

Robotics in Healthcare

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This year the entire world experienced an epidemic that took the lives of millions. As this happened, the need for doctors and medical professionals increased. Everyone relied on these brave and amazing people to be the reason they could live and survive the virus. Seeing the importance of these doctors and healthcare workers opened my eyes to what career I wanted to take and made me realize that just like these doctors I wanted to be able to help others and have a positive impact on their lives.

Initially, I believed that just by taking the steps to become a healthcare professional, which involved; completing an undergraduate education, completing training in medical school, taking numerous exams throughout the process, starting residency, earning board certification, and getting a state license, that I would be able to excel in the field. I thought that I only needed to study and have knowledge of content revolving around basic biology and other science related courses to succeed in medicine. However, in this pandemic I realized that robotics and technology also play a huge role in healthcare and medicine.

The wide variety of healthcare jobs have all been using robotics in one way or another. Doctors specifically have been using the help of certain robots to get minimal but very vital jobs done. Instead of risking the lives of personnel in hospitals, robots are used to scan for patients with potential symptoms, such as coughing or high temperature. Mobile robots are also used in place of doctors to perform routine observations such as temperature checks and to dispense medicine, which frees up nurses to help with patients in other ways. The use of robots allows doctors and nurses to more effectively perform the highest priority duties where their skills and abilities are most needed. Robots increase the capabilities of the medical facilities they're in, while reducing the risk to those working there.



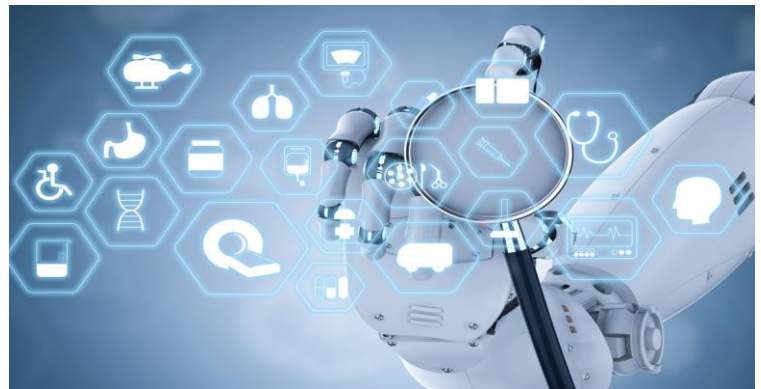
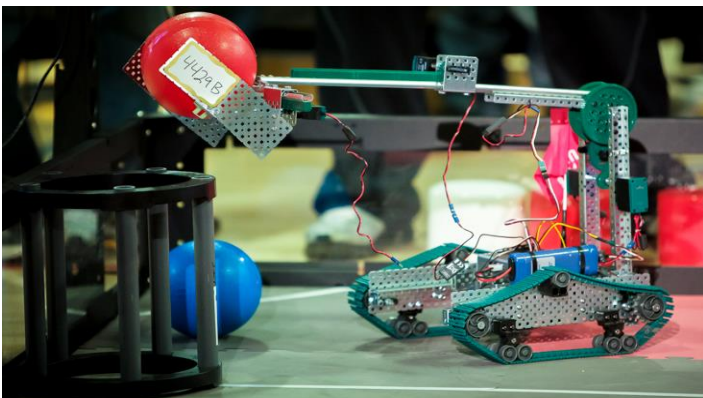
Robots like Tommy are used to measure blood pressure and the oxygen saturation for the patients in the ICU. These two parameters provided a crucial picture of the patients' health conditions, and through the use of robotics, doctors are able to attain this information quicker and efficiently.

Although it isn't a necessity to know much about robots as a doctor, having knowledge of how they work and what they do can be very beneficial. A doctor's goal is to be able to serve their patients to the best of their abilities, and by knowing how to work robots and having extra skill on how to program them or how to make them work, they're able to accomplish this goal to their best extent. Through robotics, doctors are able to get insight on the machines they're working with and are able to deeply learn about these machines. If any problems are to occur (regarding the robots), a doctor who has knowledge of how the robots work and how they are; could easily help in solving the issues, thus being able to help his/her patient in a better way.

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Involvement in competitive robotics has allowed me to get started on learning about robots and how they work. It's also allowed me to learn various skills and values that could be applied to my future job, thus preparing me for this field of work. By not having a specific job on my robotics team, I was able to learn a little bit of everything. From being able to code and program certain parts of our robot to building it and to solving any problems it had, I was able to completely introduce myself to this mesmerizing world of machines and technology. As a doctor, if a problem would ever occur with the robot, I'd be able to apply my knowledge of programming, knowing the parts of a robot, and how to work it, to solve any issues.

In competitive robotics I've also attained skills regarding teamwork, prepared myself to be ready for unexpected changes, learned how to solve problems, and have become very patient. All these skills are vital for doctors and could easily be applied to their daily lives. As a doctor you should be able to share your thoughts, listen, and lead in order to execute your best work. Working in teams through competitive robotics teaches you all of those skills. Robotics also gets you to be ready for unexpected changes. This is a skill that a doctor needs, since the health of their patients could easily change, and they have to be prepared for whatever is to come next. Values such as patience are also acquired during competitive robotics, and patience is a very important virtue for a doctor. Through the constant fighting that can sometimes occur between your team members, patience is a value that I attained during competitive robotics to prevent any further chaos and to get to a resolution quicker. For doctors, having to deal with many people on a daily basis/ their health problems can be very troublesome so it's important to have patience in order to calmly do what has to be done in order to come to their "resolution". Lastly, in competitive robotics I learned how to solve problems my robot had. Fixing a robot could be compared to fixing a patient. The robot could represent a patient, and the skills that you acquire in order to solve the problem are extremely important in order to attain good results. Although in robotics the problem isn't evident right away, both circumstances involve knowing how to fix a problem and what way to fix it. If the problem isn't solved fast enough, it can overall just lead to many more problems for your robot, and in medicine the same goes for the patient.



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Throughout the years there have been many renowned and important doctors that have contributed to our world in inexplicable ways. Healthcare is such a vast and beautiful field that any one who is part of it automatically is able to help others in one way or another and impact people in many ways. There's so many different types of doctors and they're all very special to their specific job as well. However one doctor who caught my eye and who is pretty well known for his work is Dr. Naresh Trehan.



Dr. Naresh is a famous Indian cardiovascular and cardiothoracic surgeon. He was born on August 12, 1946 in Delhi, India. He obtained medical degree from King George's Medical College in Lucknow.

Dr. Naresh was also the founder, executive director and chief cardiovascular surgeon of Escorts Heart Institute and Research Center (EHIRC), New Delhi, India. As of now, he serves as a Chairman, Managing Director and Chief Cardiac Surgeon of MedantaTM-The Medicity, one of the largest multi-specialty hospital at Gurgaon, Haryana.

Working as a surgeon, Dr. Naresh has a great affinity towards robotics and its immense help towards healthcare. When interviewed on advantages of robotic surgery at the Global Robotic Surgery Conference on January 13, 2012, he explained how robotics had become a necessity for surgery now and how it allowed surgeons like him to do heart surgery in a way that is much less invasive than open-heart surgery, while still having the same effects. The way Dr. Naresh had elucidated the remarkable abilities that robotics had in healthcare really attracted me to robotics and inspired me to also use it in such a prodigious way. Moreover, my initial want to become a doctor soared higher when I learned about the thousands of lives this doctor helped save and all of the awards he had won for his work. Being able to change the world for the better like this amazing doctor did has been a dream of mine since the very beginning, and I hope to make a reality through robotics.

As for the future of healthcare, I believe this field will progressively start working more hand in hand with robotics and technology. With advances in digital healthcare technologies, such as artificial intelligence, VR/AR, 3D-printing, additional robotics, and nanotechnology that we are currently seeing shaping up the future of healthcare, these advances will probably continue to grow and become very prominent in this field. Over the next ten years we can definitely expect to see many more robots built to aide doctors and nurses, a lot more robotic surgery, and overall, the addition of heavy technology in healthcare places such as hospitals. Developments that have been ranging from robot companions through surgical robots to pharmabotics,

disinfectant robots, and even exoskeletons all prove the rapid growth of robotics in healthcare and in a way give us a little idea of what's more to come as the years pass by, for healthcare.

Resources & Sites

- https://www.northlandcollege.edu/now/news/view.php?news_id=1669
- <https://www.robotics.org/blog-article.cfm/How-Robots-Are-Helping-Combat-COVID-19/256>
- <https://www.pri.org/stories/2020-04-08/tommy-robot-nurse-helps-italian-doctors-care-covid-19-patients>
- <https://www.embibe.com/exams/top-10-doctors-around-the-world>
- <https://www.youtube.com/watch?v=Kn8AnUOkf6U>
- <https://complianc navigator.bsigroup.com/en/medicaldeviceblog/robotics-in-healthcare/>
- <https://www.rn.com/nursing-news/robots-in-healthcare-whats-in-store-for-the-future/>
- <https://newkentrobotics.org/join-us/benefits/>
- <https://www.robotics.org/blog-article.cfm/Examining-Robotics-Growing-Impact-on-the-Healthcare-Industry/243>
- <https://www.indiatoday.in/lifestyle/health/story/cardiologist-dr-trehan-gives-tips-on-maintaining-a-healthy-heart-1177990-2018-02-26>