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Future Career Paths in the Field of Cosmetic Surgery

People are becoming very interested with enhancing their bodies in order to fit the current beauty standard being set by Hollywood, the media, and the pop culture these days. More and more of them from all walks of life are now turning to the cosmetic surgeons to improve their appearance, which a lot of them believe may enhance career prospects or improve social opportunities. That's one of the main reasons why cosmetic surgery has become popular in recent years. Many new techniques have been developed with the potential for multiple applications in this field. Interesting, mathematics and computer imaging start to play important roles in cosmetic surgery. In this section, we are going to look at how mathematics and computer science students would actually get involved in this field and how cosmetic surgery can lead to the future career paths in the area of mathematics and computer science.

Cosmetic Surgery--- "The Mathematics of Beauty"

"Beauty may well be in the eyes of the beholder. But in the future in could be in the realm of mathematics."

--- By Professor Tony Fitzpatrick (Washington University)

Suppose there is a patient comes to a cosmetic surgeon's office and asks for surgery to make him look like William Bradley Pitt. Can the surgeon just simply lead him the operation room and give him a surgery to make the patient look at whoever he wants to be? The answer is no. Cosmetic surgery is far more difficult than we can

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expect. It is not only a surgery, but also an art appreciation. There is a great emphasis on balance and perspective behind cosmetic surgery (Struss 56-52).

Cosmetic surgery has been practiced since the days of ancient Egypt (56-53). Many studies have been made in the field since the end of World War II, and especially in the past 25 years (56-53). The fact is, before the actually surgery, the surgeon has to make a lot of precise evaluations and procedures. During the whole process, mathematic calculation could decide how ideal the computer model will turn out to be. What the surgeon does is scan the patient's face with safe white light from the 3-D scanner; instantaneously it turns the face into a very fine grid that looks like multiple triangles pieced together, representing the shape of the face with its entire curve and creases (Jain 696-694). The grid is compared to a library of idealized faces and one is chosen. Upon this grid, the wavelet mathematics and differential geometric calculations go to work in measuring the noses, cheeks, eyes and calculating the difficulty in making changes as well as the global effects of surgery- how changes in one part of the face, say, for instance, the forehead will impact the shape beneath the eyes (696-695).This means that by using the combinations of wavelets and mathematics calculations, it can actually take two faces and construct a different face. The process sounds simple but it actually requires high math skills. For this reason, the good news for math students is that other than choosing accounting or business as your future career, it is also great to get started in cosmetic surgery. Jobs like surgical technologies and surgery assistants should be favorable for those in the field of mathematics with high standards of math skills.

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Cosmetic Surgery—"Computer Aided" Surgery

Computer technology has affected life in the late 20th century from different ways. It is not surprising that computers can be used in multiple ways in the field of cosmetic surgery. Surgeons use these technological advances in order to simplify complex and historically challenging reconstructive issues.

Computer Imaging of the face allows patient to fully describe to the surgeon what is desired, and for the surgeon to illustrate what is possible. In other words, the main advantage of computer imaging of facial reconstruction is that is enables the doctor and patient to work together on redesigning the part which the patient wants to change. Moreover, computer imaging is very helpful in terms of seeing what the possible outcome is before taking the step of the surgery.

Besides computer imaging, many other new computer tools have been created in recent years also play important roles in the field of cosmetic surgery. The software named CAPS, or Computer Aided Plastic Surgery, creates a virtual model of a person so a surgeon can see the consequences of making a particular incision and minimize any disfigurement patients may experience following an operation (Hoehnke et al.1144-1138). The system allows surgeons to define where incisions would be, what tissue would be excised and where suturing would occur (1144-1139). The software used photographs of the face to get the surface details right. Then after analyzing a series of useful data, it can provide a perfect design model for surgeons to use during the actual surgery (1143-1140).

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From all the facts, it is not hard for us to realize the developing of cosmetic surgery leads to the trends of using computer science. Great computer skills are not only highly in demand in the field of software designing, but also in the field of cosmetic surgery. Students who have strong computer background knowledge will get many opportunities from this field.

Conclusion

By looking at the applications of mathematics and computer science in the field of cosmetic surgery, we can find out our experiences with computer and math can be used in a variety of career areas. As cosmetic surgery becomes more and more popular in our society, it brings many great career opportunities to the students who have strong mathematics or computer science backgrounds. We should say, for math and CS students, it is wroth while pursuing a career in cosmetic surgery in the future. And the most important is, math and CS students can use their knowledge to make a big difference in the field of cosmetic surgery.

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