

# C code analysis with formal method

Groupe LGM



**NICOLAS BAUDIN**  
INTERNSHIPS IN FRANCE INITIATIVE

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|---|---|
| Name of the hosting institution in France   | Groupe LGM  |
| Name of the host laboratory / research team | Ecole Polytechnique Féminine  |
| Address                                     | 3 bis rue Lakanal 92330 Sceaux  |
| Web site                                    | <a href="http://www.epf.fr/presentation-de-la-recherche-epf">http://www.epf.fr/presentation-de-la-recherche-epf</a> |
| Name of the supervisor                      | Katia GARCERAN  |
| Function                                    | Professor of Computer Science   |
| Email                                       | katia.garceran@epf.fr   |

## Internship offer

|                                   |                                    |            |            |            |
|-----------------------------------|------------------------------------|------------|------------|------------|
| Topic of the internship (title)   | C code analysis with formal method |            |            |            |
| Proposed dates of the internship* | <b>Start</b>                       | 2020-06-01 | <b>End</b> | 2020-12-31 |

\* The supervisors have indicated the dates proposed are flexible and are able to be postponed subject to COVID-19 border closures.

### Scientific and academic objectives of the internship (detailed description of the internship content, work expected from the intern and expected outcomes):

As part of your internship, you will be in charge of the analysis of embedded C code developed by LGM for its customers; to this end you will be using the formal method technics in Frama-C environment. During this internship you will be discovering and applying a software validation and verification (V&V) You will be taking part to the following missions:

- Getting familiar with Frama-C Framework, its plug-in, and its ACSL specification language
- Writing of C functions contracts in ACSL language
- Analysis of C function UML activity diagrams
- Analysis of the source code using Frama-C
- Analysis of the results in collaboration with the internal development teams of our industrial customers
- Participation to continuous improvement process of software V&V activities

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| Name of industrial partner  | Groupe LGM   |
| Role of the industrial partner in the internship project            | Groupe LGM will be the hosting company, where the intern will work. The internship topic has been designed by Groupe LGM and its academic partner, the French engineering School "Ecole Polytechnique Féminine" but the day to day job will be ensured by a Groupe LGM mentor. The purpose is to obtain scientific results in France, in order to use those results for our Australian branch, helping it to win new projects. |
| Main contact at the French industrial partner                       | Xavier Allegrini   |
| Email of contact at French industrial partner                       | xavier.allegrini@lgm.fr  |
| Main contact at the French industrial partner's branch in Australia | Franck BLOOM   |
| Email   | franck.bloom@lgm.fr  |

## Expected profile of applicant

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| Level of study                           | Master's student   |
| Discipline                               | Engineering  |
| Required qualities, knowledge and skills | You are possessing strong technical knowledge in C language programming. You have good listening skills; you are meticulous and organized. Mastery of Frama-C and being able to use Linux is a plus. Knowing the concept of formal methods and being able to model in UML is a plus. |
| Other specific eligibility criteria      | You are able to speak (basic conversation) and/or to read French.  |