Le prochain séminaire de l'équipe A3SI du LIGM (unité mixte de recherche de l'Université Paris Est) aura lieu le mercredi 6 novembre de 13h30 à 14h30, salle 160 (ESIEE PARIS).

Attention : exceptionnellement le séminaire a lieu un mercredi

Local image analysis using higher-order Riesz transforms
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Abstract: The Reisz transform is a mathematical operator that has been the subject of recent image analysis research. It can be used to model local image structure as a superposition of sinusoids, where phase describes feature type (line or edge) and amplitude describes feature strength. The advantage of this split of identity is that local symmetry can be analysed separately from overall intensity.

In this talk, we introduce an expanded set of signal models based on the Riesz transform. The single sinusoidal model of the monogenic signal is modified to have a residual component, allowing higher-order Reisz transforms to be included in the derivation. This improves the parameter estimation and leads to a method of detecting junctions and corners.

Following on, a multi-sinusoidal model consisting of any number of sinusoids is described, allowing features consisting of any number of lines or edges to be analysed. To find the sinusoid parameters, a recent method from super-resolution theory is applied.

Finally, junctions and corners are not well modelled by sinusoids. To analyse these features we propose a model consisting of the superposition of a 2D steerable wavelet at multiple amplitudes and orientations. This component wavelet corresponds to either a line segment or an edge segment, depending on the feature of interest.

Cordialement,
Michel Couprie