

## Introduction

Personal safety remains a significant concern, especially within Asian communities that have faced a rise in racially motivated hate crimes. Many individuals report feeling unsafe in their daily lives, with over half of respondents to our initial survey indicating that safety concerns impact their routines, and 82% rating their confidence in defending themselves as 3 or below on a 5-point scale. Existing self-defense solutions, such as pepper sprays, often lack accessibility or usability for different users.

The idea for our self-defense bracelet originated from an organization one of our teammates founded. The nonprofit organization is called the Asian Defense Alliance in New York City, which focuses on promoting safety and empowerment in Asian communities. Inspired by their work on the growing concerns about personal safety and stopping asian hate, we wanted to design a self-defense bracelet that addresses the limitations of the existing self-defense solutions.

Our solution is BraceForce, a bracelet that wraps securely around the wrist during daily activities and can be quickly deployed as a defensive tool to create distance between the user and a potential threat. The design of BraceForce is to provide both physical protection and psychological confidence to users.

This project was developed for our Design Thinking and Communication course for the Northwestern McCormick School of Engineering. In our Whitespace project course, we were given the freedom to design any product that addresses a meaningful problem. The projects in our course are all related to the United Nations Sustainable Development Goals. We chose to focus on SDG 16: Peace, justice, and strong institutions to reduce all forms of violence everywhere, especially faced by vulnerable populations.

The purpose of this report is to address our design process, users and requirements, product specifications, and testing and results. We will conclude the report with recommendations for future developments.