

Practical Exosuit Design for Patients with Amyotrophic Lateral Sclerosis
(Technical Report)

Gun Violence Stalemate:
Why Proponents of Gun Regulations in the U.S. Have Failed
(STS Research Paper)

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Preface

Public health is the sum of public safety, the prevention of injury and disease, and medical treatment. The thesis includes a technical project report that contributes to state-of-the-art medical treatment, and a sociotechnical research paper examining a divisive controversy in public safety and injury prevention in the United States.

How can soft actuators be used to make a practical arm exosuit for patients with amyotrophic lateral sclerosis (ALS)? ALS is a debilitating disease. A soft, microcontroller-operated exosuit can restore some of ALS patients' lost motor control. The project team fabricated a soft upper-limb exosuit incorporating a cable actuator connected to a 24V motor and power supply. While wearing the device, the user can lift an additional 5 lbs for up to 4.5 hours without recharge.

In the United States, social groups are divided over the problem of gun violence. Some blame popular culture, particularly entertainment media, for glamorizing gun violence and desensitizing audiences. Some gun rights advocates use such blame to redirect public policy responses away from gun control, which they condemn as a threat to personal liberties. In the US from 2019 to 2022, mass shootings, in which at least four people were shot, averaged 649 per year. In response, gun control advocates such as Everytown and the Brady Campaign fight gun rights advocates such as the National Rifle Association. Groups on both sides of the debate often blame entertainment media, but they draw opposing conclusions from this criticism. In the U.S, proponents seeking increased firearm regulations have failed because powerful defenders of gun rights have strategically characterized them as opponents of esteemed traditions, self-defense and personal liberty. In this competition, gun rights advocates have found an advantage in a popular culture that celebrates guns, gun owners, and gun violence.