

Researcher in Formal Methods (M/F)

Permanent contract reference INSPE049

Context and description

As a subsidiary of the Mitsubishi Electric Group, a global leader in electrical and electronic products and systems, MITSUBISHI ELECTRIC R&D CENTRE EUROPE includes a division named “Digital Information Systems” (DIS). This division specializes in professional network-based and safety-critical applications. Specifically, the DIS division engages in research activities encompassing multi-approach Formal Methods (such as Deductive Verification, Abstract Interpretation, proof assistants, etc.) across various domains, including aerospace, automotive, factory automation, hardware and software development, nuclear, railway or robotics.

Located in Rennes (Ille-et-Vilaine, Brittany), the DIS division is seeking a researcher with expertise in Formal Methods to undertake the following responsibilities:

- Research on innovative solutions for critical and non-critical systems, with a focus on security, safety, or business activities using Formal Methods;
- Study and develop prototypes of software tools and engineering methodologies to facilitate the application of Formal Methods in an industrial context, spanning from proof of concept to pre-production tools;
- Clearly demonstrate the effectiveness of proposed solutions to both technical and non-technical stakeholders;
- Contribute to open innovation in the field of Formal Methods by collaborating with academic partners through joint research projects, co-supervision of doctoral students, direct contracts, etc.

Required education and experience:

- A Ph.D. in the field of Formal Methods with experience in software and hardware development or mathematics, gained within public or private R&D laboratories;
- Experience in Formal Methods and possibly in one or more of the following areas: Artificial Intelligence (Deep & Machine Learning, Reinforcement Learning, Genetic Algorithms, etc.), model engineering, control theory, software engineering, FPGA and similar hardware developments, testing, industrial and optical networks;
- Strong interest in combining Artificial Intelligence (Deep & Machine Learning, Reinforcement Learning, Genetic Algorithms, etc.) and Formal Methods at both theoretical and practical levels;
- Applied knowledge and expertise related to one or more Formal Methods tools (such as Atelier B, Frama-C, SPARK, SCADE, Why3, Dafny, F*, Boogie, Agda, Rocq, Lean, Isabelle, TrustinSoft Analyzer, PolySpace, Astrée, Z3, CVC5, Alt-Ergo, SPIN, NuSMV, Simulink Design Verifier, UPPAAL, etc.);
- Established research experience evidenced by publications or patents;
- A strong knowledge of functional (OCaml, Haskell, etc.), object-oriented (C++, C#, Java, etc.), or synchronous languages (SCADE, Lustre, etc.), as well as software engineering practices, will also be highly appreciated;

- Knowledge related to one or more of following application domains would be appreciated: aerospace, automotive, factory automation, hardware and software development, nuclear, railway or robotics.

Personal profile

We seek a motivated and talented candidate with the following qualifications:

- Open-mindedness, capacity to work in a multicultural and international environment;
- Ability to work across multiple tasks methodically and efficiently, within set deadlines;
- Motivation to work in a dynamic industrial research environment and adaptability in reordering priorities;
- Excellent communication and interpersonal skills: ability to share information with team players (must show evidence of teamwork), and to present one's work to a wide audience (demonstrators, presentations, etc.) in an understandable and appealing fashion;
- Fluent written and spoken English;
- Availability for business trips abroad.

Duration: permanent contract

Contact:

Magali BRANCHEREAU, Human Resources Manager

Please send your C.V. and cover letter in English as PDF files to jobs@fr.mercede.mee.com specifying your name followed by the reference of the job posting INSPE049 in the subject line.