

POSITION ANNOUNCEMENT



National Institute of Aerospace

Research Scientist: Computer Science

The National Institute of Aerospace (NIA), located in Hampton, Virginia, has an opening for a Research Scientist to work in support of the Safety Critical Avionics Systems Branch at NASA Langley Research Center, on the advancement of distributed systems and runtime verification (RV).

The qualified candidate will be responsible for furtherance of this software, working with other NASA and NIA researchers on enhancement of functionality and verification of the code. This position is intended to be based in Hampton, VA but consideration will be given to highly qualified candidates working remotely.

New technologies are disrupting the management of the airspace as unmanned and manned aircraft not only need to operate safely in a shared space, but to coordinate among themselves and with agents on the ground to accomplish a shared objective. There is a need for formally verified distributed algorithms and protocols that are tailored for the environments that these aircraft will operate.

Distributed autonomous systems often exhibit a level of complexity beyond what existing testing and formal proof techniques can handle. This is not a feasible method for assuring safety of new, highly complex, autonomous systems being designed today that will eventually be trusted in the National Airspace. Runtime verification (RV), where monitors detect and respond to property violations at runtime, holds particular potential for ensuring that ultra-critical systems are in fact ultra-reliable, but there are challenges.

CoPilot is an RV system targeted at real-time distributed embedded systems such as civil aviation. CoPilot is Haskell Embedded Domain Specific Language (EDSL) created by researchers at NASA and Galois as part of NASA's ongoing research efforts.

Requirements:

- PhD computer engineering or computer science.

Desired skills:

- Experience in Haskell, OCAML, or a similar typed functional language.
- Experience with formal methods tools such as TLA+, Prism, nuSMV, Coq/Verdi, etc.

Interested candidates should apply via NIA's career opportunities site located at www.nianet.org under the 'About NIA' tab. Please include a letter of introduction, resume, and the names and contact information of three current references.

NIA, located near NASA Langley Research Center in Hampton, Virginia, is a non-profit research and graduate education institute created to perform aerospace and atmospheric research, develop new technologies for the nation, and help inspire the next generation of scientists and engineers.

NIA ranked #1 in the 2021 Top 50 Best Nonprofits to work for in the U.S.!

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