Similarity Metrics for Template Matching

Find pixel $(k, l) \in S$ with Minimum Sum of Absolute Differences:

$$SAD(k,l) = \sum_{(i,j)\in T} |I_1(i,j) - I_2(i+k, j+l)|$$

Find pixel $(k, l) \in S$ with Minimum Sum of Squared Differences:

$$SSD(k,l) = \sum_{(i,j)\in T} |I_1(i,j) - I_2(i+k, j+l)|^2$$

Find pixel $(k, l) \in S$ with Maximum Normalized Cross-Correlation:

$$NCC(k,l) = \frac{\sum_{(i,j)\in T} I_1(i,j)\, I_2(i+k, j+l)}{\sqrt{\sum_{(i,j)\in T} I_1(i,j)^2 \sum_{(i,j)\in T} I_2(i+k, j+l)^2}}$$