

# CaneBuddy: Multi-Purpose Adaptor to Improve Hands-Free Storage of Mobility Canes

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## NEED

Dr. Sriram Balasubramanian is a **Mobility Cane user** who **cannot store his cane in public places**

## OBJECTIVE

Design a mobility cane adaptor that allows:

1. **Hands-free storage** in public places
2. **Flashlight attachment** for low-light environments

## DESIGN INPUTS

**Low-Profile:** < 100% total diameter increase

**Inner Diameter:** 12.9 mm (Ambutech Cane)

**Flashlight:** Hold > 180 g (Flashlight Weight)

**Weight:** < 10% weight increase

**Assembly Time:** < 30 sec to attach components

## CONCLUSION

### Accomplished

- Designed a multi-purpose adaptor that meets unmet user needs

### Innovation & Impact

- All unique features present on one device
- User can overcome difficulties of carrying around cane

## SOLUTION

1

### SNAPPABLE BASE

Main component. Attaches to cane. Made by PLA.



### ARMS

PLA hooks that grab onto doors, stalls, etc.

2

3

### VELCRO

Attaches & holds flashlight to base



## TESTING RESULTS

### BASE ATTACHMENT TEST: PASS ✓

- **Objective:** Ensure no translation of base when attached
- **Passing Criteria:** < 1 mm movement after 1 min of use

### ARM WEIGHT BEARING TEST: PASS ✓

- **Objective:** Ensure arms can withstand weight forces without separating from base
- **Passing Criteria:** arms withstand > 50N

### FLASHLIGHT ASSEMBLY TEST: FAIL ✗

- **Objective:** Ensure no translation / slippage of flashlight when secured to base and in use
- **Passing Criteria:** < 1 mm after 1 min

### ASSEMBLY TEST: PASS ✓

- **Objective:** Ensure adaptor is user-friendly and easily attached
- **Passing Criteria:** < 30 sec assembly time

### DROP TEST: PASS ✓

- **Objective:** Ensure adaptor can withstand falling from a certain height
- **Passing Criteria:** No visible defects > 1m drop

## FUTURE REVISIONS

- Design a built-in flashlight feature for more stable attachment
- Expand to wider population of cane users
- Allow for attachment to various cane diameters

