conducting Safety Assessment Process on Civil Airborne Systems and Equipment".

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Embedded Cybersecurity System Engineer (Contract):
sept 2021: – August 2022: Boeing, Plano Tx.
Developed Quality Assurance Process using R4J Atlassian Jira compatible Requirements Management GUI add-on tool for Verification & Validation management.

Embedded Cybersecurity System Engineer (Contract):
Aug 2021: – August 2022: Thales eSecurity, Plantation FL.
Performed cybersecurity verification & Validation on Hardware Secure Module (HSM)..

Embedded Verification Embedded System Engineer (Contract):
Aug 2020: – July 2021: Kearfott Corporation Guidance and Navigation Division, Pine Brook, NJ.
Developing DO-178 Planning Documents in conformance with SOI 1 for the company's Next Generation Inertial Measurement Unit (NxIMU) and Next Generation Navigational Unit (NxNav); also migrating the development to Ansys SCADE Model Based Development Environment. Kearfott Corporation is a subsidiary **of Astronautics Corporation of America**, Oak Creek, WI.

Embedded Software Engineer (Owner/President):
May 2019: – Jul 2020: MicroComputer Data Processing, Palm Bay, Florida;
Remote System Administration of smaller client networks, including website development and maintenance of websites, network control of CNC machines, Secure communications between those clients and their suppliers.

Senior Embedded Software Engineer (Contract):
Sept 2018 – April 2019: L&T Technology Services @ Thales Group(Formerly **Thales Avionics InFlight Systems), Melbourne, Florida;**
Managed High-Level Requirements (HLRs), decomposed them to Low-Level Requirements (LLRs), Test Plans/Procedures, Test Cases, and Testing for In-Flight Entertainment (IFE) Systems.

Developed application code and Test Case/Procedures for In-Flight Entertainment (IFE) Services over Wireless networks. Performed Verification and Validation on the IFE software. Used Python, PERL, Linux/CentOS PCPDump and Wireshark

Senior Embedded Software Engineer (Contract):
Mar 2018 – Sept 2018: HCL America @ Rockwell Collins; Melbourne, Florida;
Developed High-Level Requirements (HLRs), decomposed them to Low-Level Requirements (LLRs), Test Plans/Procedures, Test Cases, and Testing for an advanced avionics display for the redesigned Boeing 737 aircraft, to DO-178 requirements; Used ARINC-429/615/653 protocols.

Developed application code and Test Case/Procedures. The application involved high reliability and high availability avionics systems with MicroControllers & MicroProcessors using InterProcessor Communication (IPC), serial communications, SPI, I2C, A/D, EEPROM, timers, real-time clocks, and other functions; **Embedded Software Engineer (Owner/President):**
Mar 2018: – June 2018: MicroComputer Data Processing, Palm Bay, Florida;

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Remote System Administration of smaller client networks, including website development and maintenance of websites, network control of CNC machines, Secure communications between those clients and their suppliers.

Developed High-Level Requirements (HLRs), decomposed them to Low-Level Requirements(LLRs), Test Plans/Procedures, Test Cases, Application Code, and Test Case/Procedures.

Safety V&V Software Engineer (Contract):
December 2016 – Mar 2018: Adecco @ GE/Alstom Transportation; Melbourne, Florida;.
Verified and Validated Safety Related Requirements, (HLRs and LLRs), Test Plans/Procedures, Test Cases, and Testing, for an Incremental Train Control Software (ITCS), using the Cenelec Standards.

Application code and Test Case/Procedures involved high reliability and high availability Safety Systems with Micro-Controllers & Micro-Processors using Inter-Processor Communication (IPC), serial communications, SPI, I$_2$C, A/D, EEPROM, timers, real-time clocks, and other functions; Used C/C++.

Embedded Software Engineer (Owner/President):
February 2016 – December 2016: MicroComputer Data Processing, Palm Bay, Florida;
Provided Software/Firmware Development, Testing, and Verification & Validation Services to DO-178C Guidelines; System/Data Networks/Storage Area Network (SAN) Development, Administration and Maintenance, Website Development, Administration and Maintenance. Also provides Data Safety, Security, & Availability Services including Online Backup. **These services are provided on a Corp2Corp basis, onsite or offsite.** LAN bring-up and debugging were also included.

Provided on-going System/Network Development, Administration and Maintenance, Website Development, Network Administration and Maintenance, Device Drivers, and Bios Development. Used C/C++.

Embedded V&V Software Engineer (Contract):
July 2015 – January 2016: eInfochips @ Rockwell Collins; Cedar Rapids, Iowa;
Developed High-Level Requirements (HLRs), decomposed them to Low-Level Requirements (LLRs), Test Plans/Procedures, Test Cases, and Testing for an advanced avionics display for the redesigned Boeing 737 aircraft, to DO-178C requirements.

Validated Application code and Test Case/Procedures., Application involved high reliability and high availability avionics systems with MicroControllers & MicroProcessors using InterProcessor Communication (IPC), serial communications, SPI, I$_2$C, A/D, EEPROM, timers, real-time clocks, and other functions; Used C/C++.

Embedded Software Engineer (Owner/President):
October 2013– current: MicroComputer Data Processing, Rancho Santa Margarita CA.;
Provided Software/Firmware Development, Testing, and Verification & Validation Services to DO-178C Guidelines; System/Data Networks/Storage Area Network (SAN) Development, Administration and Maintenance, Website Development, Administration and Maintenance. Also provides Data Safety, Security, & Availability Services including Online Backup. **These services are provided on a Corp2Corp basis, onsite or offsite.** LAN bring-up and debugging were also included.

Provided on-going System/Network Development, Administration and Maintenance, Website Development, Network Administration and Maintenance, Device Drivers, and Bios Development. Used C/C++.
Embedded Software Engineer (Contract):
Sept 2012 – Sept 2013 Astronics, Advanced Electronics System (AES), Inc., Kirkland, Washington;

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Conducted DO-178C level A Software Systems Design & Development of a Switched Synchronous Induction Machine to be used as an Electrical Power Starter/Generator System (EPSGS) targeted at Corporate jet aircrafts. The EPSGS would perform as an electrical starter for the jet engine, then transition to perform as an electrical power generator when the engine was operational. Developed High/Low-Level Requirements, decomposed them to Application code and Test Case/Procedures. The application was BareMetal since timing constraints did not allow for a formal RTOS. Hardware design was based around dual Texas Instruments TMS-570 MicroControllers with InterProcessor Communication (IPC), serial communications, SPI, I_2C, A/D, EEPROM, timers, real-time clocks, and other functions; The MicroControllers managed Data Acquisition, Digital & Analog Signal Processing, 3-phase Switching, System Health, and Aircraft Communications. IDE was Texas Instruments Code Composer and Board Support Package (BSP). Participated in PCBA bring-up and debugging. Used C/C++.

Embedded Software Engineer (Contract):
June 2012 – Sept 2012: to HCL America/Cymer, Inc., **Rancho Bernardo, San Diego CA.;**
ONC/HNC EE/ME, BS EE/CS, MS Mgt/Fin (MBA+), PPL (Private Pilot Lic).

Conducted Software Testing, and Verification & Validation of the PLC system used to control various aspects of the Light Generation Process. Used Manual Test Procedures and automated Regression Testing using Python test scripts. Used SVN for source code management and JIIA for Defect Tracking. Used C/C++, software development, application support & maintenance, application development, application Verification & Validation.

Embedded Software Engineer (Owner/President):
October 2011 – June 2012: MicroComputer Data Processing**, Rancho Santa Margarita CA.;**
Provided Software/Firmware Development, Testing, and Verification & Validation Services to DO-178C Guidelines; System/Data Networks/Storage Area Network (SAN) Development, Administration and Maintenance, Website Development, Administration and Maintenance. Also provides Data Safety, Security, & Availability Services including Online Backup. **These services are provided on a Corp2Corp basis, onsite or offsite.** LAN bring-up and debugging were also included.

Provided on-going System/Network Development, Administration and Maintenance, Website Development, Network Administration and Maintenance, Device Drivers, and Bios Development. Used C/C++.

Embedded Software Engineer (Contract):
August 2011– Oct 2011: Technisource Engineering Services**, Fort Lauderdale, FL.;**
Conducted DO-178C Software Development, and Verification & Validation of Secondary Power Distribution System (SPDS) for the client, Bombardier Aircraft. The project originated from Hamilton Sundstrand**, Rockford, IL.** Used Microsoft's Visual Studio Visual Basic for test scripts development. Used Unified Modeling Language (UML) Methodology, and DOORS/Rhapsody. TCP/TTP Aircraft communications network protocols. Used VxWorks Tornado IDE tools with BSP support. Used C/C++.

Embedded Software Engineer (Owner/President):
Oct 2010 – August 2011: MicroComputer Data Processing**, Rancho Santa Margarita CA.;**
Software/Firmware Development, Testing, and Verification & Validation Services to DO-178C Guidelines; System/Data Networks/Storage Area Network (SAN) Development, Administration and Maintenance, Website Development, Administration and Maintenance. Also provides Data Safety, Security, & Availability Services including Online Backup. **These services are provided on a Corp2Corp basis, onsite or offsite.**

Provided on-going System/Network Development, Administration and Maintenance, Website Development, Network Administration and Maintenance, Device Drivers, and Bios Development. Used C/C++.

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Embedded Software Engineer (Contract):
Jan 2000 – Dec 2010: Multiple Avionics and Network and Storage Companies, Nationwide:

- **Nov 2009:** Hamilton Sundstrand**, San Diego, CA.;**
  DO-178C Testing, Gap Analysis, and Verification & Validation of the APU (Aircraft Auxiliary GasTurbine/Generator Power Plant) FPGA, FADEC & EEC Controller Software.

- **Jun 2008:** Avidyne Corp.**, Lincoln MA.;**
  DO-178C Testing and, Verification & Validation of the Entegra II's Flight Deck Systems and LynxOS-178 Embedded Real-Time Operating System, using Open Group Test Suite (OGTS).

- **Feb 2008:** Crane Aerospace (Hydro-Air)**, Burbank CA.;**
  DO-178C Testing, Gap Analysis, and Verification & Validation of the Boeing 787 Landing Systems, using a combination of in-house and off-the-shelf tools, including Microsoft C/C++ for automating testing for certification.

- **Aug 2007:** Hamilton Sundstrand**, Rockford, IL.;**
  Remote Power Distribution System (RPDS) for the Boeing 787 aircraft project, using VxWorks kernel extensions with Board Support Package (BSP) provided by General Electric Corporation.

- **May 2006:** AOL Wireless**., Seattle WA.;**
  ONC/HNC EE/ME, BS EE/CS, MS Mgt/Fin (MBA+), PPL (Private Pilot Lic).

  SIM/Smartcard Backup utility for mobile phones, using MS-Visual Studio. Used C/C++/C#/Java (.Net Framework) to develop a utility to access Mobile Phone SIM via RS232C and other interfaces.

- **May 2003 :** Advanced Digital Information Corp**., Redmond WA, and Englewood CO.;** DVT and SVT Qualification of large, medium, and small Automated Tape Libraries on Storage Area Network

- **Feb 2001:** Brocade Communications**, San Jose Ca.;**
  Port SAN Switch firmware from VxWorks to Linux (for SCSI and RAID devices over Fibre Channel);

- **Sept. 2000:** Thales Avionics In-Flight Systems**, Tustin Ca. - (Formerly Thompson-Sextant InFlight Systems, formerly BE Aerospace), Tustin, Ca.;**
  Automatic Test Equipment (ATE) for Video on Demand In-Flight Entertainment System using SCSI, RAID storage, Video over IP.

- Incorporated **MicroComputer Data Processing, Rancho Santa Margarita, Ca;**
  Mission: Provide Safety-Critial services on a **Corp2Corp** basis for Embedded Software Development and Remote System Administration of smaller client networks, including website development and maintenance of websites, network control of CNC machines, Secure communications between clients and suppliers.

Firmware Engineer (Full-Time):
Jan 1977 – Dec 2000: Multiple Business Computer Companies, Southern California:
Developed hardware and Software Systems for general business computer systems, developed Test Equipment for Storage Devices, Device Drivers for Storage Devices, and LANs, WANs, SANs, and Storage Libraries; developed Test Equipment for Storage Devices. Supported Development of Toshiba's SuperSmartCard/SIM-Card and related devices, received initial training in Tokyo, Japan; Worked with GemPlus/GemAlto SmartCard also and received training in LaCiotat, France. GemPlus/GemAlto was acquired by Thales Group in April 2019.

Electrical Power Engineer (Full-Time):
Jan 1968– Jan 1972: Two Industrial & one Utility Power-Plant Companies, Jamaica WI:
Participated in the commissioning and operation of two Industrial and one Utility steam power-plants operating in the 30MW – 50MW range. Commissioned and operated both the Alumina Partners of Jamaica (ALPART) and

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Revere Jamaica Alumina Power-Plants, and Performed duties relating to the protective relaying of the entire 1000MW Island-wide Power 13.8KVAC Transmission and 480 VAC Distribution network. At the Jamaica Public Service Company.

ONC/HNC EE/ME, BS EE/CS, MS Mgt/Fin (MBA+), PPL (Private Pilot Lic).

EDUCATION

Jan. '76 – Jan. '77: Master of Science in Business Administration and Management (MS Management/MBA), major in General Management, minor in Finance; Polytechnic Institute of New York (**New York University Polytechnic** School of Engineering (**NYU Poly**)), 33 Jay Street, Brooklyn, NY 11201.

Jan. '73 – Jan. '75: Bachelor of Science in Electrical Engineering and Computer Engineering (BSEE), major in Electrical Power, minor in Computer Engineering; Polytechnic Institute of Brooklyn (New York University Polytechnic School of Engineering (NYU Poly)), 33 Jay Street, Brooklyn, NY 11201.

Jun. '67 – Jun. '68: Higher National Certificate in Electrical Engineering Technology (HNC), major in Electrical Power Engineering, minor in Mechanical Engineering; University of Technology (UTECH), formerly College of Arts Science and Technology (CAST), Kingston Jamaica, W.I.;

Jun '65 – Jun '67: Ordinary National Certificate in Electrical and Mechanical Engineering Technology (ONC); major in Electrical Engineering and Mechanical Engineering Technologies (ONC). University of Technology (UTECH), formerly College of Arts Science and Technology (CAST), Kingston Jamaica, W.I.;

Jun '60 – Jun '64: General Certificate of Education (GCE): major in Mechanical Engineering Technology Kingston Technical High School, Kingston Jamaica, W.I.;

VOCATIONAL TRAINING:
1962 - 1963: Jamaica Combined Army and Air Cadet Force (JCAACF) (during high school), (**ROTC equivalent**): Completed Basic and Advanced Army Field Craft Training, Flight Ground School, and First Aid (CPR) Training; in 1962, won awards for proficiency (second place in Jamaica's Best Twelve Cadets for 1963; and in competition shooting was 2 points below marksman, was awarded the First Class Rifleman badge and lanyard (1963).

1975: Jamaican Private Pilot License (completed additional requirements for private pilot license in 1975);

1980 – 1990: Completed Income Tax Preparation Training from H&R Block; Realtor Training from Walter & Lee Reality; Creative Finance Training from various sources; Quality Improvement Process, Software Quality Assurance; Executive Development Programs.

Nov '87: Western Digital Corporation**, Irvine, Ca.,** Executive Development Program, Irvine, California;
Oct '87: Philip Crosby Associates, Quality Improvement Process Management College, San Jose, California;
Sep. '87: Control Data Institute for Advanced Technology, Software Quality Assurance, San Francisco, California.

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1985: FAA Certification Private Pilot License (USA).

May 2006– March 2007: GemPlus Smart/SIM Card Certificates:
>   **Java SIM Card Administration, Java SIM Card Applet Development, Java SIM Card STK and**
>   **OTA Training.** GemPlus/GemAlto was acquired by Thales Group in April 2019.

SCHOLARSHIPS:
Sep. '60 – Jul. '64: Government of Jamaica; to attend Kingston Technical High School;
Sep. '66 – Jul. '68: ESSO Standard Oil (deregulated to: **Exxon**, **Mobile, Cheveron** & **Texaco**);
>   Pursued ONC and HNC Certificates at the College of Arts Science and Technology (CAST),
>   now the University of Technology (UTECH), Kingston Jamaica, W.I.;
>   **ONC/HNC EE/ME, BS EE/CS, MS Mgt/Fin (MBA+), PPL (Private Pilot Lic).**

May '75:   Howard University; to pursue MSc (***Could not accept due to personal family problems back in Jamaica);***