For this project, our group would like to develop a computer vision program to analyze images or videos of doors and figure out how to open them. First, the program should find the precise location of the doorknob under most light conditions. Then, the program should recognize the type of the doorknob on the image. Also, the rotation in which the doorknob should be rotated to open the door should be determined as well. Finally, the algorithm should be able to identify where it is a push or pull door. As a bonus, the door with the “push to open” button on the side should be detected if there is one. The purpose of this project is to empower door-opening robots or transportation devices for disabled people who have trouble opening doors, for example, wheelchair users.

- Zhuohao Yang
  - Doorknob detection
  - Doorknob rotation detection
  - Leader for advanced calculus

- Chengshi Zhang
  - Doorknob detection
  - Type of doorknob detection
  - Leader for machine learning

- Tianze Huang
  - Push or pull detection
  - “Push to open” button detection
  - Leader for optimization