



Input Image

Normalize



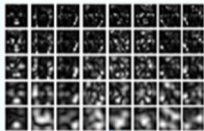
Illumination Normalization

Gradient



Gradient Magnitude

Gabor wavelet



EGM representation

Downsample



Downsampled EGM feature vector in image form

MAT

$$\begin{bmatrix} \partial_{i,j,R}^T & \partial_{i,j,I}^T & \dots & \partial_{i,j,B}^T \\ \partial_{i,j,R}^T & \partial_{i,j,I}^T & \dots & \partial_{i,j,B}^T \\ \dots & \dots & \dots & \dots \\ \partial_{i,j,R}^T & \partial_{i,j,I}^T & \dots & \partial_{i,j,B}^T \end{bmatrix}$$

Downsampled EGM feature vector in matrix form

Cat

$$\begin{bmatrix} z_{10} & z_{11} & \dots & z_{1Q} \\ z_{20} & z_{21} & \dots & z_{2Q} \\ \dots & \dots & \dots & \dots \\ z_{20} & z_{21} & \dots & z_{2Q} \end{bmatrix}^T$$

Concatenated EGM feature