

Thesis Project Portfolio

Practical Exosuit Design for Patients with Amyotrophic Lateral Sclerosis

(Technical Report)

How Technology Can Make a Positive Social Impact for the Disabled in China

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

My research project addresses the needs of those with disabilities and how technology can address those needs and offer them assistance in daily life. The technology I am creating is an exoskeleton robotic arm. This technology addresses basic human needs for inclusion and helps to incorporate more fully those with disabilities into the social fabric of society. Without technological assistance some disabled persons will not have access to basic activities and services. In addition, their exclusion means society does not benefit from their presence.

With respect to STS theory, my project is interested both in the social needs of the disabled and in the technology that might best serve their specific needs. The goal is to optimize the use of technology to bring the most benefit to the disabled. If this is done the social isolation of the disabled would be reduced and this would alter the way society operates.

In order to conduct my research, I have engaged in extensive literature review. This includes both reading about the social needs of those with disabilities and also literature on technological innovations to meet the needs of the disabled. My expectation is that my project will eventually result in a device that will be practically used by those who have limb disabilities. The implications of a successful project will be the fuller inclusion of those with disabilities into the typical activities (e.g., picking up a book, drinking a cup of water, etc.) that are generally taken from granted by those who are able-bodied.