

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

Software Engineer - ASTRIS kickstage

PTS

Since 2021-01

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 - CLAM (IoT solution for logistics)

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- CLAM is a monitoring and optimization solution for logistics: it provides the position, temperature, humidity, etc of the container or truck, as well as its loading level.
- **As the main responsible for the software**, I researched, designed and developed both the embedded software running in the containers and the backend to administrate the units and visualize the data.
- **Embedded software**: ESP32, GSM and GNSS modules, distance sensor (VL53), environmental sensors (temperature, humidity), IMU.
- **Backend software**: Django, SQLite, Grafana, Nginx.
- **Electronics**: prototype PCB layout, routing and soldering, testing.

Software Engineer - Exomars

GMV

2019-2020

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).

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 μ controllers 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 μ controllers, 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

- Writing <https://blog.nodraak.fr>
- Tourism Museums and cities
- Sports Running (HM: 1h29), swing dancing, roller/ice skating
- Learning and making Software and robotics projects - Recently: learning Rust lang
- Playing Kerbal Space Program