

IMPERIAL

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Project 19: Surgical Robot Instrument Pose Estimation

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1 Introduction & Background

[OpenCVAdaptive Exponential Smoothing\[1\] \(AES\)](#)
[Hyperlink to glossary](#)

2 Design & Implementation

References

- [1] D. Kundrat, G. Dagnino, T. M. Y. Kwok, *et al.*, “An mr-safe endovascular robotic platform: Design, control, and ex-vivo evaluation,” *IEEE Transactions on Biomedical Engineering*, vol. 68, no. 10, pp. 3110–3121, 2021. DOI: [10.1109/TBME.2021.3065146](#).

Glossary

AES Adaptive Exponential Smoothing[1] 1

OpenCV OpenCV (Open Source Computer Vision Library) is a library of programming functions mainly for real-time computer vision. Originally developed by Intel, it was later supported by Willow Garage, then Itseez (which was later acquired by Intel). The library is cross-platform and licensed as free and open-source software under Apache License 2. Starting in 2011, OpenCV features GPU acceleration for real-time operations.**1467495** 1