This article introduces perceptual resemblance of plastic surgery facial images using near sets. Near sets are disjoint sets that resemble each other. Near sets facilitate measurement of similarity between objects (digital images) based on features values (obtained by probe functions) that describe the objects. Resemblance between disjoint sets occurs whenever there are observable similarities between the objects in the sets. Each list of feature values defines an object’s description. Objects that are perceived as similar based on their descriptions are grouped together. These groups of similar objects can provide information and reveal patterns about objects of interest in the disjoint sets. The practical application of near set theory on the pre and post plastic surgery facial images to extract resemblance between them was introduced in this article. Facial plastic surgery can be reconstructive to correct facial feature anomalies or cosmetic to improve the appearance. Both corrective as well as cosmetic surgeries alter the original facial information to a great extent thereby posing a great challenge for face recognition algorithms. The main aim of this article is to measure the degree of resemblance of facial images before and after plastic surgery. Blepharoplasty (Eyelid surgery) and Rhinoplasty (Nose surgery) is being considered for this research work due to the maximum number of individuals and easy to differentiate faces before and after plastic surgery. $t_{HD}$, $t_{NM}$ and $t_{HM}$ is being used to measure the degree of resemblances between plastic surgery images. $t_{HD}$ measure shows around 100% nearness as compared to $t_{NM}$ and $t_{HM}$ for all
features. These measures can also be used in increasing the efficiency of any face recognition system containing plastic surgery images.

References

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Index Terms

Computer Science
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Keywords
Near Sets Rough Sets Resemblance Plastic Surgery Tolerance Near Sets