Effects of Computer Mouse Lift-off Distance Setting in Mouse Lifting Action

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Preview Presentation

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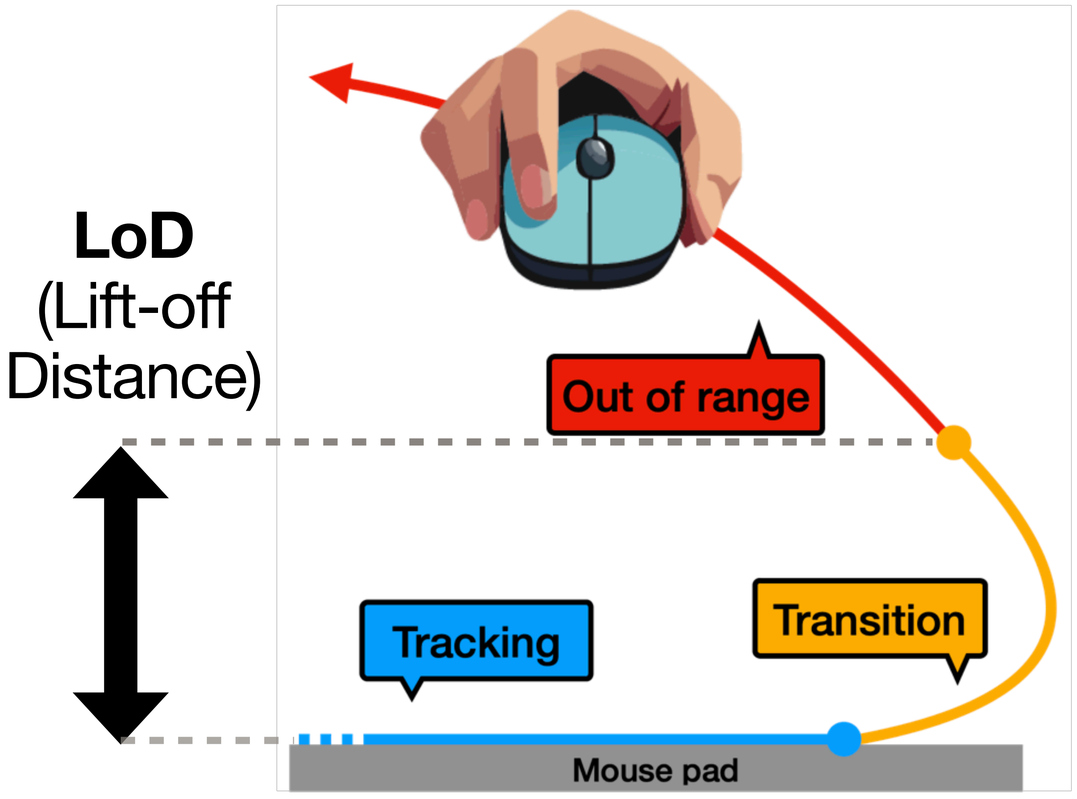
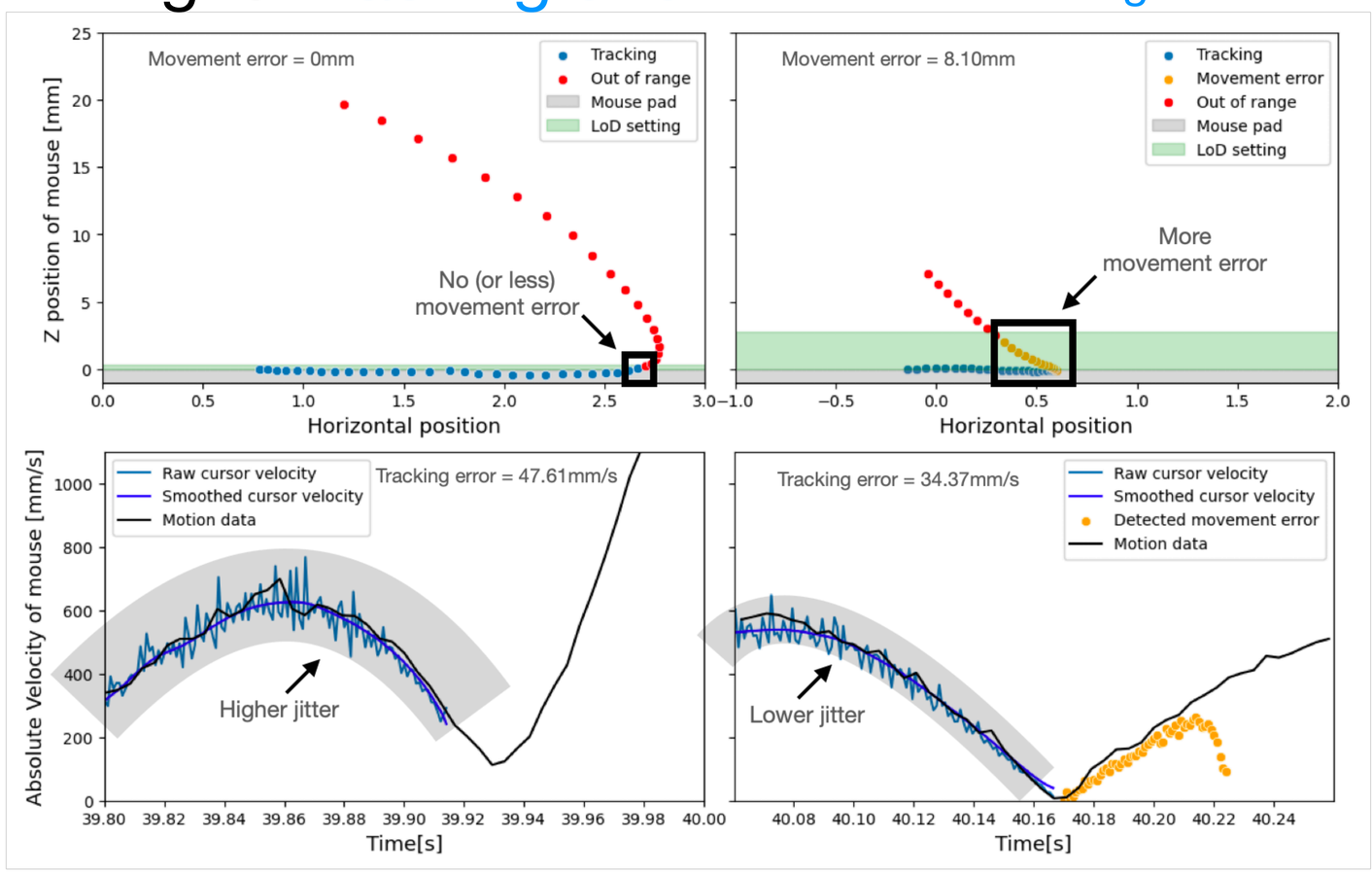
When adjusting the **Lift-off Distance(LoD)** for a mouse, there is a **trade-off** between tracking accuracy and movement error.

Lift-off Distance(LoD) is the height at which a mouse sensor stop tracking.



<Low LoD setting>
Less movement error
Higher tracking error

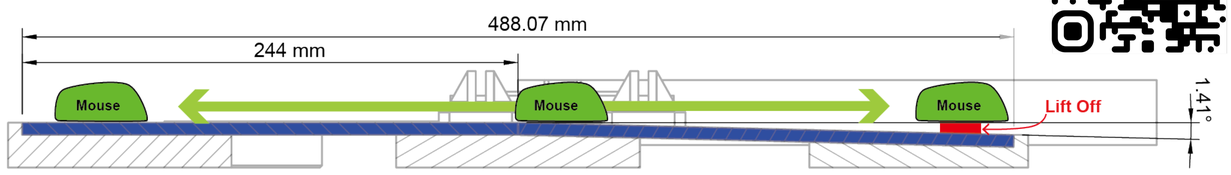
<High LoD setting>
More movement error
Lower tracking error

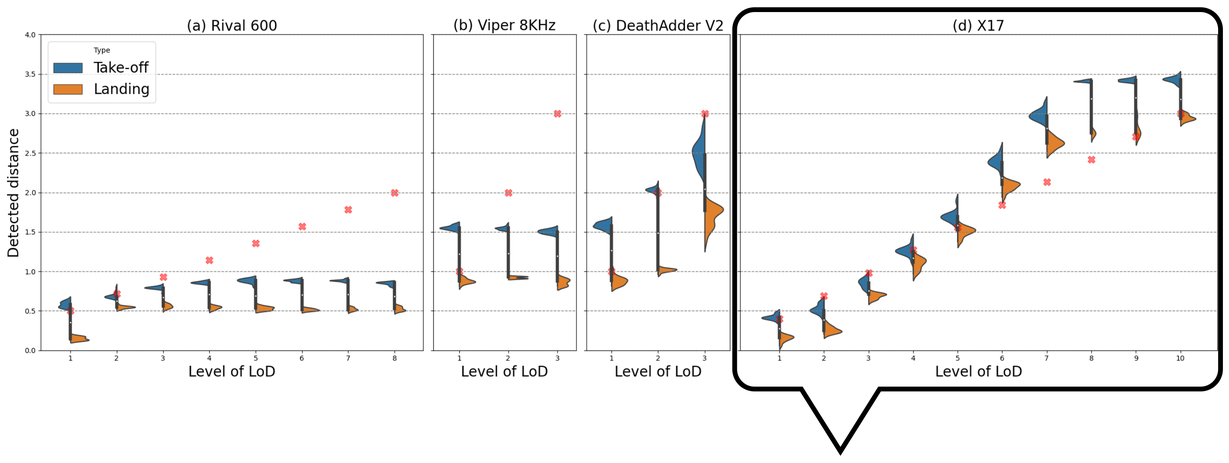


Results

LoD Measurement and Sensor Validation

Video figure





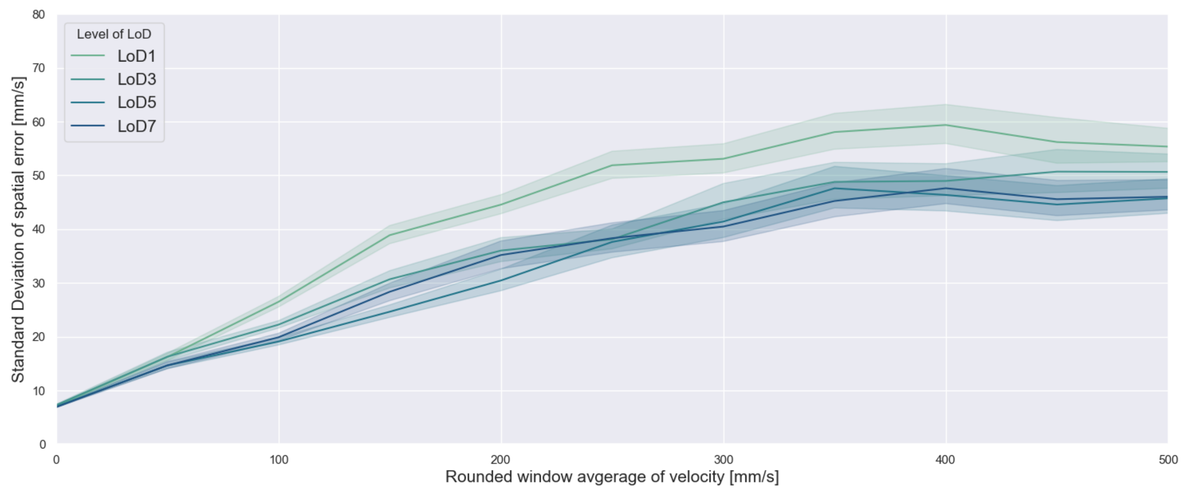
Level of LoD setting	1	2	3	4	5	6	7	8	9	10
Claimed LoD (mm)	0.4	0.69	0.98	1.27	1.56	1.84	2.13	2.42	2.71	3.0
Measured LoD (mm)	0.29	0.39	0.77	1.18	1.60	2.23	2.80	3.09	3.11	3.19

LoD Perception Test (ISO 4120:2021 triangle test)

Compared setting level	1 & 3	3 & 5	5 & 7	1 & 5	3 & 7	1 & 7
Difference of LoD (mm)	0.48	0.83	1.20	1.31	2.03	2.51
Correct response (N)	11	10	6	18	16	16
α-risk	0.2	-	-	0.001	0.001	0.001

Target Click Test

Tracking error



Unintended movement error