Formal Methods for embedded software

The problem

Finding a software bug after deployment can be too costly. According to the Systems Sciences Institute at IBM, the cost to fix a bug is 15 times more during the testing phase than during the design phase, and up to 100 times more during the maintenance phase. Additionally, this does not account for the costs and impacts to human life in safety critical systems.

In development for the past 40 years as part of Research & Development in Universities and Industry, Formal Methods is now being deployed as a state-of-the-art Verification and Validation technology due to the increase in available computing power.

The promise of Formal Methods is too attractive to ignore versus traditional testing or prototyping methods. The use of powerful tools based on mathematical logic allows you to ensure safety within defined constraints and uncover problem areas of your implementation.

Our offering

CS Canada owns the know how to apply Formal Methods efficiently on your projects by using Formal Methods in a highly focused way on critical parts of your project.

- Deploy Formal Methods in your development process
  - Ensure that your design is properly meeting your system intent
  - Identify corner cases that are difficult to uncover with traditional testing techniques
  - Deploy a formal specification system
  - Identify the areas of opportunities to use Formal Methods throughout your development process
- Develop the mathematical entities to model your complex system
  - Ensure that the model used to run Formal Methods theorem solvers are developed at a proper level of abstraction
  - Ensure that the proper safety goals are implemented
- Provide training services on how to use and deploy Formal Methods state-of-the-art tools in your process
  - SAT/SMT Solvers, Z3Prover, NuSMV, UUPAAL, SparkPro

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Benefits

Our customers within the aerospace and automotive industry can implement Formal Methods rapidly and efficiently, thanks to our support, and therefore ensure that their systems will be safe, and that people's life will be safeguarded.

- Find errors earlier in the development process (as early as the requirement definition step)
- Perform a more thorough evaluation than conventional testing thanks to a deep mathematical approach
- Faster and lower cost overall process

Why CS Canada?

In order to meet the challenges of Safety Critical Systems, CS Canada has assembled a highly skilled team with substantial experience in critical real-time software development and V&V.

This team possesses:

- Safety and Formal Methods experience in the automotive and aerospace industries
- Demonstrated use of Formal Methods to ADAS technologies

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