LIST OF SYMBOLS

\( \alpha, \sigma_g \)  
Spatial scale of the filtering

\( \sigma_{gh}, \sigma_{gv} \)  
Deviation or simple cell width

\( \sigma_{v0} \)  
Small simple cell width

\( \sigma_{v1} \)  
Medium simple cell width

\( \sigma_{v2} \)  
Small simple cell width

\( F(\Omega) \)  
Frequency domain vector of a continuous signal \( f(x) \)

\( \Omega \in \mathbb{R}^2 \)  
Frequency domain vector

\( x \in \mathbb{R}^2 \)  
Vector in the spatial domain

\( \omega \)  
Angular frequency in rad/Sec

\( G(\xi, \eta) \)  
Fourier transform of the image \( g(x, y) \)

\( \lambda \)  
Layer number in spiral addressing scheme

\( G^\lambda \)  
\( \lambda \) level structure

\( \forall g_i \)  
For all \( g_i \)

\( \sigma_x, \sigma_y \)  
Standard deviations of the elliptical Gaussian along \( x \) and \( y \) axes

\( F \)  
Radial frequency

\( \theta \)  
Orientation

\( U_l, U_h \)  
Lower and upper center frequencies of interest

\( S \)  
Total number of stages in Gabor filter bank

\( \mathbb{N}^0 \)  
The set of natural numbers

\( \mathbb{R} \)  
The set of real numbers

\( r_1, r_2 \)  
Linearly independent vectors

\( \mathbb{R}^k \)  
Lattice sites
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>$\chi_R(x)$</td>
<td>Indicator function of a Voronoi cell</td>
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<tr>
<td>$m_x$</td>
<td>The number of lattice points to which $x$ is adjacent</td>
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<tr>
<td>$\hat{R}$</td>
<td>The dual or reciprocal lattice specified by $R^{-T}$</td>
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<tr>
<td>$\eta_1(x)$</td>
<td>First order hex spline</td>
</tr>
<tr>
<td>$\eta_{p+1}(X)$</td>
<td>Higher order hex spline</td>
</tr>
<tr>
<td>$\forall X$</td>
<td>For all $X$</td>
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<tr>
<td>$s(\eta_p)$</td>
<td>Signal space</td>
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<tr>
<td>$C(k)$</td>
<td>Coefficients of signal space</td>
</tr>
<tr>
<td>$(X)^0, (X)^1$</td>
<td>Generating functions</td>
</tr>
<tr>
<td>$\Delta^n, \Delta^m$</td>
<td>Localization functions</td>
</tr>
<tr>
<td>$u_1, u_2, u_3$</td>
<td>The reciprocal vectors of $e_1, e_2$ and $e_3$ respectively</td>
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<tr>
<td>$L_R$</td>
<td>Rectangular lattice</td>
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<tr>
<td>$L_H$</td>
<td>Hexagonal lattice</td>
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<tr>
<td>$\hat{\chi}_R(\omega)$</td>
<td>Fourier transform of the indicator function $\chi_R(x)$</td>
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<tr>
<td>$\mathbb{Z}$</td>
<td>The set of integers</td>
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