Appendix C: Important Mathematical Definitions

**Convolution.** The convolution \( f(x, y) = g(x, y) \ast h(x, y) \) of two 2-dimensional functions \( g(x, y) \) and \( h(x, y) \) is defined as:

\[
f(x, y) = \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} g(u, v) h(x-u, y-v) dudv
\]

**Correlation.** The cross-correlation function \( c(x, y) = g(x, y) \star h(x, y) \) of two 2-dimensional functions \( g(x, y) \) and \( h(x, y) \) is defined as:

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