传统视觉传感器

1st solid-state imagers (Honeywell, IBM, ...)

CCD

- Invention of CCD (Bell labs)
- 1st commercial CCD (Panasonic, Sony)
- The 2009 Nobel prize (Boyle & Smith)

CMOS

- 1st commercial MOS Camera (Hitachi)
- Invention of CMOS (Fossum et al.)
- Commercial BSI (JPL, Sony, Omnivision, ...)
- Stacked CIS (ST, Sony, Samsung, ...)

1960 1970 1980 1990 2000 2010 2020 Now

HH Neuron model
1963 Nobel Prize

类脑视觉传感器

感知空间变化

- 1st Silicon retina (Mead et al., Caltech)

感知时间变化
混合RGB

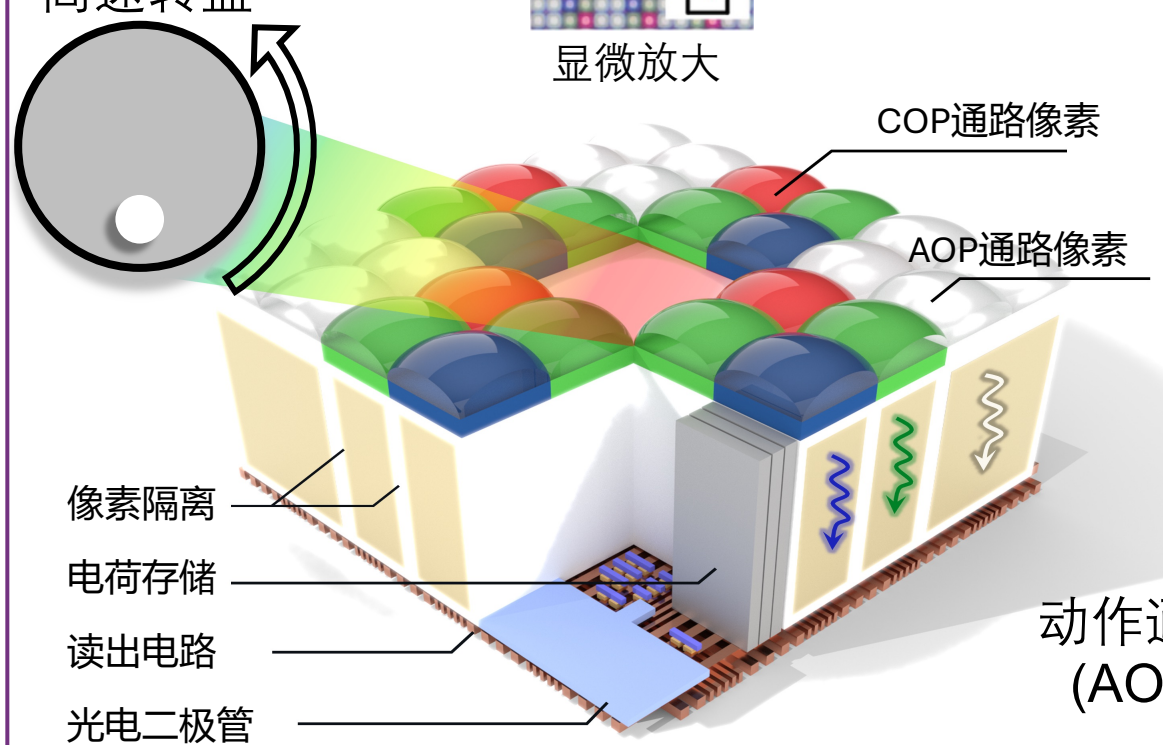
- 1st DVS 2005 (Tobi et al., ETH)
- ATIS 2008 (Posh et al.)
- DAVIS 2013 (Tobi et al., ETH)
- IMX636 (Prophesee and Sony)
- Vidar 2018 (Tiejun et al., PKU)

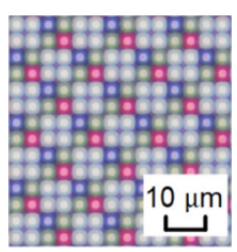
Many progress
ISSCC2023 sony, ov, ...

基于原语的范式

Two-streams hypothesis (1992, David et al.) → Complementary Pathways → Tianmouc 2024 (Luping Shi et al., THU)

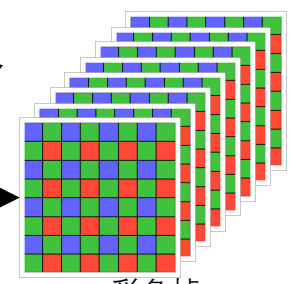
带圆标的
高速转盘



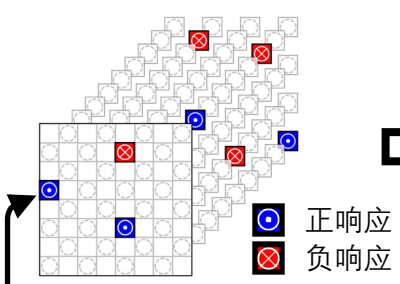


显微放大

认知通路
(COP)

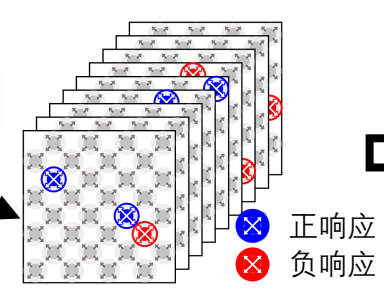
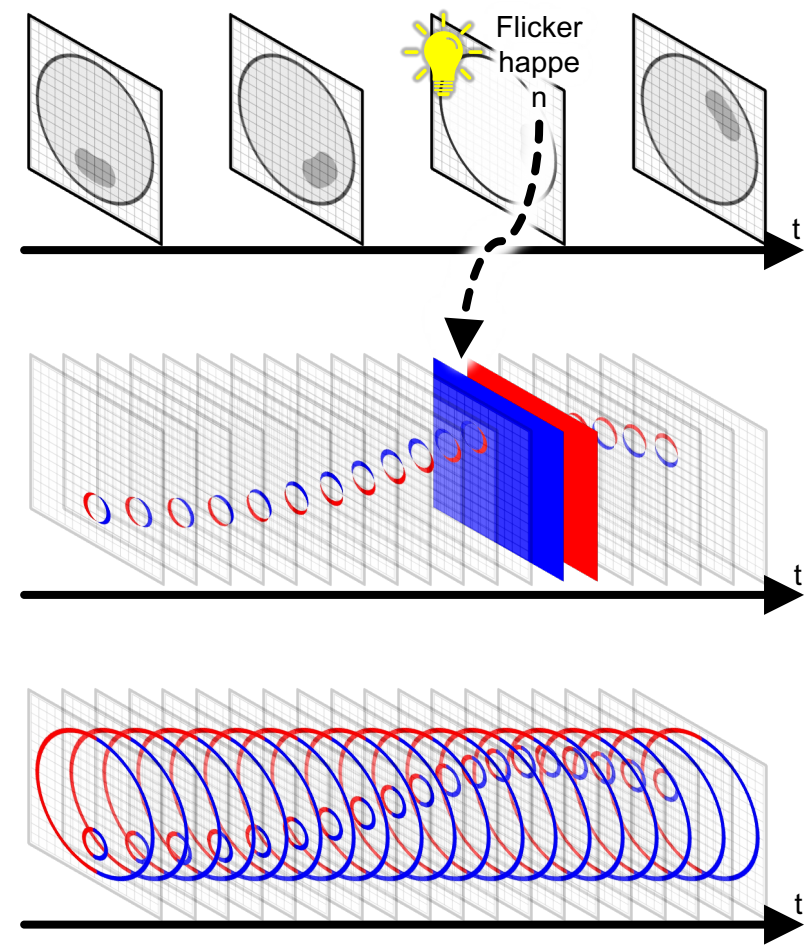


彩色帧



时间差分（TD）

动作通路
(AOP)



空间差分（SD）