



# Jacob Chapin

[jacob.chapin@slu.edu](mailto:jacob.chapin@slu.edu)

ADVISOR/MENTOR: Dr. Hall  
SPONSOR/GRANT: Research Grant  
PROGRAM START: Summer 2018

## BIOGRAPHY

Jacob Chapin is from St. Louis, Missouri. He is a biomedical engineering major with a minor in engineering. Jacob has been working for the past year on research in medical robotics. He has conducted his own research to develop a fully automated robotic procedure for spinal fusion surgery. He has enjoyed studying the human body and applying his research to increase the accuracy of surgical procedure. Jacob is pursuing a Master's degree in biomedical engineering at Saint Louis University.

## RESEARCH

The purpose of this project is to develop a fully automated robotic procedure for spinal fusion surgery, because one does not currently exist. A Kuka LBR iiwa robot will be used to interchange tooling, drill and tap a hole in the spine, and place a spine screw within one millimeter and one degree of the target. This will be performed on cadaver spines and compared to the accuracy and duration of the surgeon performed procedure. This procedure will allow for higher accuracy and stability, which will lead to minimal wounds and rapid recovery for patients.



**SAINT LOUIS UNIVERSITY**  
—  
PARKS COLLEGE OF ENGINEERING,  
AVIATION AND TECHNOLOGY

