

# Théo Bessel

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European Spatial Agency (ESA)

Software Systems Division

European Space Research and Technology Centre (ESTEC), Noordwijk, The Netherlands

Dear Madam, Dear Sir,

With this letter I would like to express my great motivation for the position of trainee in the Software Systems Division of the European Space Agency. I am enthusiastic about this opportunity and believe that my curiosity, willingness to learn and the abilities described in my CV and recommendations will align well with your team's objectives.

I'm currently in my second-to-last year of an engineering degree at ENSEEIHT, a renowned engineering school in Toulouse, specializing in software engineering. Through this demanding program, I have developed solid skills in software engineering, and a strong interest in software verification, model-driven engineering and embedded systems.

During my studies at ENSEEIHT, I had the opportunity to develop my knowledges in model-driven engineering (with tools such as Eclipse Modeling Framework, Sirius, ATL, Acceleo) and formal code verification (using tools as Frama-C, Why3, Coq). These courses enabled me to acquire solid skills in software validation and verification, which I then applied in practical projects. As part of my studies, I also had the opportunity to carry out two short-term internships in software development.

At the same time, I'm an active member of the TOLOSAT software team, a student project developing a CubeSat from scratch in collaboration with Toulouse's leading engineering schools. As a member of the software team, I'm in charge of developing the Fault Detection, Identification and Recovery (FDIR) system. My work has mainly focused on low-level error handling, where I have designed exception handlers and a stack-trace mechanism for ARM Cortex-M architectures. This experience has considerably improved my understanding of low-level error handling but also of the processor's internal components, assembly language and ARM's unique unwinding mechanism.

I'm really looking forward to taking part in your internship program in embedded software development for satellites. Of the four topics, I'm particularly attracted by the last one : "Novel SW V&V tools and methodologies", as it perfectly bridges my passions for embedded systems and software verification. However, the first topic, "RISC-V in space", is also of great interest to me, even though I don't really have any background in RISC-V architecture development, as it is a very new and innovative technology, but I am highly motivated to learn more about this field. This internship would be a unique opportunity to deepen my skills in these fields and to contribute to your team.

Thank you for considering my application. I would be very grateful to have an opportunity to discuss in more detail how my experiences and aspirations fit with the project you are proposing. I look forward to contributing to your team.

Yours sincerely,

Théo Bessel

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