Adrien CHARDON

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Adrien is a software and electronics engineer, with an expertise in embedded and critical systems. He is interested in robots, launchers and inter-planetary probes. He cares about code quality, automation and open source software.

Work Experience

Senior Software Engineer - SIGI satellite

REFLEX AEROSPACE
2023-04 - Present
Berlin, Germany

- *Contributing to the SIGI mission, Reflex's first demonstrator. The mission, a 120 kg satellite to be launch in fall 2024, will prove the avionics (designed and manufactured in-house), as well as fly a customer payload.*
- **Architecture and development** of the software, with a focus on mission-level features (internal communication bus, TM/TC-ground chain, datapool, thermal/power/etc subsystems, integration of Matlab/Simulink-generated code).
- **Testing and quality assurance**: bring-up of hardware, SIL and HIL testing, development of a custom embedded systems testing framework, code reviews.
- **Technologies**: ARM microcontrollers (Zynq Ultrascale+, TMS570), RTEMS, NASA cFS, C, Python, Rust, Git, CMake.

Software Engineer - ASTRIS kickstage

PTS
2021-01 - 2023-03
Berlin, Germany

- *The ASTRIS kickstage is a 5 tons spacecraft developed by ArianeGroup to be flown on Ariane 6 to provide additional capabilities and flexibility to payloads. In collaboration with ArianeGroup, **PTS designed the full avionics of ASTRIS** up to PDR. The PTS developed avionics covered the **electronics of the OBC**, the power, data acquisition and valves and pyros control subsystems, as well the **low-level software of the OBC, and complete software of the other subsystems**.*
- Within the software team, I contributed to the following topics:
- **Architecture and design**: requirements flow down, functional architecture decomposition, design of the CANopen-based internal bus of the avionics.
- **Documentation** (following ECSS standard): software unit and validation test plans (SUITP / SVTP), software design document (SDD) and interface control documents (ICD) ; With a focus on the IOs drivers (UART, CAN, SPI), Datapool and Telemetry pipeline.
- **Implementation and integration**: ARM µcontrollers BSP (Zynq 7020, SmartFusion2), RTOS (RTEMS), drivers (UART, CAN, SPI). Version control and CI (Git and GitLab), maintaining three execution targets for different levels of tests (x86/Linux, ARM/QEMU, ARM/Zynq), code coverage (GCOV), static analysis (Cppcheck, SonarQube, MISRA), unit tests (VectorCast).

Software Engineer - Exomars

GMV
2019-04 - 2021-01
Madrid, Spain

- **Exomars rover**: as the **main technical responsible**, I developed and validated a middleware to interface the autonomous navigation libraries (CNES) with the rover platform (Airbus UK). During development, I configured a **CI pipeline to ensure high quality code and up to date reports**: running automated test on x86 and SPARC, tracking coverage and static analysis results, and automatically generating documentation.
- **Exomars cruise and descent modules**: I **helped in the development of the GNC**: coding, bug fixes, testing, validation, and improvement of the software quality metrics.
- **Skills:** programming (embedded C, Python), unit and integration testing (VectorCast, Tsim, Leon 2 FT on Rasta board), quality tools (Cppcheck, Gitlab CI, code coverage), software development standards (MISRA-C, ECSS-40B).

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Project Leader (Student) - Smallsat ECE3Sat

ECE PARIS
2017 - 2018
Paris, France

- In collaboration with a team of 25 people, I designed and built a **nano satellite** in order to study a new de-orbit technique using Earth's magnetic field.
- **I managed the team** (5 people) responsible for the satellite architecture and the on-board computer. **We implemented the on-board communication bus** with CAN and ASN.1 to ensure a reliable communication between the subsystems.
- **Skills:** distributed architecture design, sizing and µcontrollers choice, team management and coordination.

Software Engineer (Student) - Robot Gali X

ECE PARIS
2016 - 2017
Paris, France

- With a team of 5, **we built an autonomous robot** for the French Robotic cup.
- **In charge of the software**, I designed a **distributed architecture** to allow easier reuse for the future robots.
- I implemented a **telemetry GUI** to monitor the robot status and a **simulator** to assess the performances (recompilation of ARM code for execution on x86).
- **Skills:** embedded C/C++, Python (telemetry GUI, software-in-the-loop simulation), drivers for CAN bus and other peripherals, ARM µcontrollers, Git.
- Video demo and source code available at `https://cv.nodraak.fr`

Education

Degrees

2018	**Advanced Master**, *TAS Astro: space systems design*. ISAE-Supaero - Toulouse, France
2013 - 2018	**Engineering Degree**, *Majoring in embedded systems*. ECE Paris - Paris, France
2015 - 2016	**Bachelor of Science**, *Electronics & IT*. Aalborg University - Aalborg, Denmark

Languages

French	**Native**.
English	**Fluent (C2)**.
German	**Conversational (B1)**.
Spanish	**Conversational (B1)**.

Hobbies and Side Projects

Writing	`https://blog.nodraak.fr`
Side projects	Moon Lander GNC software written in Rust (Learn more on my blog, Source code) Running performance analysis (Source code)
Sports	Running (HM: 1h29), swing dancing, roller/ice skating