

The header features a collage of images including an airplane, a satellite, a person in a space suit, and a fighter jet, all set against an orange background. The Pitch Technologies logo is positioned on the right side of the header.

Thesis Opportunities at Pitch



Background - High Level Architecture (HLA)

High Level Architecture (HLA) is a standard for distributed simulation. It is used when building a simulation for a larger exercise by combining (federating) several simulations together. The standard was developed in the 90s under the leadership of the US Department of Defense and was later transitioned to become an open international IEEE standard. Today HLA is used in a number of domains including defense, security, and civilian applications.

Low latency video streaming over HLA

Pitch has developed a tool, Pitch Media Streamer, that can collect a video stream (often created by a software tool such as ffmpeg), then transmit it over HLA and emit it somewhere else on the network. This is used, for example, to record screens during a training session. This thesis would investigate how the current tool chain can be improved to reduce the latency of the video stream. The thesis should not only investigate the software tool chain, but also look at possible hardware solutions (such as from Matrox) for the video encoding.

Populating a distributed simulation with pattern-of-life models

When running a distributed simulation, it would be useful to have a realistic simulation of ships, aircrafts and traffic moving around, and display realistic behavior, in the simulated world. This thesis would look at how AI and Machine learning techniques could be used to create such models, specifically generating realistic road traffic. Input data could be Google Maps, Open Street Map or other sources of open data. The models should use HLA to communicate with other simulators.

Weather simulation in a distributed simulation

Pitch has been involved in creating a model for how weather information can be shared between distributed simulators, this model is part of a standard used by NATO. The model defines how weather information can be described using surfaces, layers, precipitation and so on. The focus of this thesis is not to create realistic weather simulation but to evaluate if the model is suitable and is sufficiently detailed. Pitch has access to existing simulators that can be adapted to using this new model, or a simple weather simulator can be created and then the shared weather information can be displayed in an existing simulator.

Other topics

If you are interested in Pitch, but didn't find the above ideas matching your profile, please let us know. We have other ideas for a thesis such as a federated flight model, synchronized recording of multiple data sources and more. Contact us at jobs@pitch.se.

Already have an idea for a thesis?

If you have an idea for a thesis we would be happy to discuss it with you. We offer opportunities both for bachelor's and master's thesis. Contact us at jobs@pitch.se.