Flexible Computing Infrastructures

Core area: Technical Sciences
Level of expertise: Student
Working time: Full time

INNOVATION FOR LIFE

TNO connects people and knowledge to create innovations that boost the sustainable competitiveness of industry and well-being of society. Our picture of the future is one of a safe and secure society, with welfare and prosperity for all. A society in which competitiveness goes hand in hand with sustainability. A society where there is progress. TNO furthers this progress through using applied scientific knowledge to generate solutions and innovations that have impact. TNO has chosen to focus on five themes: Healthy Living, Industrial Innovation, Defence, Safety & Security, Energy, and Built Environment.

YOUR IMPACT

You will work in close conjunction with the TNO team that works on Flexible Computing Infrastructures. We are using state-of-the-art cloud computing services to be able to scale up and down the number of resources for our applications. The process we employ to do this in an automated way is to monitor and analyze metrics from the computing infrastructure, and plan and execute commands to adjust these resources (from the field of autonomic computing). We use several open source products for monitoring metrics on the system, platform and application level, and some libraries to execute commands on clouds. At the moment, the analysis and planning phase of our system is using simple if-this-then-that rules. The goal of your work is to explore options for more elaborate analysis and planning. For example, simple rules may adjust unnecessarily if spikes in usage are temporary. And planning may decide to remove a virtual machine while it was only started up minutes ago. The first part of your assignment consists of research into the state-of-the-art of analysis and planning w.r.t. autonomic computing. In the second part you should design and build a prototype that shows how your selected analysis and planning methodology behaves in practice and compares to our existing simple rules. You will describe both parts in your thesis.

YOUR COMPETENCES

You are currently in the last stages of your academic education in the area of computer science or other technical master with affinity for the subject. You are able to develop a well thought out software architecture and can discuss the pros and cons of your solution. You are also able to implement this architecture into a demonstrator, preferably in Java.

DISCOVER TNO

You want to work on the precursor of your career; a work placement gives you an opportunity to take a good look at your prospective future employer. TNO goes a step further. It's not just looking that interests us; you and your knowledge are essential to our innovation. That's why we attach a great deal of value to your personal and professional development. You will, of course, be properly supervised during your work placement and be given the scope for you to get the best out of yourself. Naturally, we provide suitable work placement compensation.

Startdate: a.s.a.p. **Duration**: t.b.d. **Location**: Groningen.
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