# The Human Speechome Project

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ASRU 2007

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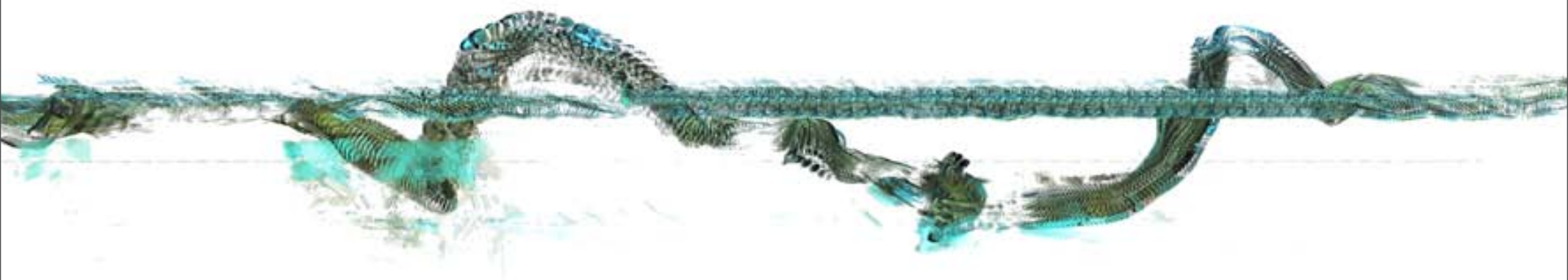
Impact: Illuminate language acquisition, behavioral phenotyping, video search, smart homes, parenting aids, security, retail,...

# Speech in the home

# Speechome

# DATA COLLECTION



A house in the Boston area

# Looking up at the ceiling

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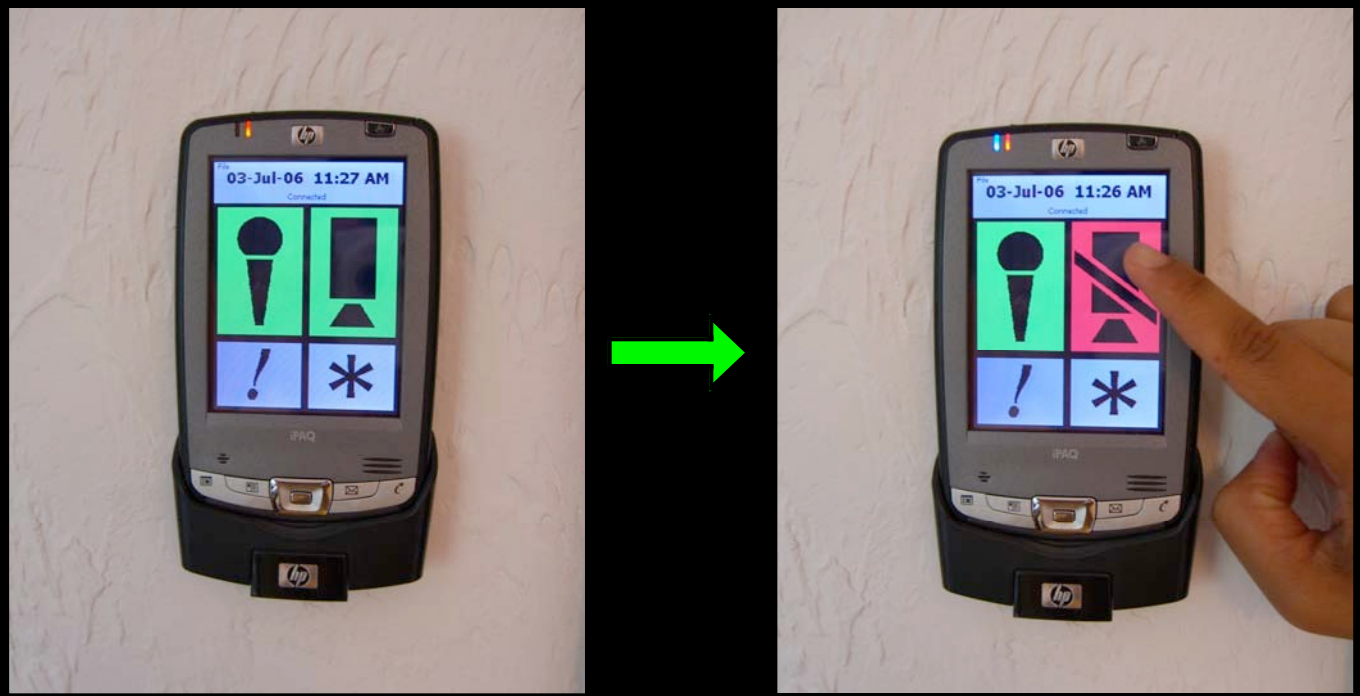
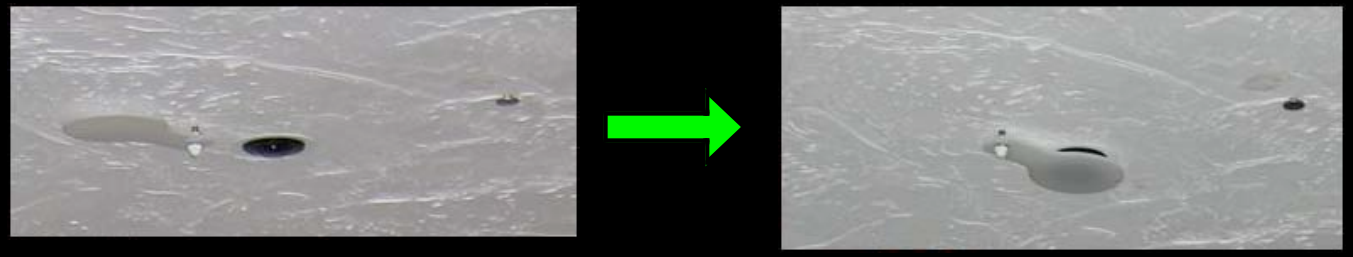
# Recording control system





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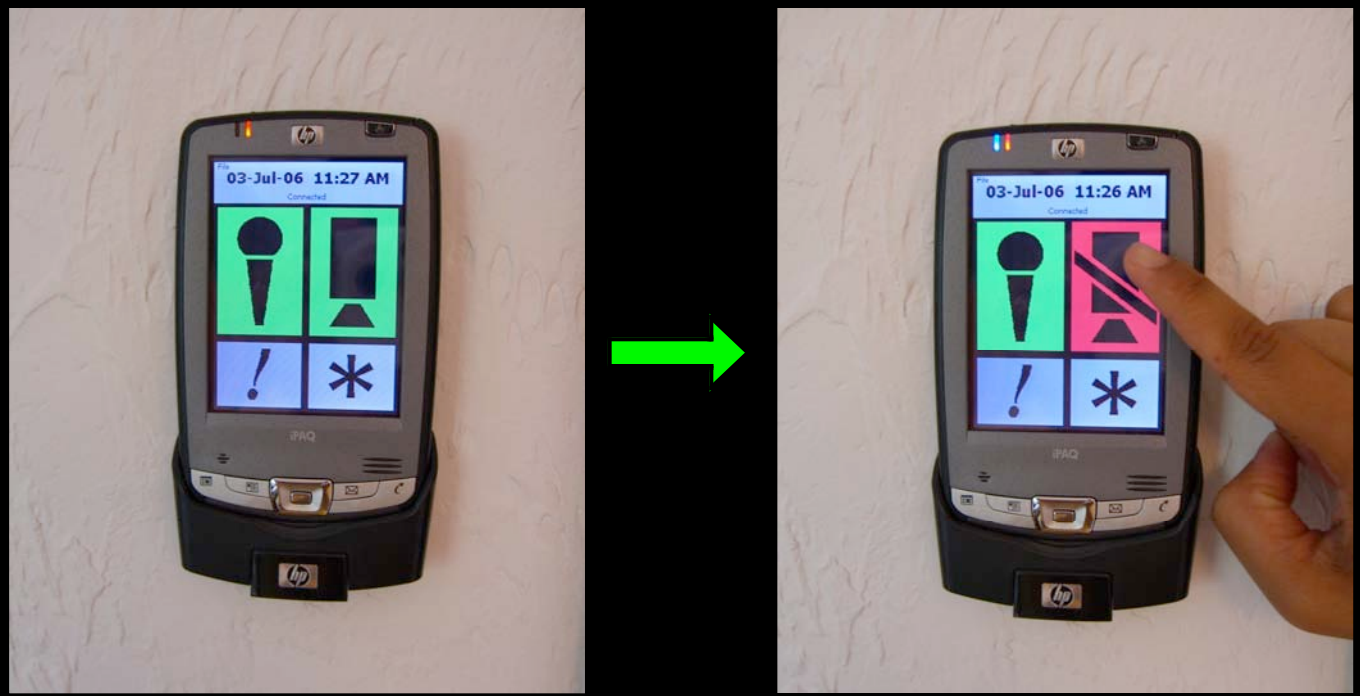
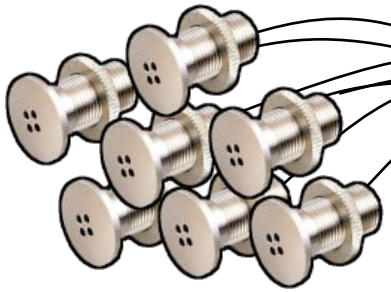
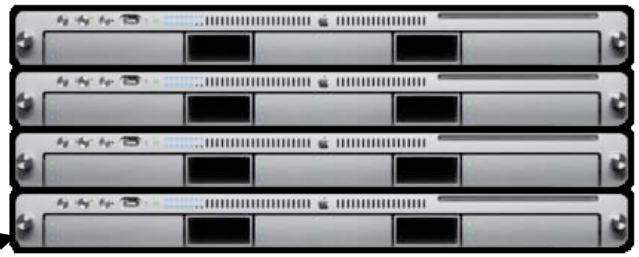


# Recording Infrastructure



14 Microphones

Preamps



Audio/Video Processing

Ethernet

11 Cameras

GbS Ethernet

Control Server

11 PDAs

Wireless Hubs

5TB Raid

# Storage at the Media Lab

250,000 GB capacity

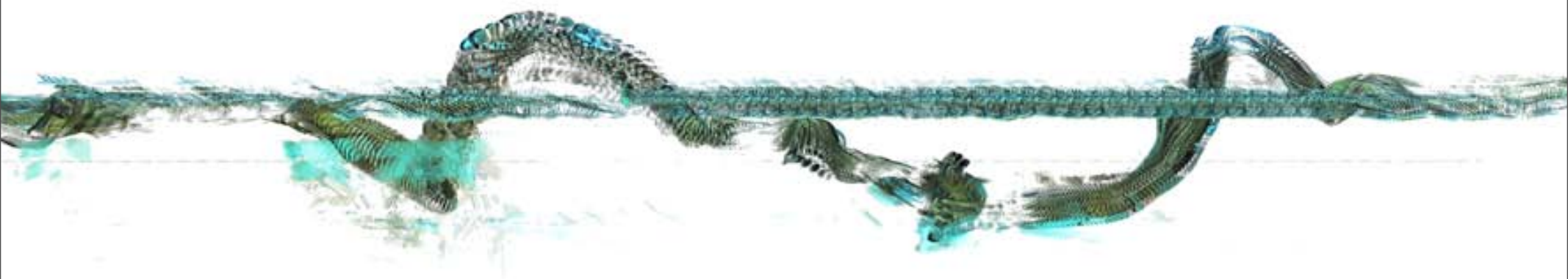
80,000 hrs video

120,000 hrs audio

~2 yrs of recording

48 KHz audio,
1 MP video,
~15 fps

# DATA ANALYSIS



# Tracing the Birth of a Word

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Transcribe all speech heard and produced by child

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Annotate video surrounding all uses of target word

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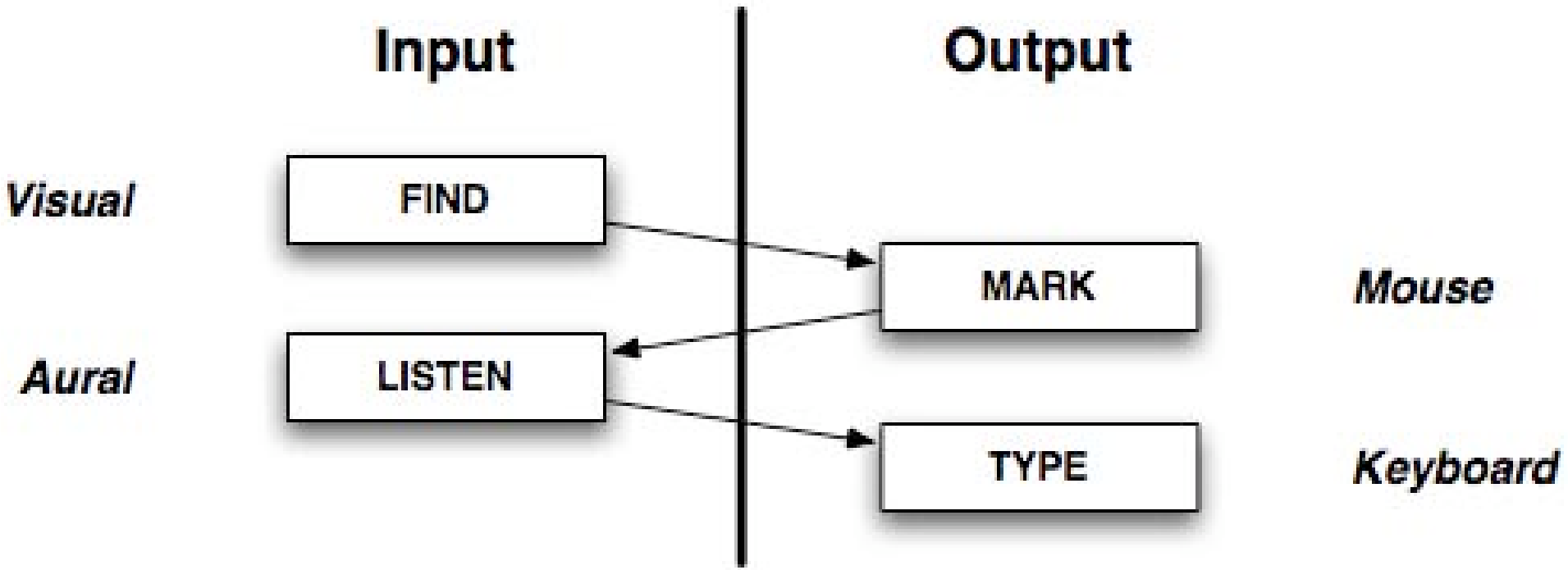
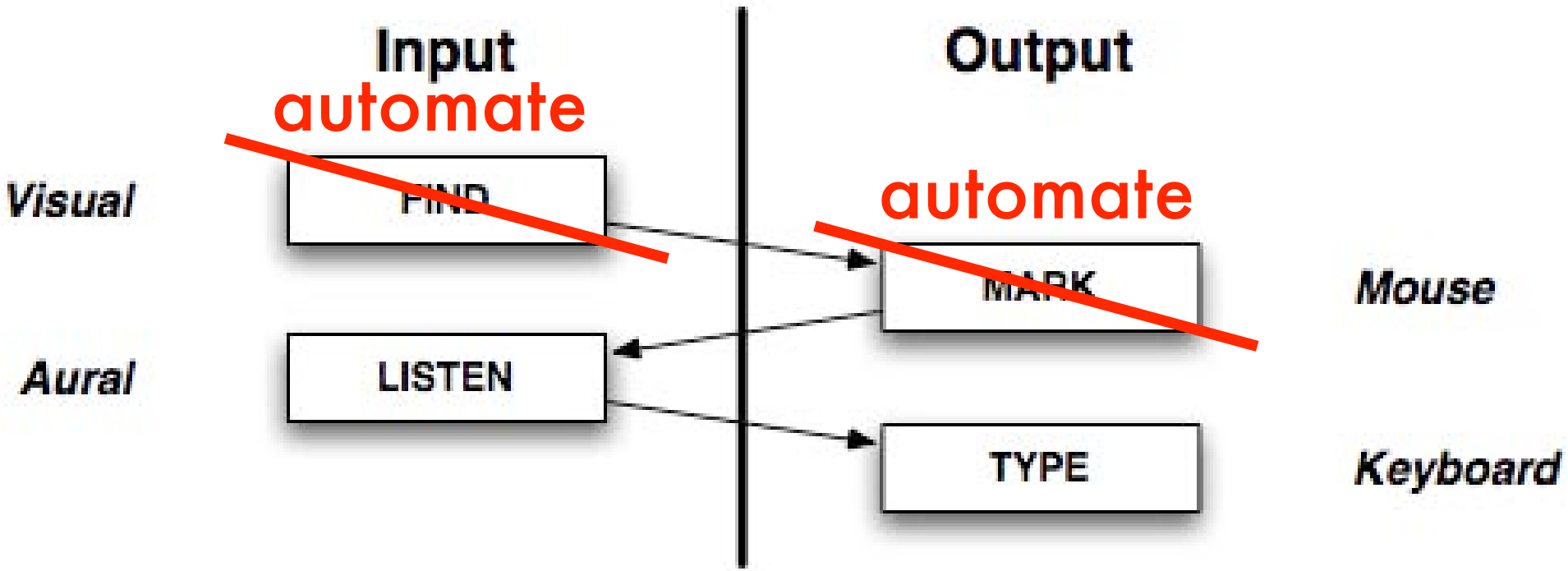
Analyze role of contextual factors in word learning

# Speech Transcription



# Semi-automatic speech transcription



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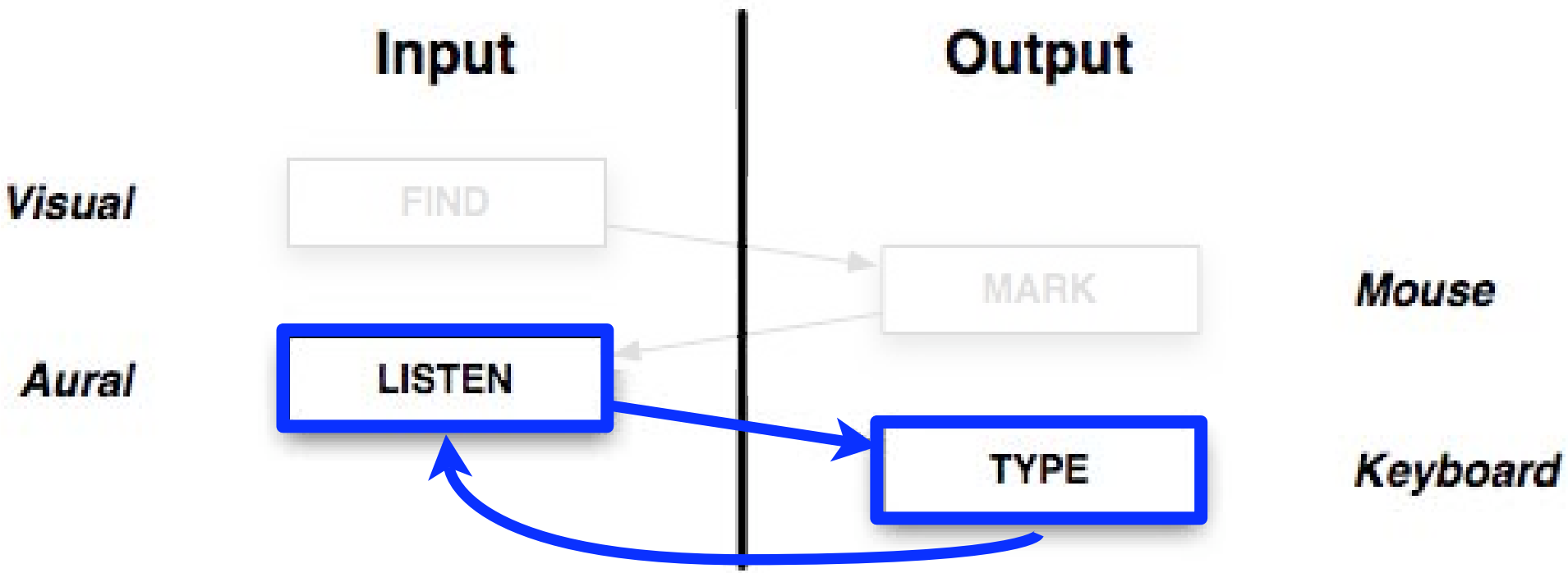

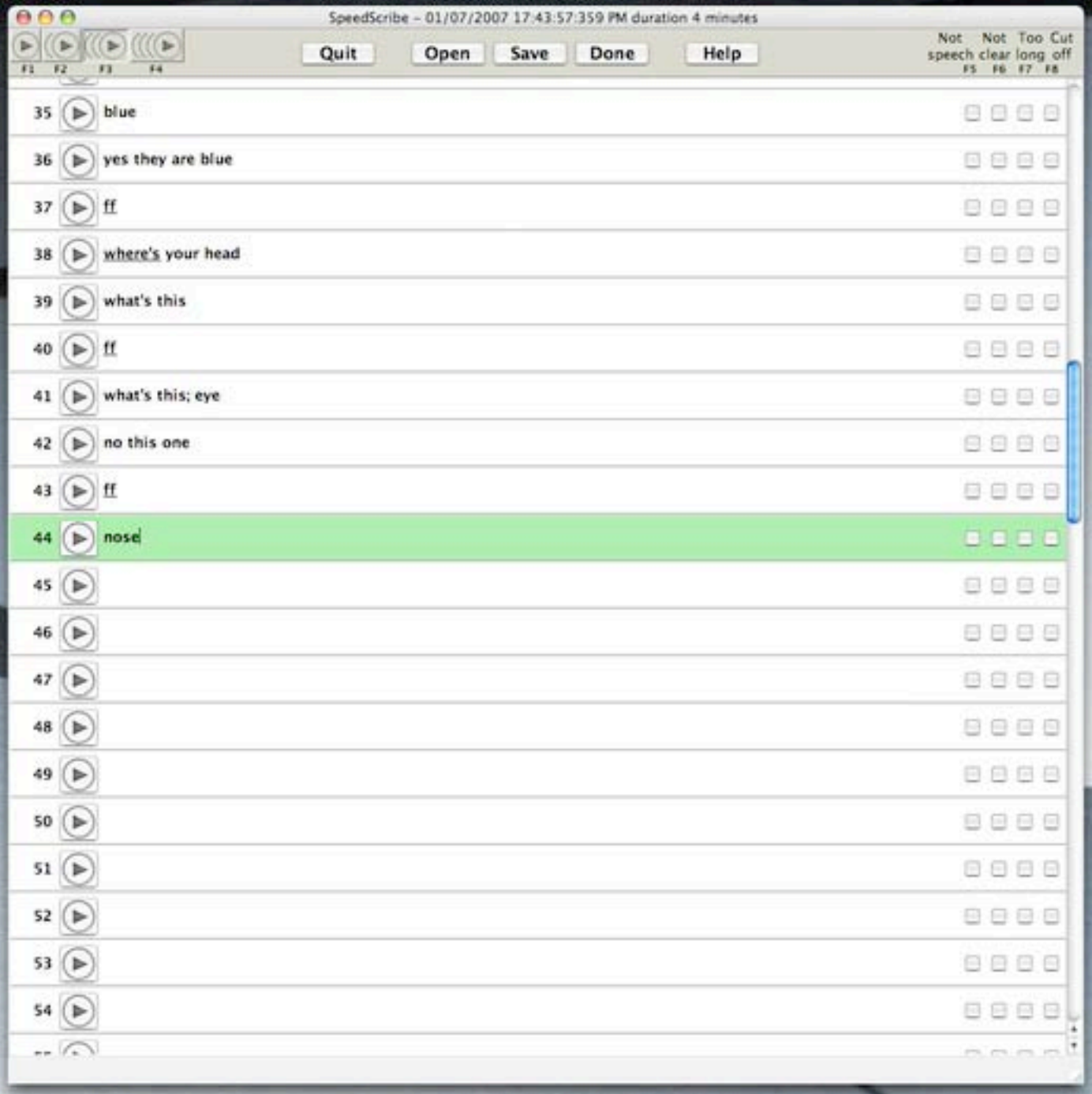
SpeedScribe – 01/07/2007 17:43:57:359 PM duration 4 minutes
F1
F2
F3
F4
Quit
Open
Save
Done
Help
Not speech F5
Not clear F6
Too long F7
Cut off F8
35 blue
36 yes they are blue
37 ff
38 where's your head
39 what's this
40 ff
41 what's this; eye
42 no this one
43 ff
44 nose
45
46
47
48
49
50
51
52
53
54

Evolution of “water”

# Video Annotation

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Tracking algorithms to follow people throughout the house

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Estimate head pose to help determine focus of attention

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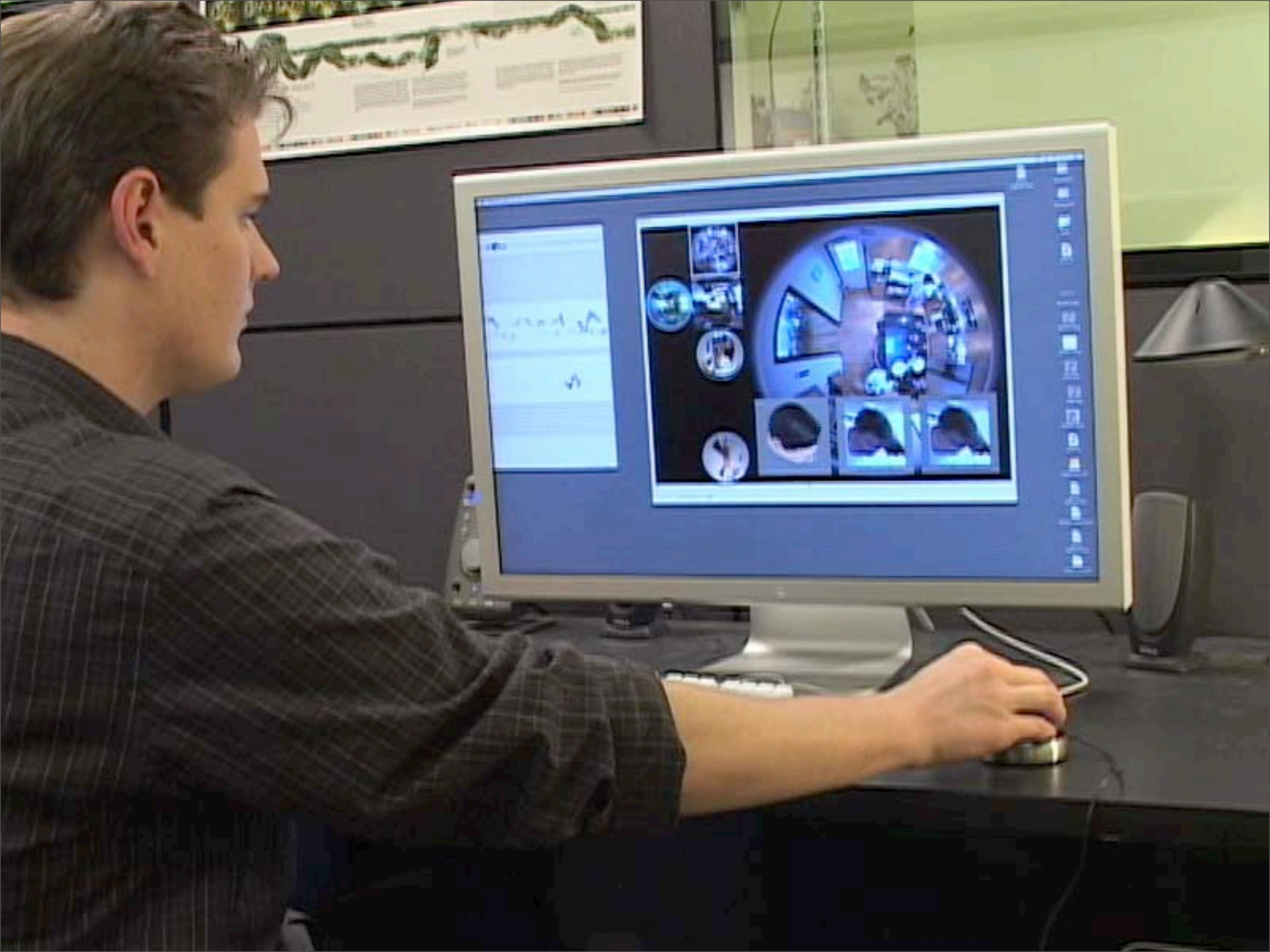
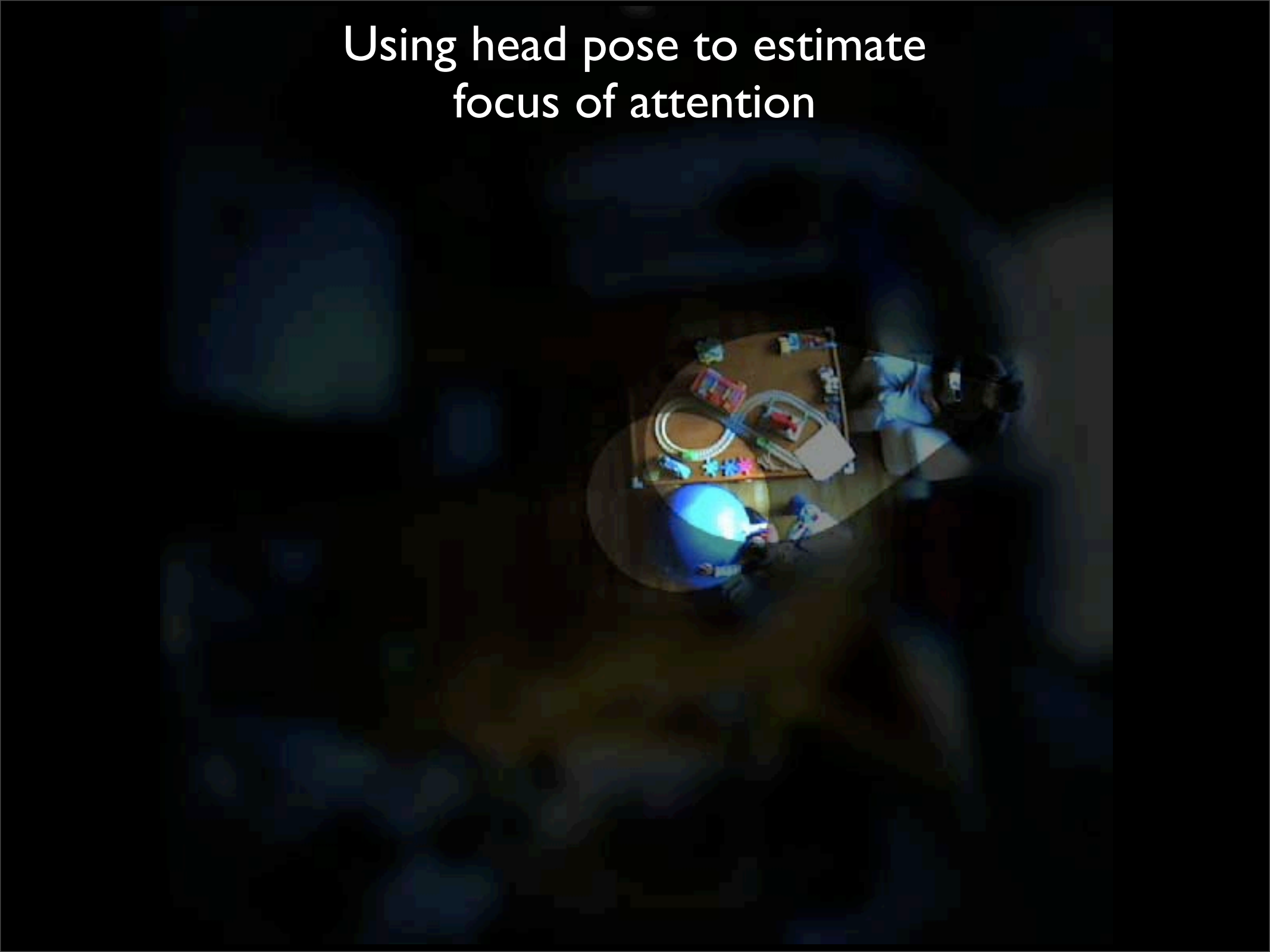
Estimate head pose to help determine focus of attention

Combine automatic and manual methods for tracking and head pose annotation



# Using head pose to estimate focus of attention



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