

Advisors:

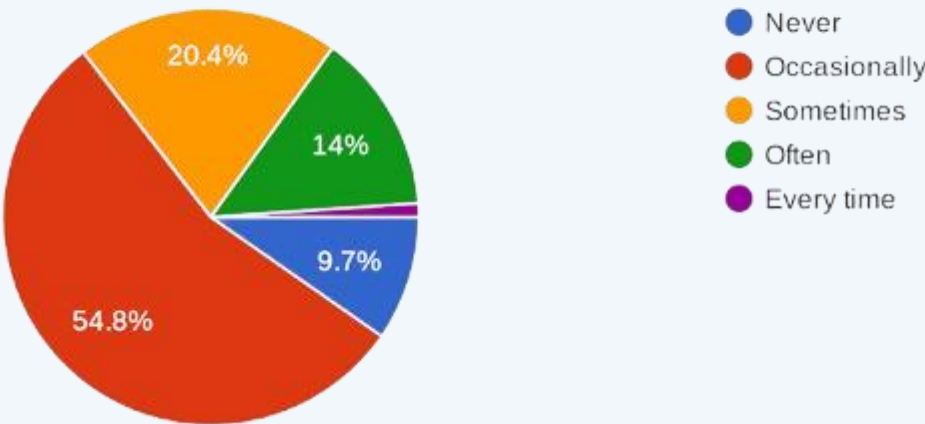
Chris Wells - Owner, Solidified 3d
Jacob Verbanas - Engineer, DEDC
Jacek Fedorynski - Creator, Youtuber

Enhancing 3D CAD Navigation



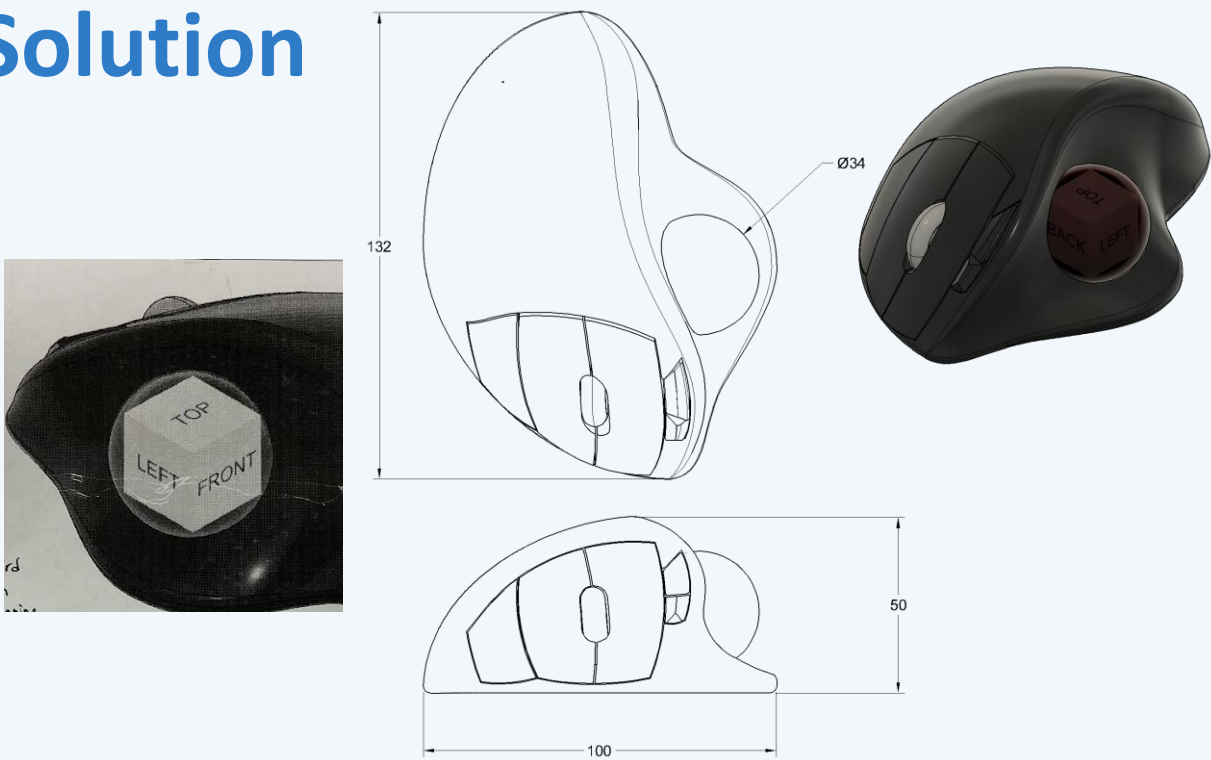
Problem

How often have you found navigation (orbiting, panning) in CAD to be inefficient or inconvenient
93 responses



- In CAD software, **2D mouse** input does not allow proper control of an object in **3D space**, creating **inefficiencies** for CAD users.
- Alternative solutions such as the *SpaceMouse*™ are **expensive** and have **shortfalls** in **efficiency** and **intuitiveness**^{1,2}

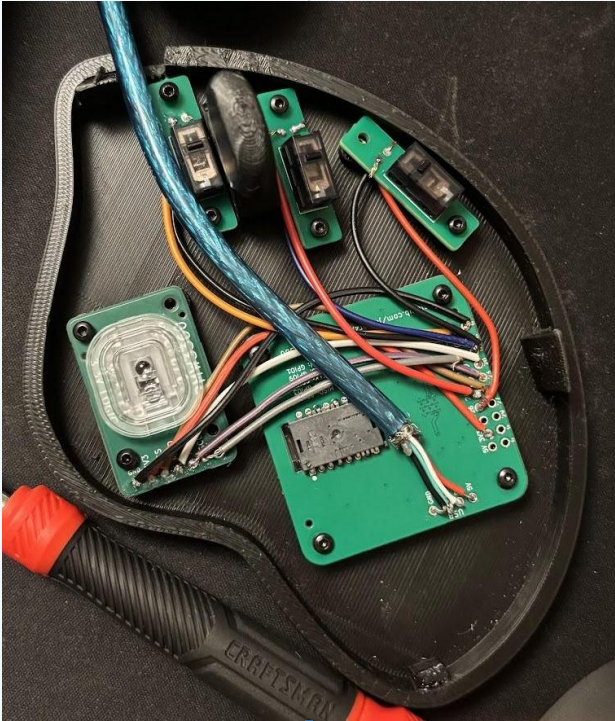
Solution



- Unlike a regular trackball, this device lets you rotate a 3D model in all directions thanks to a **novel** double optical sensor arrangement, not just in two dimensions.
- 6 degrees of freedom** mean you can inspect and manipulate complex designs more naturally, almost as if you were **holding the model in your hands**.
- Maintains traditional mouse behavior for use outside of CAD

Prototyping

Item	Qty	Vendor	Cost
Main PCB	1	JLPCB	\$24.96
Auxiliary PCB	1	JLPCB	\$16.15
Mouse button mount PCB	3	JLPCB	\$3.50
Optical sensor (PixArt PMW3360)	3	Aliexpress	\$12.38
Mouse switches (Kailh GM08)	3	Aliexpress	\$0.99
Scroll encoder (Kailh 8mm)	1	Aliexpress	\$0.92
POM bearing balls	3	Aliexpress	\$3.01
USB type A cable	1	Already have	free
M3x4 machine screws	4	Lowes	\$2.48
M2x4 machine screws	14	Already have	free
Insulated copper wire (2 gage)	6	Already have	free
Trackball (34mm)	1	Amazon	\$11.99



¹https://www.reddit.com/r/Fusion360/comments/125x94r/space_mouse_worth_it/

²<https://forum.parallels.com/threads/poor-mouse-performance-in-autocad.32596/>

*All units in millimeters (mm)