Postdoc Position

MPC: Scalable and correct by design synthesis

Critical application domains of cyber-physical systems such as transport and mobility, advanced manufacturing, future energy systems, infrastructure and environmental monitoring rely heavily on the availability of system components that are always powered on, ready to execute, constantly connected using low-latency, no-loss communication links and that have an availability close to 100%. In contrast, any real system that can scale in a practical and economically viable fashion, will, more often than not, be composed of failure-prone low-cost components using unreliable intermittent wireless communication and will be exposed to a very high degree of non-determinism in environmental conditions, such as highly variable resource loads and interference on computation and communication channels.

The project will study the challenge of designing and deploying complex control techniques for critical application domains that are capable of correct and effective operation on unreliable commodity components and communication systems. The researcher will develop novel research directions, in collaboration with the team, on topics related to (*but not limited to*) • Formal methods for reliable and scalable synthesis of controllers • Deployment of advanced controllers on low-cost and unreliable networks • Resource-efficient implementations.

Background The ideal candidate will have a background in control systems and / or optimization, solid programming skills and an interest in developing both novel theory, as well as practical tools. Outstanding people with only a partial match to this list are encouraged to apply.

Our lab is composed of people with different nationalities and backgrounds as we truly believe that diversity is key to establishing a fair and fruitful research environment. We therefore encourage applicants from all locations, backgrounds and genders to apply.

Collaboration The researcher will work on a collaborative project and will join a team with a wide expertise in control, optimization and computational methods. A positive and collaborative attitude and ability to work with others is a necessity for this position.

The project is funded by the Swiss National Science Foundation and is part of the NCCR Automation, which means a close interaction with 16 control groups and 42 PhDs and postdocs across Switzerland on this project. Details of the project can be found on the website `nccr-automation.ch`, with a particular focus on `https://nccr-automation.ch/research/computational-methods`.

Funding The successful candidate can expect the standard EPFL gross salary starting at 81′900CHF together with other benefits depending on civil status. The position is initially for a two year period, with the possibility of extension.

NCCR Automation

FNSNF Swiss National Science Foundation

To Apply

Contact Prof. Colin Jones at `colin.jones@epfl.ch` with your CV, list of references and example of your work.

Deadlines

- Evaluation of candidates will begin on July 1st, 2021
- Start-date flexible; Mid 2021 ideal

Prof. Colin Jones

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