**Two-Dimensional Patterns**

Match each of the eight 2D signals (each $32 \times 32$ pixels) shown in the top eight panels with the magnitude of its 2D DFT (lower panels A-H). Black represents 0. White represents the most positive value in that panel (not necessarily 1).

\[
\begin{align*}
|F_0[k_r, k_c]| &= \square & |F_1[k_r, k_c]| &= \square & |F_2[k_r, k_c]| &= \square & |F_3[k_r, k_c]| &= \square \\
|F_4[k_r, k_c]| &= \square & |F_5[k_r, k_c]| &= \square & |F_6[k_r, k_c]| &= \square & |F_7[k_r, k_c]| &= \square \\
\end{align*}
\]
**Mystery Photograph**

Below are shown the DFT magnitudes of an image of a single small white object photographed against a black background. The image had dimensions of $480 \times 480$ pixels and represented an area that was 1.8cm wide and 1.8cm tall.

The brightness of each pixel in the image below is proportional to the magnitude of the DFT at that $(k_r, k_c)$ value.

In the box below, sketch the rough shape and orientation of the object in the spatial domain. Include labels indicating the rough dimensions of the object, in terms of continuous lengths (meters). Do not worry about correctly sketching the size of the object relative to the size of the image.