Hervé Dang

Firmware Developer

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PERSONNAL SUMMARY

Software developper in Embedded Systems and computer science specialized in Avionics.
Engineering degree complemented by a Master's in Computer Engineering with a focus on embedded systems and aeronautics.
Strong experience in embedded system development and integration of avionics interfaces and instruments.
Multiple assignments as a DevOps engineer and system administrator, as well as projects completed as an independent contractor.
Curious, determined, and endowed with a strong sense of initiative and analytical thinking, able to quickly adapt to new technical and operational environments.
Holder of a French private pilot license, a Canadian commercial airplane and helicopter pilot license, as well as SATP certification for advanced and complex operations.

SKILLS

Language:	C, C++, PHP, Python, Scheme, VHDL, Go
System programming:	IPC, concurrent computing (Multi-threading, Multi-processing), embedded programming, drivers
Hardware	FPGA, ARM, SBC (Rasberry PI, Orange PI...), Arduino, Gyroscope, Accelerometer
Protocol:	Modbus, Zigbee, Bluetooth, I2C, SPI, SERIE
Linux:	Bash, Docker, Kernel, Drivers , Virtualization
Additional skill:	SysAdmin, Devops, AI, WEB, Security

WORK EXPERIENCE

Développeur logiciel / Ingénieur *Self employed* *2024-2026*
Software, embedded systems, and electronics project development, as well as the execution of professional assignments and personal projects in software development, embedded systems, and IT infrastructure.

DRIVERS Software Developer *Opal-rt* *2023-2024*
Contributed to the development of a real-time simulator based on a PC/FPGA architecture, running on Windows and Linux
- Developed and maintained drivers and communication interfaces, including Modbus and CAN
- Analyzed interfaces between the system's various software and hardware components
- Contributed to the evolution and improvement of software tools supporting the simulator
- Developed and maintained software components in C/C++
- Contributed to improving technical documentation
- Analyzed and debugged issues in an environment combining software, hardware, FPGA, and network/bus communications
- Worked in a real-time systems environment involving software-hardware interaction, requiring rigor, traceability, and a strong understanding of the overall system architecture

C/C++, real time, Linux, Windows, FPGA, Modbus, CAN.

Devops *Omnirobotic* *2020-2022*
Contributed to the design and administration of the DevOps infrastructure required for the development of robotic systems
- Design and maintenance of CI/CD pipelines based on Drone CI and Docker
- Development of a system enabling developers to deploy on-demand development environments closely matching production
- Development of automation tools and scripts using Python and Bash
- Management of Linux systems and interconnected services in a robotics environment
- Analysis and resolution of issues related to development, deployment, and runtime environments

Terraform, Docker, Drone CI, AWS, Python, Bash, Linux.

Devops *Novaquark* *2019-2020*
Contributed to the design and management of the cloud infrastructure for a client/server video game built using multiple technologies, including Go, Python, and C++:
- Development and maintenance of automation and deployment scripts using Ansible.
- Participation in the implementation of on-demand development environments in the cloud.
- Automation of AWS EC2, VPS, and RDS infrastructure provisioning using Terraform.
- Development of administration tools and scripts in Python and BASH.
- Analysis of interactions between the various components of a distributed architecture.
- Collaboration with development teams to improve the reliability and control of deployment environments.

Ansible, Terraform, AWS, Linux, Python, C++, Go

Software developer / Engineer *Self employed* *2018-2019*
Software, embedded systems, and electronics project development.

Technical Associate, Vehicule Simulation *Consultant at CAE Montréal* *2016-2017*

Contributed to the development of flight simulators for various aerospace programs, including the C Series and Embraer 145.

- Development of software systems for the simulation of aircraft systems.
- Development of Air Traffic Control (ATC), TCAS, EGPWS/TAWS, and weather radar systems.
- Participation in the design of various types of simulation devices, including flight simulators, flight training devices, and integrated procedural training devices.
- System integration and validation in a real-time environment

C++, Real time, Simulation, Avionics, ATC, TCAS, TAWS, WXR, GWX

Software engineer *CEL Aerospace Longueuil* *2015-2016*

Development and maintenance of a test bench for aircraft engines

- Integration of new engines into the existing solution
- Development and improvement of software drivers
- Development and execution of test plans
- Preparation of technical documentation and test reports
- Development in a real-time embedded environment

C, VB.NET, QNX.

Programmer C++ *Consultant at CMC Electronics/Esterline Montréal* *2014*

Contributed to the development of synthetic vision systems for avionics applications

- Analysis and preparation of system specifications
- Development of features in C++
- Design and execution of LLT and HLT unit tests
- Work in a development environment compliant with aviation certification requirements

PFD, SVS, DO-178B Level B/C, C++.

Software developer *Thales Canada Avionics Division* *2012-2014*

Contributed to the development of software flight control computer used in aerospace applications

- Analysis, preparation, and review of design and specification documents
- Design and development of software components based on detailed specifications
- Software development in an environment subject to DO-178B certification requirements
- Development and execution of LLT and HLT unit tests
- Collaboration with development and verification teams

SCADE, TCL, DO-178B Level A/D, embedded systems, avionics

Several internships *2008-2011*

- Aircalin: Development of a tool allowing personal management (2 months)
- Société Le Nickel: Module design for GLPI(2 months) 2009
- École Polytechnique de Montréal: Study of different architecture with RESP-SIM (4 months)
- Laboratoire d'Astrophysique de Bordeaux: Creation of the software part for high speed analog-to-digital converter project (4 months)

Contractor

Developer/Engineer/Hacker *2009-2026*

Developed software, embedded, and electronics projects, with a strong focus on hardware/software integration, system interfaces, and solution reliability

- Developed board game adaptations for the Board Game Arena platform, including SHOKOBA and VIZIA
- Contributed to various open-source projects, analyzing and integrating existing code and software components
- Designed and developed electronic prototypes and embedded, interconnected systems based on microcontrollers and single-board computers
- Developed software and firmware in C/C++ and Python
- Developed solutions using embedded Linux, Raspberry Pi, and Arduino
- Developed web applications and interfaces using PHP, JavaScript, and HTML
- Integrated hardware, software, and systems to build functional prototypes
- Analyzed hardware and software architectures, as well as communication interfaces between components
- Implemented and experimented with network communications and communication buses
- Prepared technical documentation and analyzed issues during integration and debugging phases

C/C++, Embedded Linux , Android, Arduino, Raspberry pi, Web(PHP/JS/HTML)

System Administrator *2009-2026*

Designed, deployed, and administered a multi-system IT infrastructure consisting of approximately ten workstations and multiple network services

- Deployed and administered Linux services, including DNS, web, email, VPN, and database services
- Configured and maintained Internet-facing services

- Implemented VPNs and access control mechanisms to secure communications
- Monitored services and analyzed incidents to ensure system availability
- Automated administration tasks using Ansible, Bash, and Python
- Managed physical and virtual servers as well as cloud environments
- Analyzed interactions between services, networks, and systems to diagnose and resolve issues
- Maintained and evolved an infrastructure composed of interconnected systems
- Implemented backup, monitoring, and automation solutions

System administration, Apache, Postfix, Bind, OpenVpn, Linux, Ansible

Feasibility study for using my Bike project as Business *2018-2026*

Development of a smart bicycle lighting system, from initial concept through prototype development

- Business plan development and product definition
- Fundraising and preparation of a crowdfunding campaign
- Research and selection of partners for electronic and industrial design
- Embedded firmware development
- Coordination of technical aspects with various suppliers and partners
- Experimentation, prototyping, and validation of different technical solutions
- Analysis of hardware and software system constraints
- Definition of the product's technical architecture
- Integration of electronic and software components

Product development, Embedded firmware, Electronics, prototyping, Entrepreneurship, project management

EDUCATION

M.Sc. in Computer Science – Embedded Systems *École Polytechnique de Montréal* *2011-2012*

Main courses:

- Embedded configurable processor (ASIP)
- Real time system verification
- Mobile computer system
- Embedded system: design and verification

Engineer's diploma in computer sciences in complex systems engineering *EISTI* *2004-2010*

Main courses:

- Embedded system
- Artificial intelligence
- Low-level programming (C/system/Networking)

LANGUAGES

French: mother tongue
Japanese: conversional
English: fluent
Spanish: basic Knowledge

HOBBIES

Horse ridding
Board Game
Skydiving
Aeronautics: Pilot (plane/helicopter), Drone
Travelling
Scuba diving