J HECTOR MONROY

Hardware Design Engineer

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About

I specialize on designing complex and high performing boards for complex and high performing chips.

Experience

Schneider Electric
Grenoble, France

Electronic Systems Engineer
07/2025 - Present

Architecture, design, testing and validation of FPGA control boards for large-scale medium-voltage converters

- Full-stack PCB design role: Schematics, simulation, layout (driving subco), functional & electrical validation, industrialization
- Boards with Xilinx Ultrascale+ Platform, system integration with SoM’s
- Ultra-fast PWM drivers, safety features with nanosecond reaction times
- Boards interfacing with HiL platforms, advanced control of unstable converter topologies
- FIT, MTBF, FMECA, SPOF detection, Mission Profile of board hardware
- Ethernet based TSN Networks and switches, clock synchronization, time-aware traffic shapers
- Bring-up and test of break-out boards for ADC Benchmarking
- Design, prototyping and characterization of readout signal circuits, up to 1GHz
- Industrialization plan for PCB’s

Kalray
Montbonnot-Saint-Martin, France

Board System Designer
01/2024 - 07/2025

PCIe Accelerator card product engineering for Kalray's DPU reference platform:

- Full-stack PCB design role
- Mentored into Test Engineering development with ATE (TERADYNE UltraFlex+)
- Complex HDI, high power (400W) High-speed PCB's with hard constraints. Some interfaces: DDR4, PCIe4, Ethernet 2x100G
- Low-voltage high-current (400A) buck converter design & characterization
- Debugging on system level: PCB, IC's, PDN, Package, PHY & SERDES
- Board product industrialization: RMA diagnostics, Failure analysis, complex & multimodal failure investigation
- Electrical validation: PCIe / DDR4 compliance, eye diagrams, de-embedding
- JTAG board test development
- Feasibility studies for high-speed products: (GDDR7 / DDR5, Ethernet 400G+, next gen PCIe), evaluating PHY & SERDES IP, can it be routed?, power dimensionning, advanced (chiplet) packaging technologies
- FIT, MTBF

STMicroelectronics France
Grenoble, France

Hardware Design Engineer
05/2020 - 01/2024

- Design lead of pixel imager test vehicle characterization boards team. Full-stack PCB Engineer.
- Mentored 4 interns and apprentices, all of them were hired by ST.
- Management of board stock, internal and external deployment, debug, repair, and lifecycle
- Main project: convert current test board family architecture to a modular approach: PSU with multiple supplies, low voltage and high current, high bipolar voltage and smart features like shunt-based current monitoring and enable management
- AMD Ultrascale+ FPGA Platform, STM32G4 MCU
- Baseboard family that adapts system to different testchip families (CMOS pixel, SPAD, 3D iTOF, etc.). Small power, fast and precise bipolar supplies, high power supplies, boundary scan and system testing, ADC's to pilot supplies, Testchip output signal conditioning and digitizing (DAC, instrumentation amplifiers).
- Add-in boards for system calibration and conformity
- Design of characterization boards ATE & Wafer probing machines
- Anticipate capabilities and potential bottlenecks for future technologies.

Experience

Intel Corporation
Guadalajara, México

Hardware Designer
11/2017 - 08/2019

PCB design engineering for next-gen server & data center products. Schematics & architecture implementation on Server CPUs (Intel Xeon Scalable) motherboard and system boards.

- Design of mini-PCB technology 28L interposer to adapt a processor with DDR4 and PCIe + Gen4 CPU (Ice Lake) to DDR5 + PCIe5 motherboard (for Sapphire Rapids)
- SI/PI simulation, schematics, architecture for integrating on-interposer supplies and DIMM slot
- Work involving AC power metering, Server platform chipset validation, C coding, Board architecture, schematics & layout
- Internal customer support

G2Elab
Grenoble, France

Electrical Engineering Intern
02/2017 - 07/2017

- Internship on development of technological processes for fabrication of next-gen power modules & more electric airplane.
- Multivariable DoE for thermal profile sintering silver nanoparticle and microparticle
- Test fixture and power PCB development
- Solder paste screen printing fabrication processes.
- SEM, AFM, profiling and other metering and microscopy techniques
- Working on multi-lingual collaboration team.

Training

Université Grenoble Alpes
Grenoble, France

First of Class: Master in Design of Electrical Energy Systems
Electrical and Electronics engineering
01/2019 - 12/2021

Université Grenoble Alpes
Grenoble, France

Professional License : Electrical professions - Microelectronics, Electronics, Optronics
01/2016 - 12/2017

Universidad Tecnológica de Jalisco
Guadalajara, Mexico

Engineering degree : Mechatronics, Electrical and Electronics
01/2017 - 12/2019

Universidad Tecnologica de Nayarit
Xalisco, Mexico

Technician degree : Mechatronics, Eelectronics and Electrical grids
01/2014 - 12/2016

Languages

English Fluent ●●●●○ French Fluent ●●●●○ Spanish First language ●●●●●

Skills

PCB Design : OrCAD – Allegro – Design Entry HDL – Altium – ASC – LTSpice

SI/PI: Polar – HyperLynx – ADS – Celsius PowerDC – S-Parameter Extraction – PDN Design & Simulation – ANSYS HFSS

Board Testing : Interface compliance – T.LeCroy QualiPHY – XJTAG – Boundary Scan – Functional test

Test Engineering : DIB & Probe card design – Teradyne UltraFlex+ - JMP – SIEMENS Galaxy

Coding : C - Python - LabVIEW – MATLAB – Allegro SKILL

Other : Soldering (0402, SOIC, SOT, QFN…) - Root Cause Analysis

Partnerships & Subcontractors

- **3D X-Ray Tomography**
- **DIB and Probe Card Production**
- **PCB Layout & Routing**
- **EMS for medium scale production (50+)**
- **EMS for prototype production**
- **Board Rework & Repair**
- **ATE access**