

Image Similarity Estimation with Siamese Neural Networks

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Data is generated at every development phase of a component with the help of modern measurement and monitoring systems. Detecting anomalies in the gathered data is crucial for quality assurance, health monitoring and can help prevent expensive delays. Furthermore, having a quality assurance pipeline, which is capable of detecting anomalies inline can have a major impact on manufacturing time and results in a resource-saving process.

Motivated by this, we have decided to fundamentally approach this issue by using a Siamese Convolutional Neural Network (SCNN) to find similarity between images and detect anomalies. This technique extracts the features from images and finds a latent representation which is then used to find a similarity metric (euclidean distance) such that, images of similar pairs are closer to each other and those of dissimilar pairs are distant from each other. We evaluate our approach on the publicly available MVTEC AD dataset and demonstrate the efficiency by finding the distance metric between any two given images.