

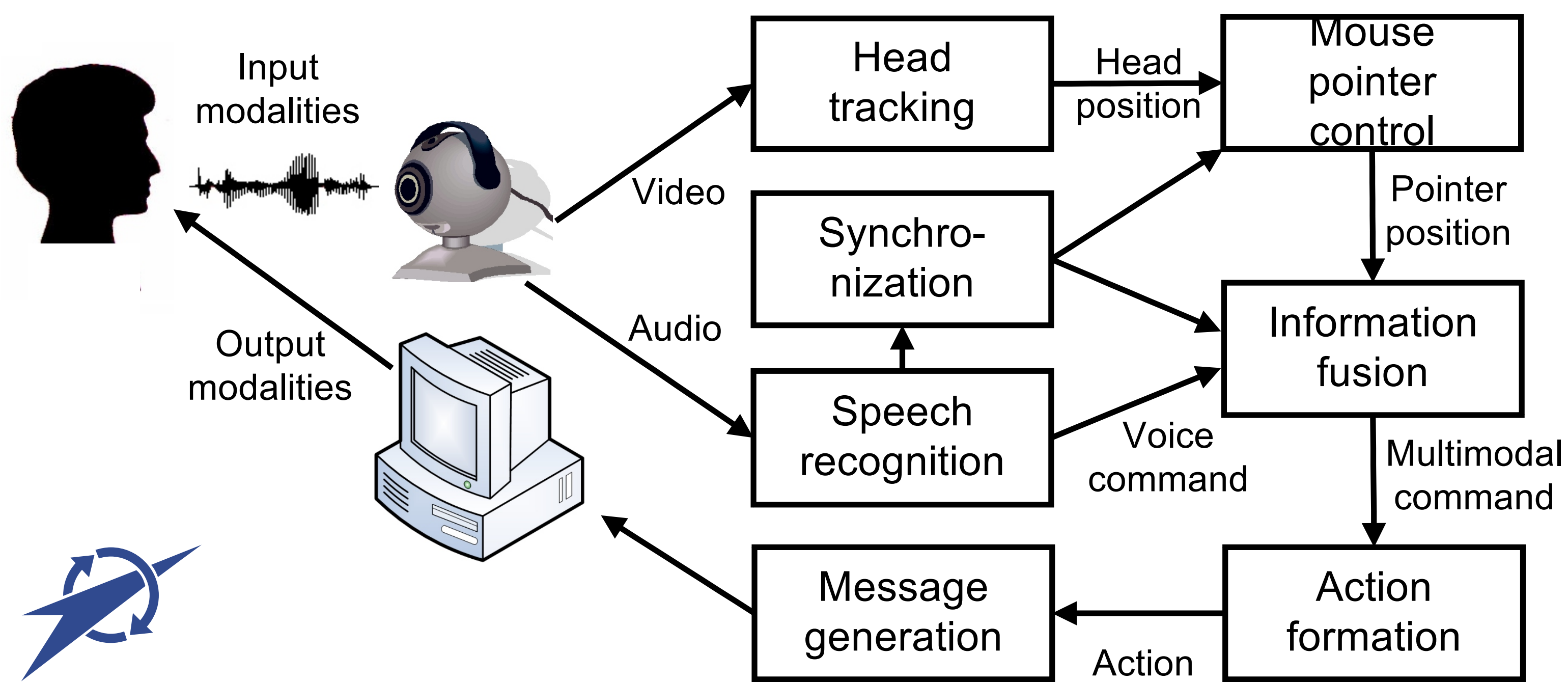
# COMPARISON OF TWO DIFFERENT SIMILAR SPEECH & GESTURES MULTIMODAL INTERFACES

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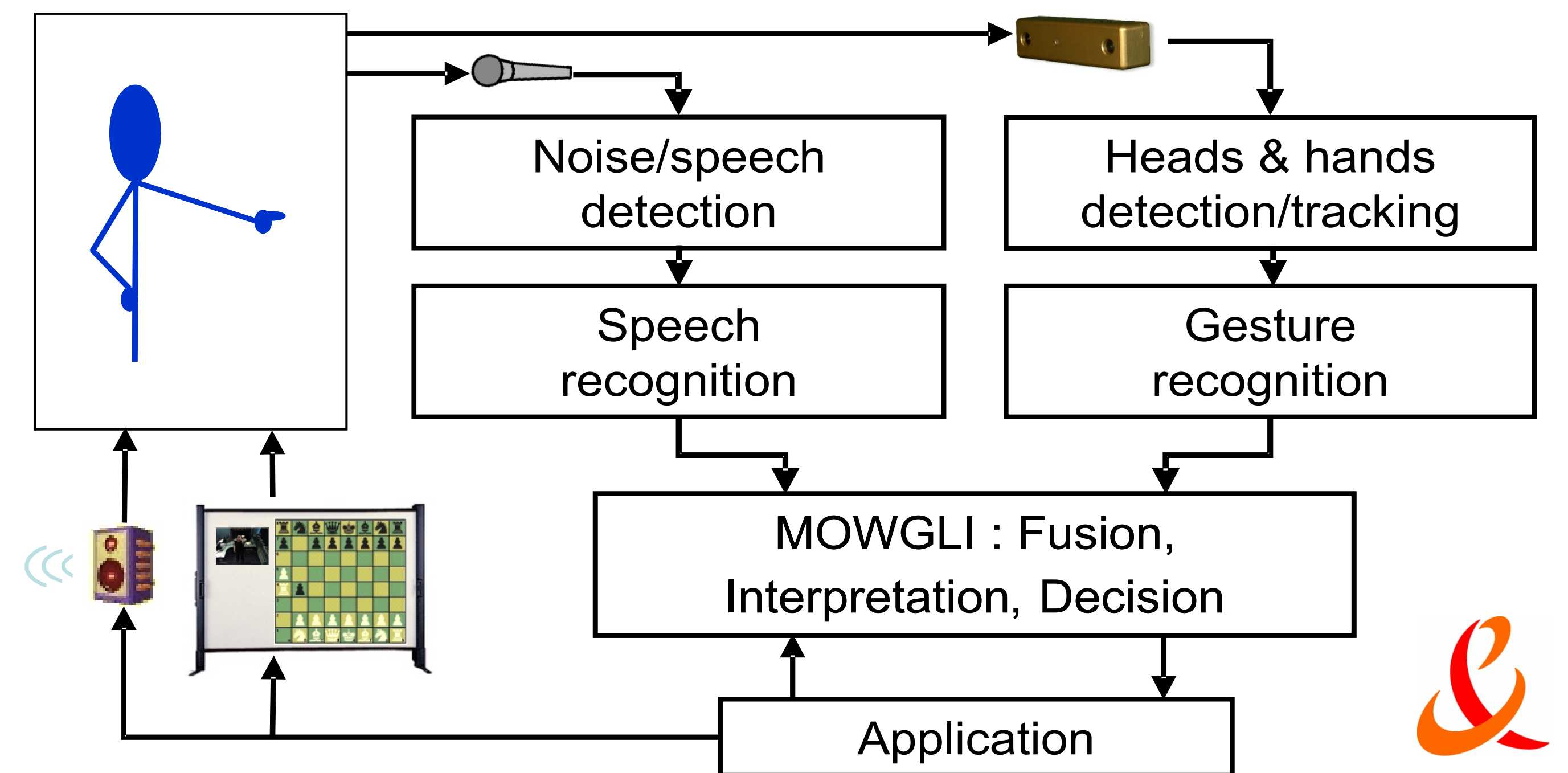
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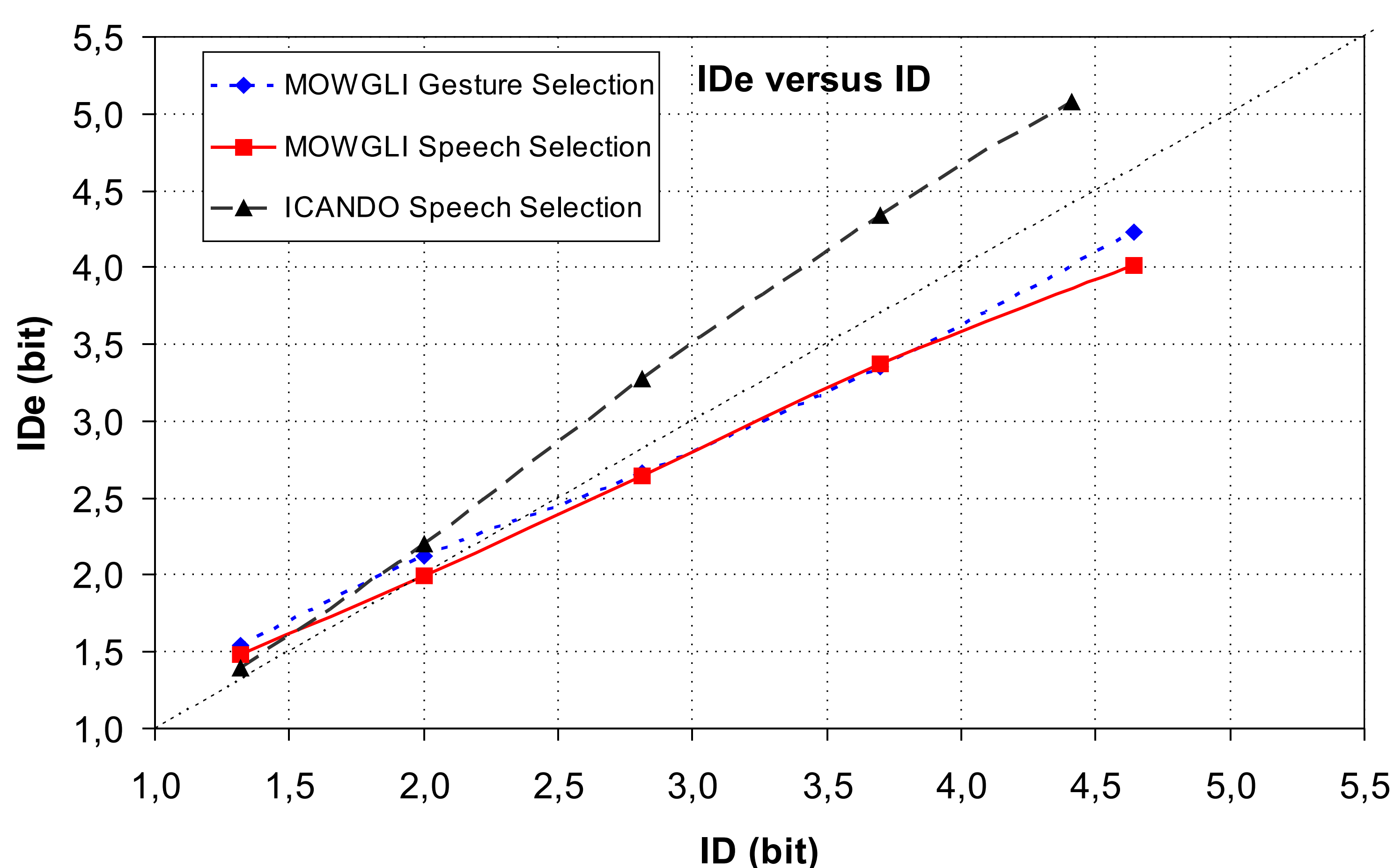
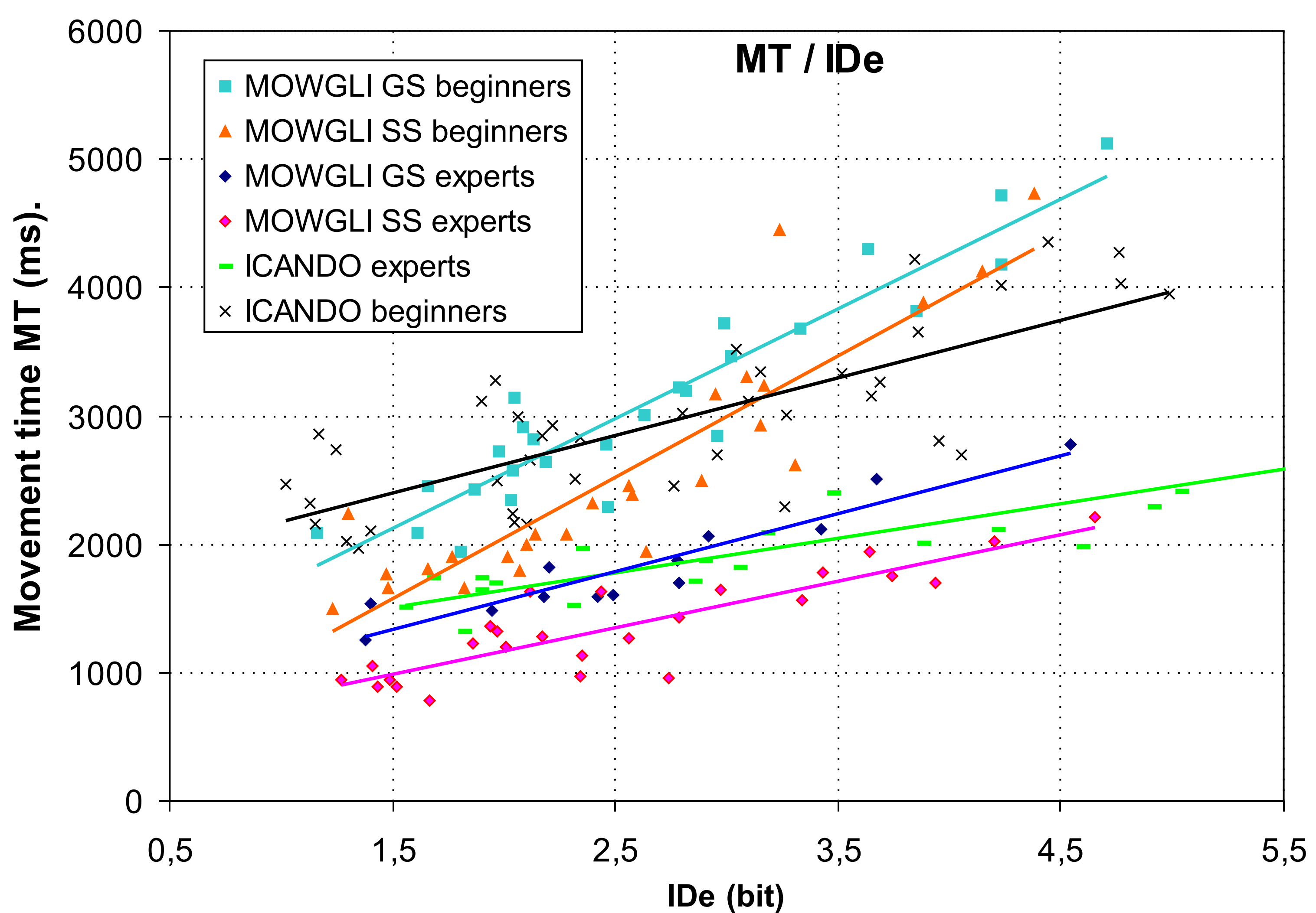
## Intellectual Computer Assistant for Disabled Operators



## Multimodal Oral With Gesture Large display Interface



Fitt's law experiments: Effective Index of Difficulty  $IDE = \log_2 \left( \frac{De}{We} + 1 \right)$ ; Throughput  $TPE = IDE / MT$



- 16 different round targets with a circular layout
- Subjects had to point and select the targets as quickly as possible with several pointing devices
- 6 users for evaluation of the contact-based devices

Input device	W (pixel)	D (pixel)	MT (s)	Selection Error (%)	TPE (bit/s)
Joystick	32-128	96-650	2.17	7.53	1.49
Trackball			1.12	4.07	3.36
Touchpad			0.98	4.36	3.55
Mouse			0.44	3.03	6.50
Touchscreen			0.48	6.30	7.42
ICANDO (2 experts)			1.98	7.33	1.59
ICANDO (4 beginners)	32-256	96-768	2.95	12.11	0.91
ICANDO (all 6 testers)			2.63	10.51	1.14
MOWGLI GS (2 experts)			1.66	9.18	1.48
MOWGLI GS (6 beginners)			2.69	17.08	0.95
MOWGLI GS (all 10 testers)			2.32	14.57	1.12
MOWGLI SS (2 experts)			1.43	12.55	1.84
MOWGLI SS (6 beginners)	32-256	96-768	2.69	19.32	1.03
MOWGLI SS (all 10 testers)			2.03	17.79	1.26