



Intersecting Versatility and Usability for Guide Dog Users: The Integration of Guide Harnesses and Mobility Canes

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Abstract

Guide dogs have been around since 1928 successfully assisting their handlers in navigating daily life, as well as providing a meaningful companion. Individuals with low vision and no vision who do not utilize an assistance dog rely on other means of communication with their surroundings. The goal of this project is to integrate a standard guide dog handle with a traditional mobility cane to provide guide dog users with a universally designed method of navigation. An interdisciplinary approach to this idea paved the way for the creation of a physical prototype to showcase the versatility and usability of this new design.

7 Principles of Universal Design

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive Use
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use

This product was developed with a universal design background that allows for it to be applicable for a range of users and abilities. This accounts for multiple different types of disabilities and prior expertise. With that in mind, one of the most important aspects to be considered was the ease of operation. The product is designed to be strong, lightweight, lack moving parts, and provide the user with quick understanding of how to manipulate it to either form. The lightweight design provides minimal fatigue during use, and the adjustability allows for maximum customization without the lengthy process of designing a custom product for each individual.

Acknowledgements

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The Design

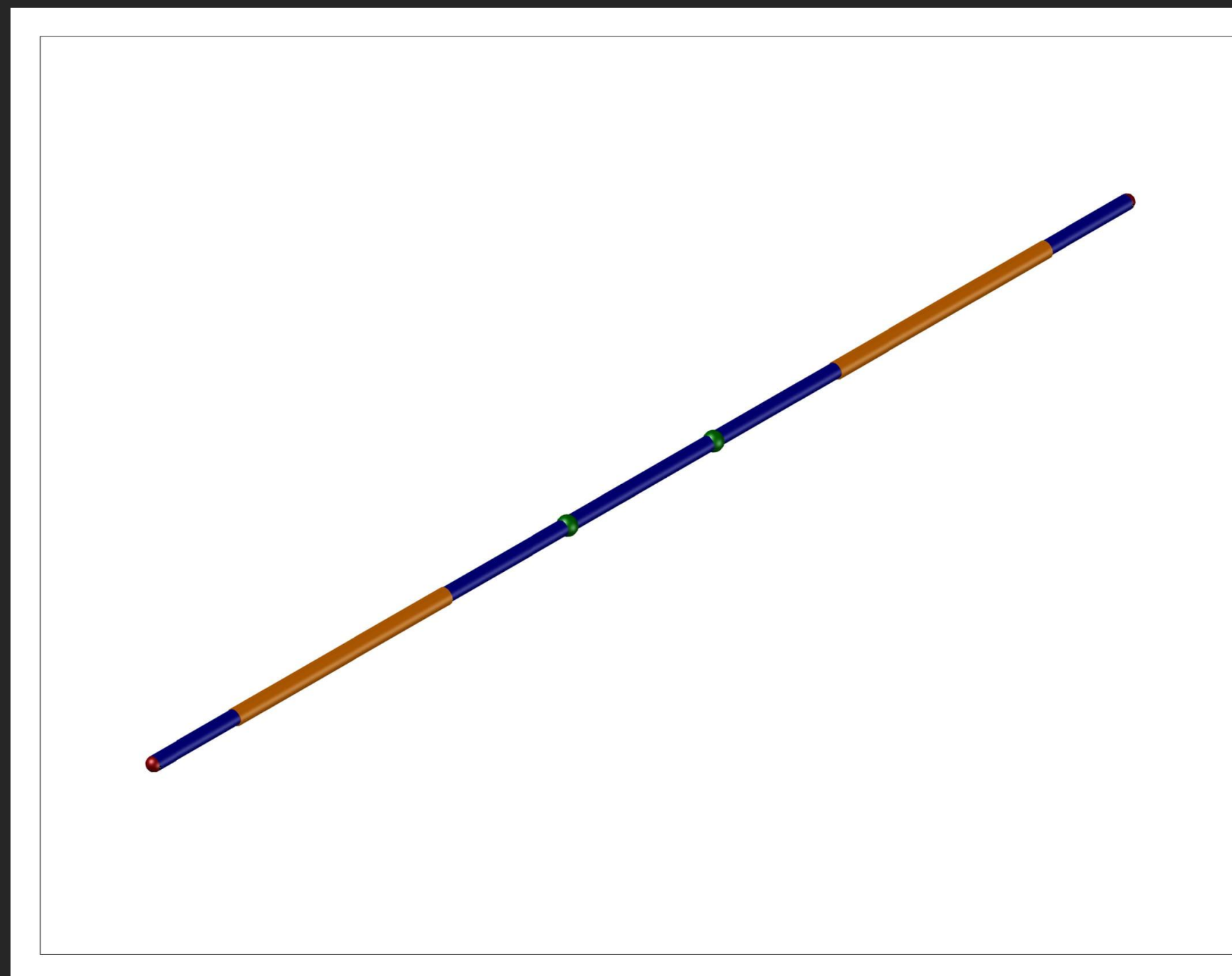
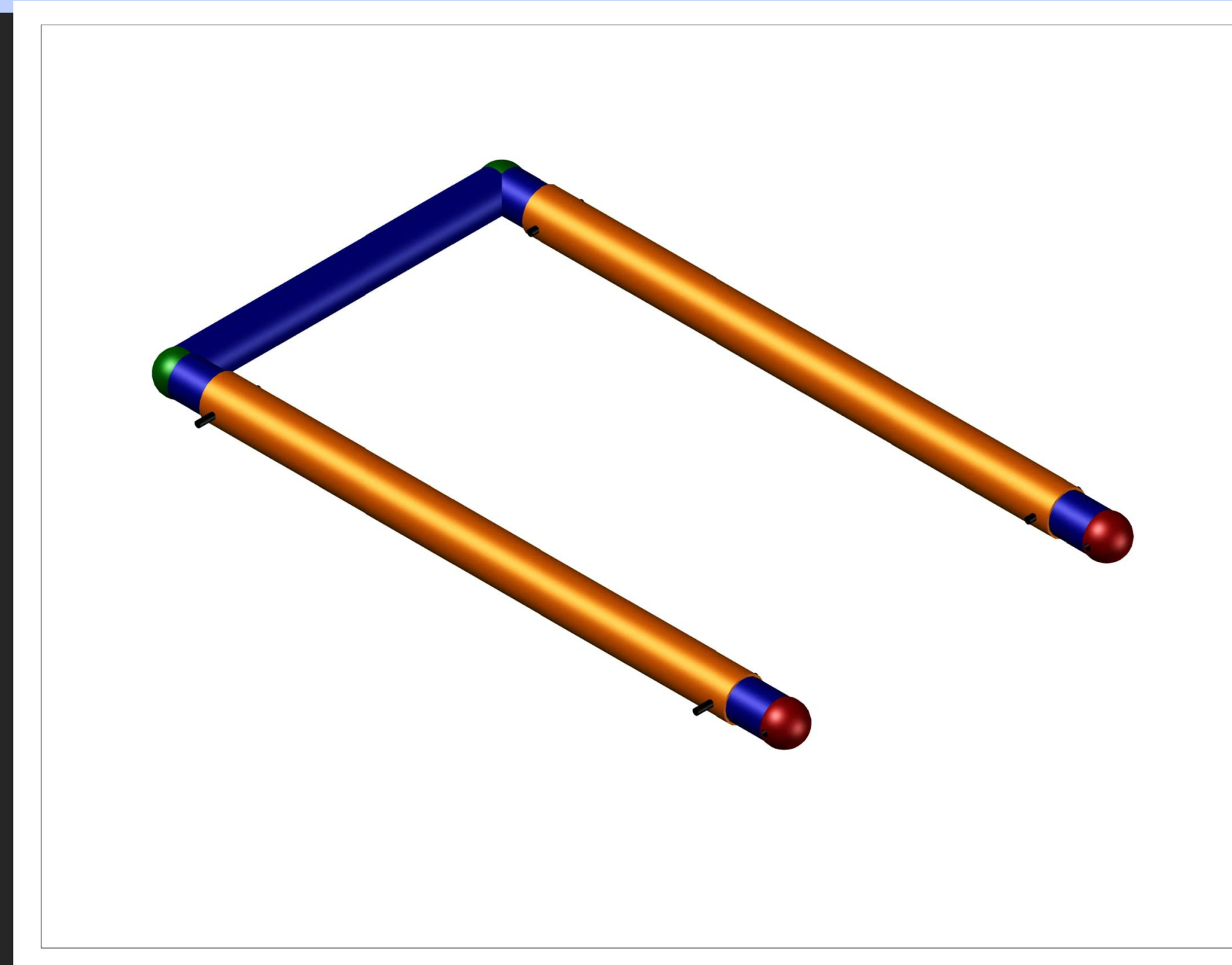


Fig 1. The design is folded into the guide handle position, color-coded to highlight the different components of the design. The two red caps on the end allow for quick attachment to the user's harness of choice and the orange expansion partitions allow for the design to stay streamlined.

Fig 2. The mobility cane is fully extended in this view, using the same color-coding as the initial image. The base has been fully extended using the expansion partitions to achieve a full length mobility cane, easily adjustable for a range of users. This form also will feature a wrist strap and soft grip on one end for the user's comfort.

Significance

Although the use of a guide dog does not negate the need for a mobility cane all together, the dog is able to provide a level of assistance that doesn't require the user to possess their cane at all times. That being said, many individuals still carry an emergency cane. Like all dogs, guide dogs need regular bathroom breaks, and should that happen in an unfamiliar area, it is necessary for the handler to have a form of communication with their surroundings. By removing the newly designed handle and extending it, the individual now has a mobility cane to navigate with in order to allow their dog to relieve themselves with ease. Another benefit of this would be that an individual who does not carry bags or have a place to hold their emergency cane would then still have one on their person, especially if they are only going to be gone for a short period of time.

Research

The research conducted determined that there was a large lack of research that has been published regarding guide dog harnesses as well as the efficacy of different mobility cane lengths, materials, and tips. Ultimately, it is the individuals preference that determines the cane they use and what features it holds. Guide dog organizations provide their users with a harness that is custom made to fit both the dog and the handler, however, those specifics are under patent and copyright. It was determined that a product of this specific type has only been considered before, but never brought into a physical phase of the design process, thus, this project was developed.

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