

# Generic implementation of random fields on embedded hardware.

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Siqura B.V. is located in Gouda and provides advanced video surveillance solutions. These solutions include IP cameras, video encoders, network video recorders, fiber equipment, video management and video-content analysis (VCA) software. Siqura currently provides a number of video-analysis algorithms for surveillance including perimeter intrusion detection, left-luggage detection and people counting.

Random fields are often used in computer vision to model the combination of different cues in the image and smooth the noisy regions. There exist several techniques to efficiently solve the random-field optimization problems. However, most of these are not suited for embedded implementations.

## Goal

- A random field generalization which can be used to improve our VCA algorithms running on embedded hardware.

## Tasks

- Literature survey of random field solvers suitable for embedded implementation,
- [Option A] Design and evaluate your own random-field solver suitable for embedded hardware,
- [Option B] Implement a random-field solver on the embedded hardware,
- [Option C] Make a code generator for a random-field solver,
- Show the suitability of your implementation on a number of applications provided by Siqura,
- Compare the performance of your solver with the well-known solvers.

## Keywords and -technologies:

- C++, SIMD/VLIW optimization or possibly FPGA implementation, Linux,
- Experience with image processing and computer vision through previous work and/or courses.

## Contact information

You are invited to send your CV to Anne van Vossen (a.vanvossen@tkhsecurity.com) and Julien Vijverberg (j.vijverberg@tkhsecurity.com).