



AimValley is a world class engineering and innovation center that designs and builds networking solutions. We are based in Hilversum, with a strong presence in the USA and India. We started in 2003 as a spin-off from Lucent Technologies (a successor from the American company AT&T), that is why we have a strong background in telecommunication solutions and have build-up vast expertise in real-time processor techniques. Most of our design & development is done in-house.

Product development entails preparation of requirement documents, specification of system architecture, electronic development (block diagrams, board design, system certification, mechanical design), FPGA/ASIC development, software development, system verification and product/factory introduction. AimValley makes use of FPGAs to process high speed transmission functions. Real-time requirements are also key in our software development.

Our business is about people and our teams are dynamic, skilled and passionate about technique. Recruiting and training the right talent is an essential part of the AimValley DNA. We have over 80 employees of which 75% works as design expert in the R&D organization. All R&D employees have a college or university level education.





Student Assignment

Project Introduction - Smart Application Monitoring - Part 2

AimValley’s embedded systems are deployed all over the world and are designed to work for many years without problems. The basis for a very low mean time between failures is a strong development process and an architecture that supports that goal. Traditionally unit tests, integration tests and verification tests are part of this process to ensure that the system works as designed.

AimValley often uses the [AimOS](#) platform to develop new applications as it is portable, reliable, and easy to customize to customer’s needs. Traditionally tests are written and executed with specific results in mind (action and response) and upon failure asserts are fired and events are raised.

During a previous assignment, a different approach was taken. We wanted to investigate if Machine Learning/AI can be used to monitor the system and detect when it is deteriorating. This means that we do not want to look at functionality, but at stability, responsiveness and performance. For instance, when new functionality is added or a patch is applied to the system, we want to know if the system is still operating within the boundaries of the design parameters.

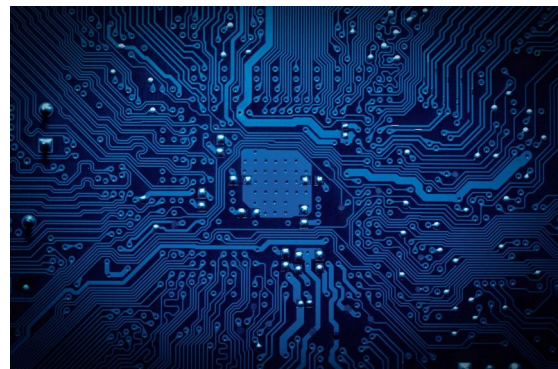
The results of the previous assignment were promising when using unsupervised novelty detection. Now the assignment needs more refining before becoming useful. This assignment focuses on the following:

Project Description

- > Determine what data is needed to get an accurate assessment of the stability of the system.
- > Investigate if a time-series anomaly detection can be build.

Complexity

- > The AimOS framework needs to be investigated and understood thoroughly before a student can determine what data needs to be extracted.
- > AimOS is used in embedded systems, that run protocols that require timely responses. The impact of extracting the required data needs to be minimized.
- > To setup a time-series anomaly detection auto-encoder can prove to be difficult as currently there is no model available.



Keywords for this project

- > Embedded Systems
- > Artificial Intelligence
- > Machine Learning

Affinity

- > C/C++, Python
- > makepp, Dockers
- > Linux, Jenkins

Skills

- > Communicative
- > Independent
- > Competent in English

Are you a student with a can-do attitude and a passion for technology?

AimValley is your company!

Why not join us today: working@aimvalley.com