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ECPE 195

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Assignment 2: Engineering Specifications

**Weighted Comparison Chart**:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Image capture** | **Ease of Use** | **Portable** | **Total** | **Weight** |
| **Image Capture** | 1 | 2 | 2 | 5 | .44 |
| **Ease of Use** | .5 | 1 | .333 | 1.83333 | .16 |
| **Portable** | .5 | 3 | 1 | 4.5 | .4 |

**Visually Impaired Assist device**

Ease of Use (.16)

Image Capture (.44)

Portable (.4)

Objects in Motion (.45)

Still objects (.3)

Low distortion (.25)

Simple Voice Commands (.45)

Audio signals/TTS (.35)

Touch warnings (vibration) (.2)

Battery Powered (.45)

Lightweight (.2)

Ergonomic (.2)

Weatherproof (.2)

**Engineering Specifications**:

Detect objects in motion - 1 Battery powered - 2 Portable - 3

Detect still objects - 4 Operate day & night - 5 Lightweight - 6

Low distortion - 7 Ergonomic - 8 High Resolution – 9 Long operating time – 10 Durable - 11

|  |  |  |
| --- | --- | --- |
| **Objective** | **Engineering Requirement** | **Justification** |
| 3, 6, 8 | System weight must not exceed 8 pounds | Laptops may range in weight from approximately 2 pounds up to 8 lbs |
| 1, 4, 5, 7, 9 | See cars, animals/pets, and people while moving | Identify potential obstacles that could injure our user |
| 4, 5, 9, 10 | Must be able to operate day and night | People need to see at night as much as during the day (15 million+ work night shifts) |
| 2, 10, 11 | Last all day when turned on | Contact lenses last from 8 to 12 hours |
| 1, 4, 7, 9 | Wide peripheral vision | Humans have an FOV of 135 degrees |
| 5, 7, 9, 10, 11 | Will work in bad weather conditions | The US receives an average of 30.28 inches of precipitation per year |

**Sources:**

<https://ranklaptop.com/how-much-does-the-average-laptop-weigh/>

<https://www.allaboutvision.com/contacts/faq/contacts-wear-time/>

<https://www.apa.org/monitor/2011/01/night-work>

<https://whatis.techtarget.com/definition/field-of-view-FOV>

https://www.ncdc.noaa.gov/sotc/national/202013