



SiPS'26 Software Optimization Contest

IEEE International Workshop on Signal Processing Systems (SiPS)

November 1–4, 2026

Bordeaux, France

About the Contest

The **SiPS 2026 Software Optimization Contest** invites researchers, students, and industry practitioners to push the limits of **energy-aware, high-performance motion-detection and object-tracking algorithms** on the DALEK cluster¹. Participants will re-implement or extend the reference C/C++ pipeline², optimize for **CPU** or **GPU**, and submit their solutions for evaluation on real-time video streams.

Participants may choose one of two paths:

- (1) **Reinvent the application** – build a brand-new pipeline (e.g., with DNNs) to push the limits of accuracy and speed.
- (2) **Optimize the reference blocks** – fine-tune the supplied C/C++ code to squeeze more performance from the same logic.

The first route is more tailored for computer vision specialists; the second is perfect for newcomers who know their way around code optimization. With no clear “winning” strategy yet, the contest is the perfect arena to prove which approach truly delivers the best energy-efficient, high-throughput solution.

Application Description

The baseline pipeline consists of:

- (1) **Motion detection** – Background subtraction.
- (2) **Denoising** – Morphological opening/closing.
- (3) **Extract blobs** – CCL & CCA.
- (4) **Associations** – k -NN matching.
- (5) **Tracking** – Sliding-window list of trajectories.

All submissions must achieve the target detection and tracking rates specified in the evaluation sheet while maximizing throughput and energy efficiency.

Contest Deadlines

Registration	<i>Jul 1, 2026</i> – Account creation on Dalek, team description.
1st code submission	<i>Jul 1, 2026</i> – Submission of a first version of the modified source code.
Final submission	<i>Oct 15, 2026</i> – Submit optimized source code, a short description to run it and a short paper.
Results	<i>Nov. 4, 2026</i> – Winners announced during the SiPS workshop.

Please visit the official webpage of the contest for detailed and updated information:

<https://sips2026.org/sips26-software-optimization-contest/>

¹DALEK cluster homepage: <https://dalek.proj.lip6.fr/>

²Baseline processing pipeline source code: <https://github.com/kouchy/sips26-sw-optim-contest>