

## CREST: Convolutional Residual Learning for Visual Tracking

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**VENUE** CS Seminar Room, Y6405  
6th Floor, Yellow Zone  
Yeung Kin Man Academic Building  
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### ABSTRACT

Discriminative correlation filters (DCF<sub>s</sub>) have been shown to perform superiorly in visual tracking. They only need a small set of training samples from the initial frame to generate an appearance model. However, existing DCF<sub>s</sub> learn the filters separately from feature extraction and update these filters using a moving average operation with an empirical weight. These DCF trackers hardly benefit from the end-to-end training. In this paper, we propose the CREST algorithm to reformulate DCF<sub>s</sub> as a one-layer convolutional neural network. Our method integrates feature extraction, response map generation as well as the model update into the neural networks for an end-to-end training. To reduce model degradation during the online update, we apply residual learning to take appearance changes into account. Extensive experiments on the benchmark datasets demonstrate that our CREST tracker performs favorably against state-of-the-art trackers.

This paper will be presented at the IEEE International Conference on Computer Vision (ICCV), Venice, Italy, October 22-29, 2017. ICCV is the premier biennial computer vision event comprising the main ICCV conference and several co-located workshops and tutorials.

Supervisor: Dr LAU Rynson W H

Research Interest: Visual Object Tracking

**All are welcome!**



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