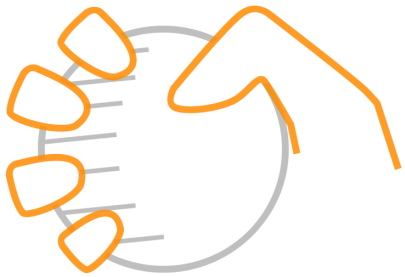
Design of Assistive Mouse

Notes :

Design Theory

Cylindrical and spherical hold are two types of prehensile hold that give way to different possible utility options. Cylindrical mouse design is suggestible for an identified single hand user. Where as, if there is a need of using both hands to control the mouse, a derivative of spherically shaped mouse can be adapted. The design of the mouse depends on various factors like grip, flexibility of the finger and keystrokes. A study of hand anatomy through sculpting is necessary to determine the above said factors.

Keystroke are the position for placing where various electronic modules that are suitable for controlling the left/right clicks and pointers .Modules like track balls, joy stick, thumb slide joystick can be used for controlling the pointer. The modules like touch sensor, push button switch with rubber pads can be used for left and right click. Mobile vibrator motors can be used to give a haptic feed back when using modules such as touch sensors.



Spherical Hold

Cylindrical Hold

NOTES :

Introduction

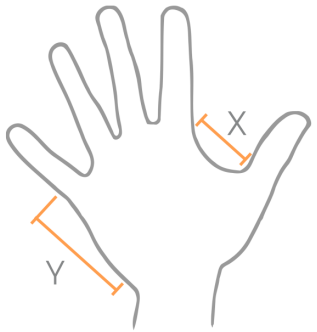
Assistive mouse is an umbrella term for mouse designs that assists Persons with Disabilities(PwDs). Even though we have many mouse designs, PwDs faces difficulty by trying to adapt with the normal mouse, as there is need for customization in the design.

The article focuses on the method to design an Assistive Mouse. An assistive mouse is in turn a mouse that mutates the design, shape and function from the traditional mouse design. Also the ergonomics of the mouse that are most suitable for the users depends upon the functional anatomy of the user's hand, finger flexibility to clench an object, pronation of the hand and Keystrokes. Various iterations have to be made to create a suitable device for the user , therefore 3D printers are the most viable rapid manufacturing machine that is reliable. Customized development of such mouse is cost efficient and by using FOSS tools one could ensure accessibility for a wider audience.

Notes :

Steps to follow

Produce the clay in spherical and cylindrical shape in the required diameter. The shortest distance between bottom of the index finger and the thumb is the approximate radius of the cylindrical hold ("x" as shown in the figure).The three forth of the distance of the palm is taken as the diameter of the spherical hold ("y" as shown in the figure). The spherical and cylindrical size of the clay will determine the keystrokes of the finger.



Hand

Clench the clay gently, so as to get the imprint of the keystrokes. Identify the pressure areas of the keystroke and mark the points. Make the required extra projections and omissions that are suitable for both the button and the joystick (optional). Ambiguity in choosing the places to add and remove material result in better design and viability. Allot the joystick position to the finger that is comparatively flexible and power inducable (usually thumb).

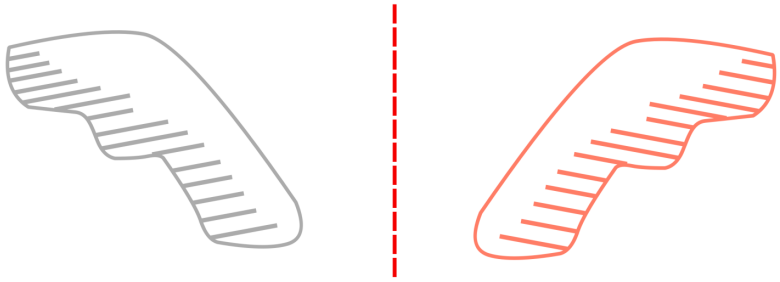
Keystroke Area

Projected Area

Notes :

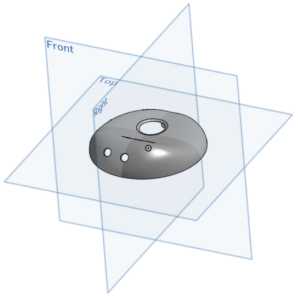
Steps to follow

Slice the clay in two similar halves, so that the designing and the assembly will be easy. Take all the measurements using vernier callipers. Slice the clay to get the cross section in equal distance, to get the cross section. Use a 3D software to draw it.



Object Mirror

Data sheet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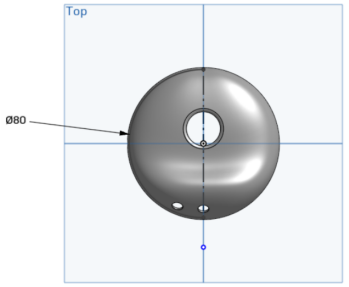
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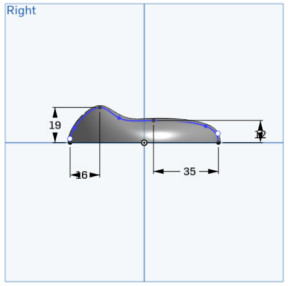
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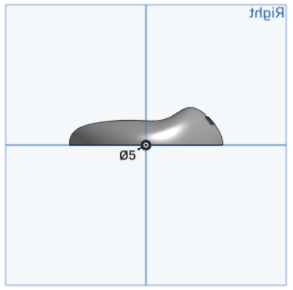
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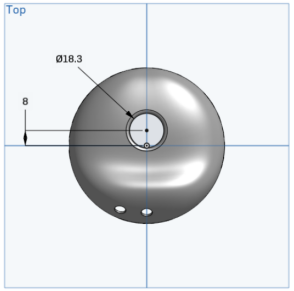
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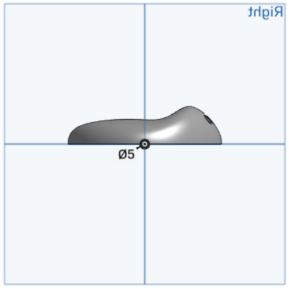
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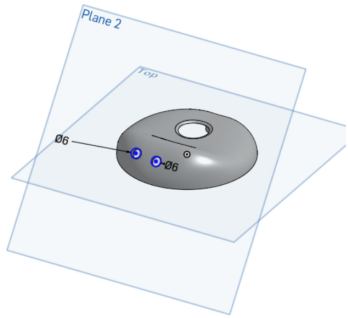
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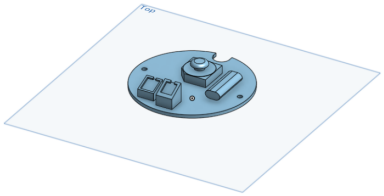
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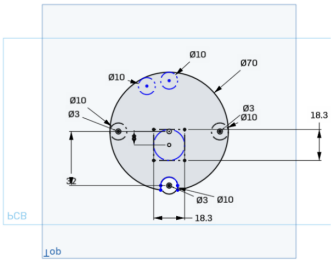
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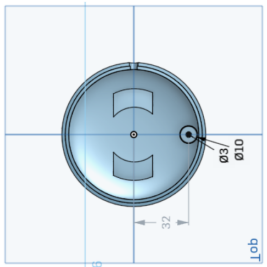
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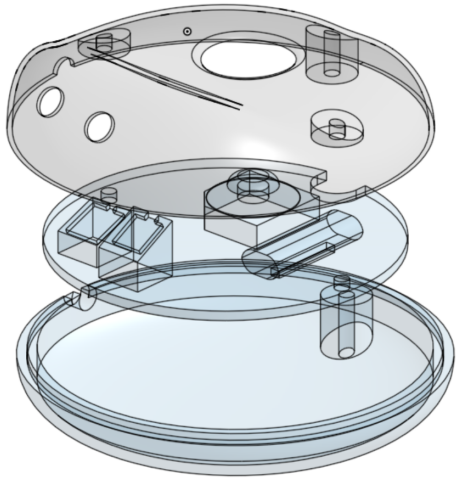

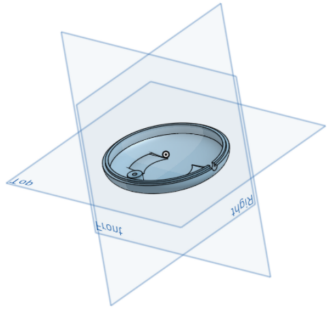
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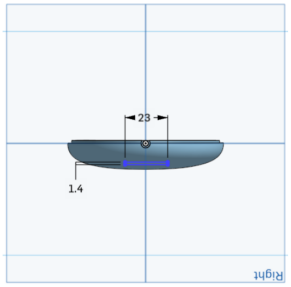
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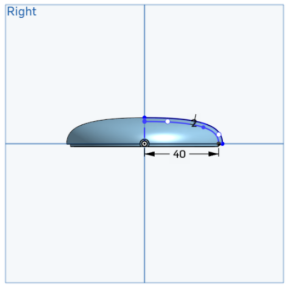
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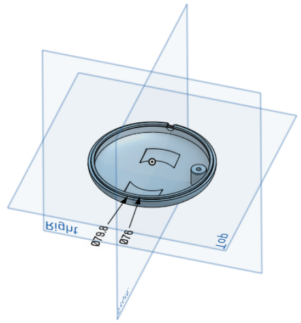
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T Slide Mouse