

# SMART TESTING

## Context

Sioux Technologies develops systems for healthcare and the high-end semiconductor industry. In these applications, it is important to identify and, where possible, reduce uncertainties. This can be done by extensive testing, but it is often difficult and/or expensive to perform these tests. Simultaneously, often a model of the system is available which can be used for virtual testing.

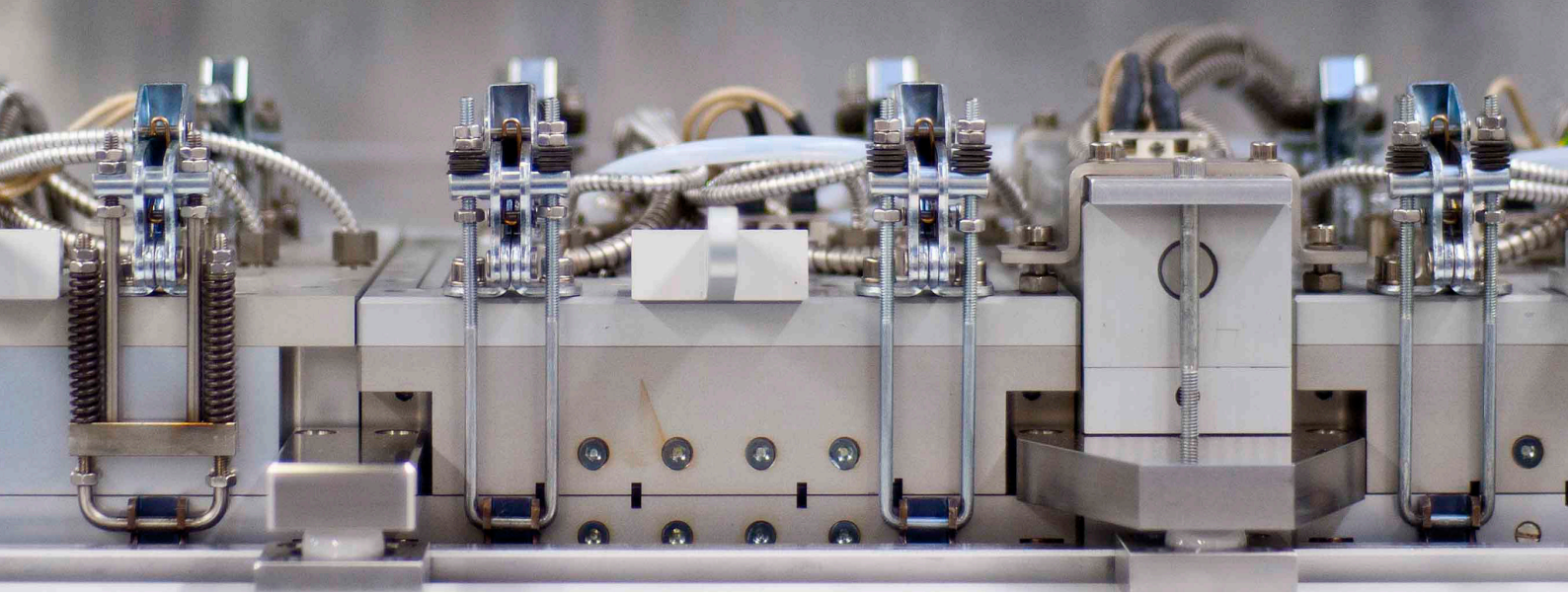
With uncertainty quantification methods, one can design a set of experiments which gives as much information as possible. This holds for both the model and the real-life version. If one can use the model for virtual testing, then one can perform virtual tests to reduce the need for real-life tests. This is done by identifying the critical usecases which need real-life testing.

## Internship overview

- Master Student
- Graduation Assignment
- Mathware
- Location: Eindhoven

## Technologies

- Mathematical Modelling
- Uncertainty quantification
- Virtual Testing



## Assignment

This project is focused on building uncertainty quantification methods that can make a design of experiments, and after evaluation, pinpoint the critical usecases. This can also encompass the modelling of the trustworthiness of the virtual model.

To make the project more concrete, we will make use of two testcases: one analytical and one more advanced. A double pendulum will be used for the initial investigation. Here, one can use multiple parameters to adapt the behaviour of the system and add noise to represent measurements of this system. Secondly, a real-life, but anonymized system is available. Here, the model will be different from the real-life setup, and hence, there is a discrepancy between the virtual test results and the real-life test results.

## Activities

The project starts with a literature review. Then, tailored uncertainty quantification methods will be developed. These are applied to two test cases, of which one is more theoretical and one is more applied.



### Why choose Sioux?

- Working on innovative technology
- Challenging, dynamic and varied work
- A comfortable and personal work environment
- Plenty of opportunities for personal development
- Great career opportunities
- Contributing to a safe, healthy and sustainable society

### Get in touch!

Would you like to know more about this student assignment?

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