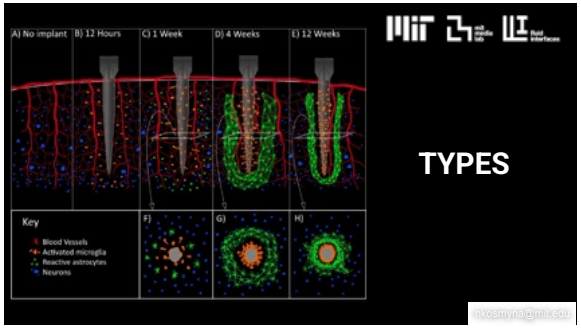
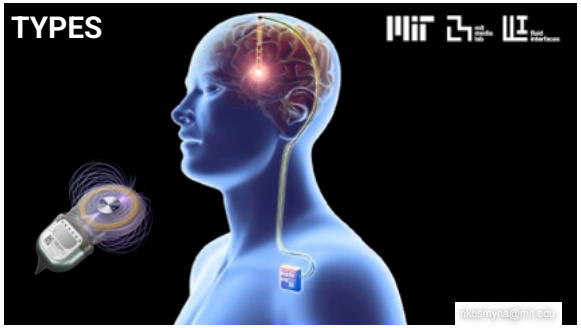
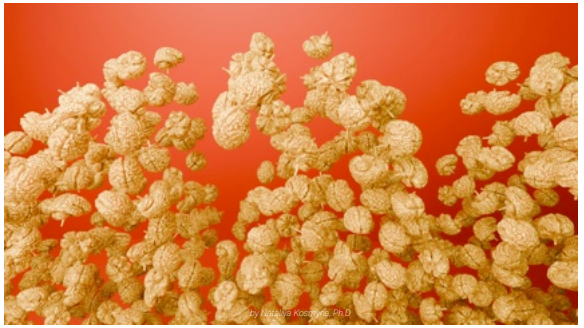
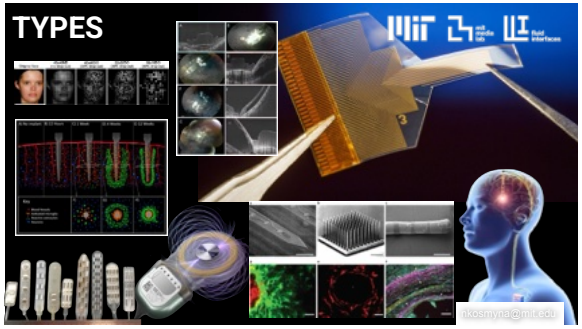
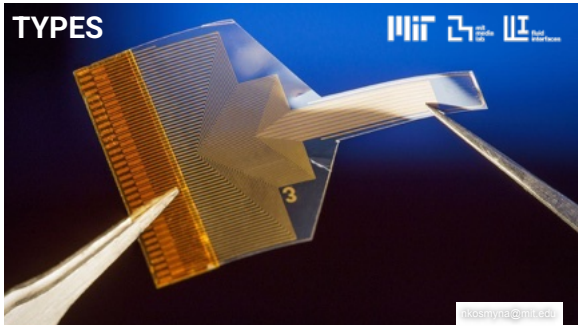

A) No implant
B) 12 Hours
C) 1 Week
D) 4 Weeks
E) 12 Weeks
Key
Blood Vessels
Activated microglia
Reactive astrocytes
Neurons
F)
G)
H)
TYPES

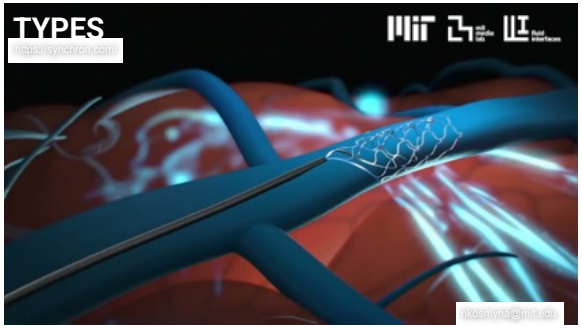

TYPES

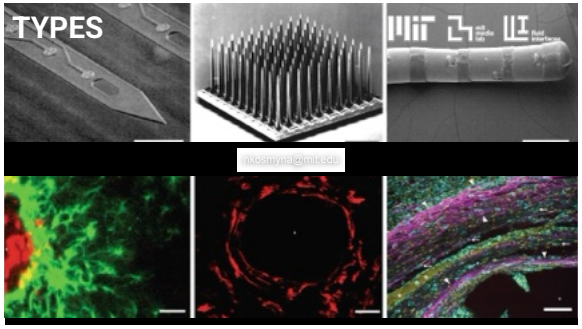


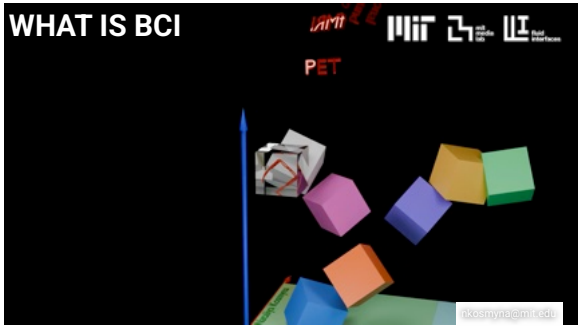

TYPES

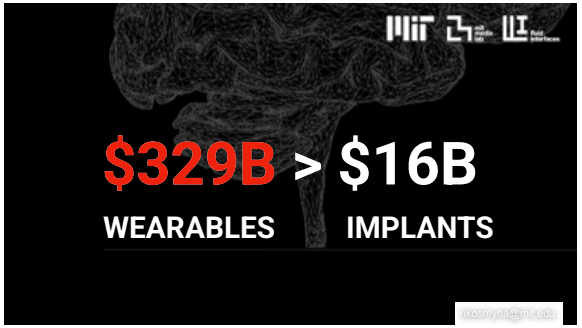

TYPES

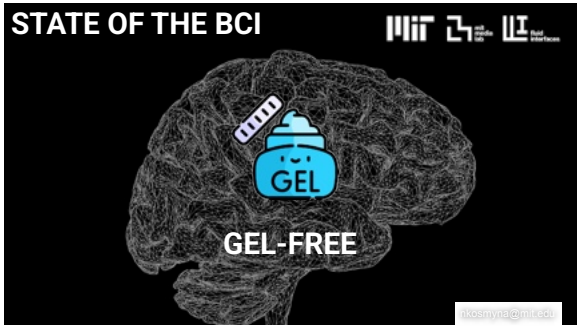

PhD, Grenoble, France
CEO, Braini Corporation
MIT Media Lab, Research Scientist
Visiting Researcher, Google
Advisor, BioTech startups

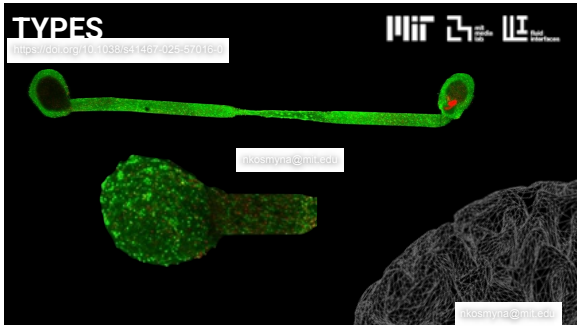

TYPES

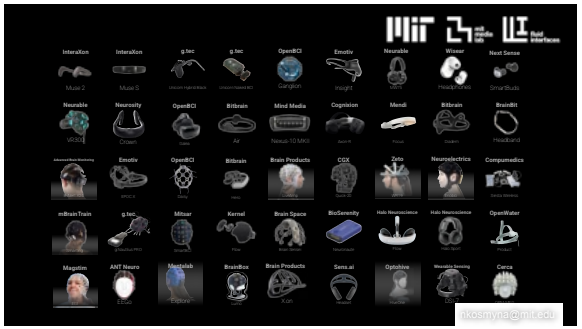

TYPES

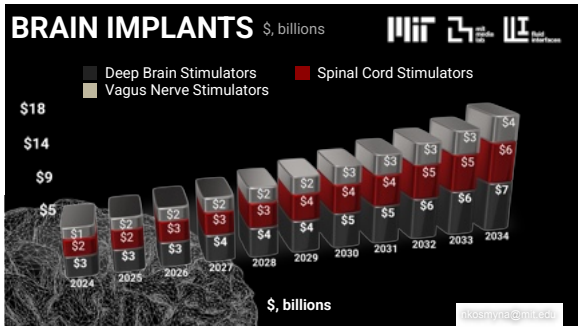

WHAT IS BCI
PET

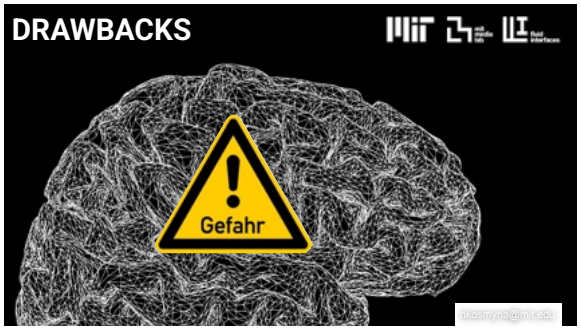

$329B > $16B
WEARABLES
IMPLANTS

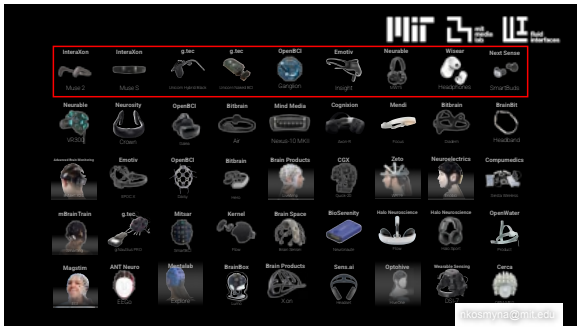

STATE OF THE BCI
GEL
GEL-FREE

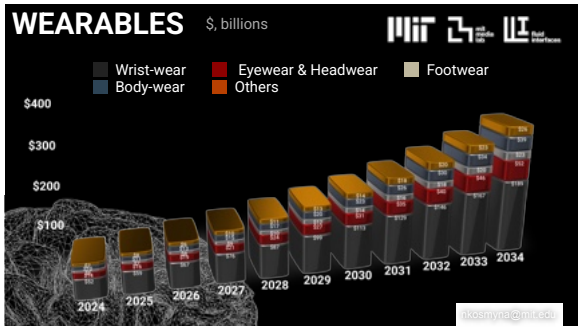

TYPES

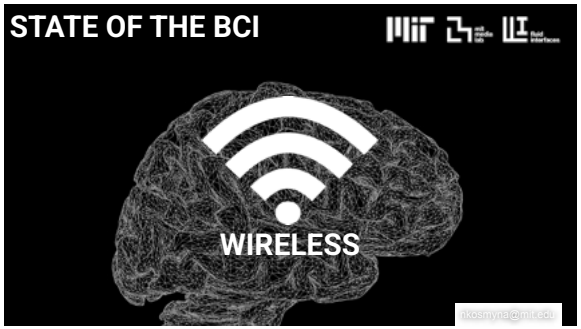


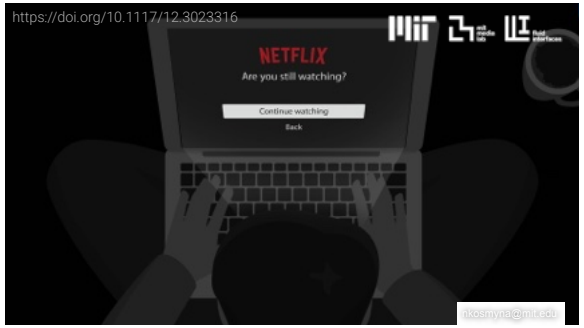

BRAIN IMPLANTS
$, billions
Deep Brain Stimulators
Spinal Cord Stimulators
Vagus Nerve Stimulators
$18
$14
$9
$5
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
$, billions


DRAWBACKS
Gefahr

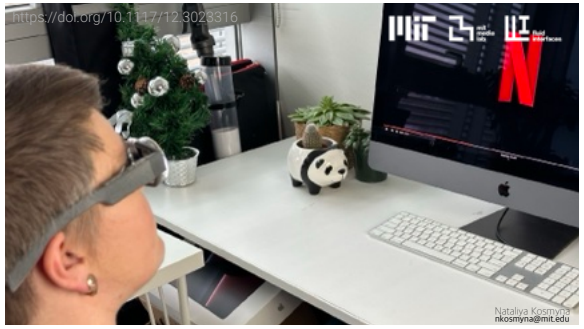


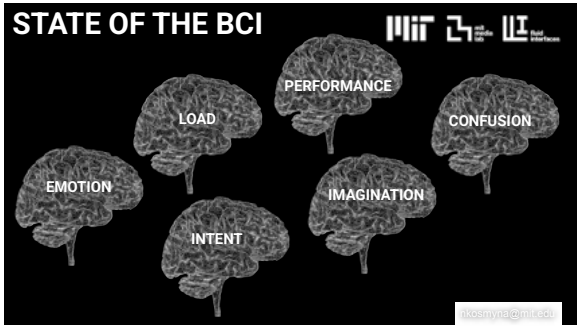

WEARABLES
$, billions
Wrist-wear
Eyewear & Headwear
Footwear
Body-wear
Others
$400
$300
$200
$100
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034


STATE OF THE BCI
WIRELESS

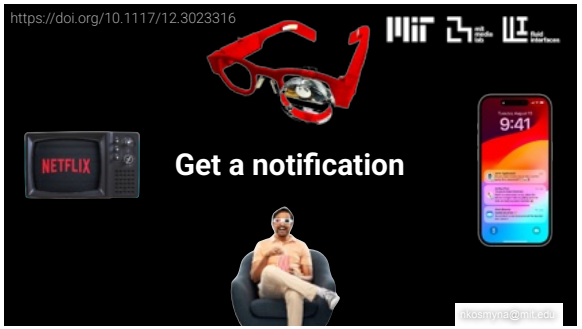

https://doi.org/10.1117/12.3023316
NETFLIX
Are you still watching?
Continue watching
Back


BCI
API


https://doi.org/10.1117/12.3023316
Nataliya Kosmyna
nkosmyna@mit.edu


STATE OF THE BCI
PERFORMANCE
LOAD
CONFUSION
EMOTION
IMAGINATION
INTENT


EEG
AR
EEG + fNIRS
VR
AR
VR
www.attentivu.com


https://doi.org/10.1117/12.3023316
NETFLIX
Get a notification
9:41


IT MAKES THIS POSSIBLE
ES MACHT DIES MÖGLICH

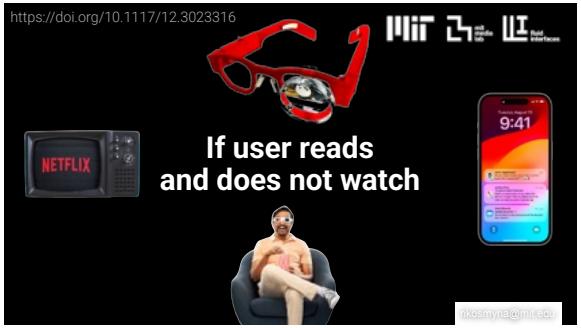

WHAT CAN BE DONE
24/7

Decoding Visual Imagery Using EEG/EOG Glasses: A Pilot Study

doi.org/10.1007/978-3-031-18458-1_29

kkosmyna@mit.edu

https://doi.org/10.1117/12.3023316



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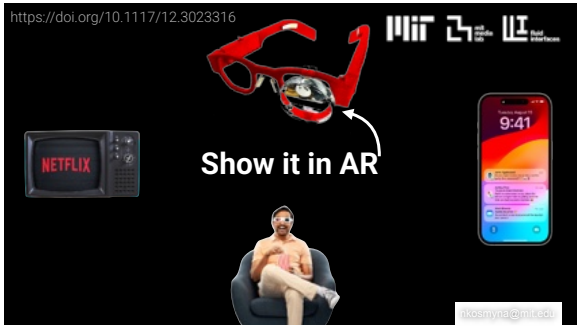
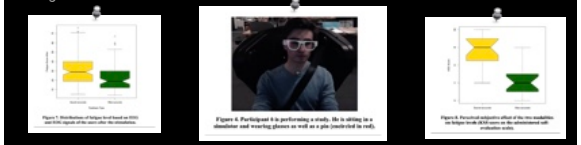


AttentivU: Designing EEG and EOG Compatible Glasses for Physiological Sensing and Feedback in the Car

doi.org/10.1145/3342197.3344516



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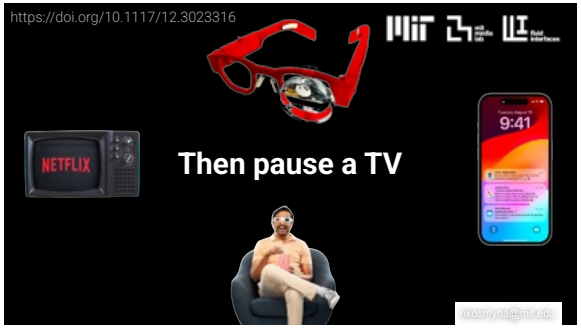
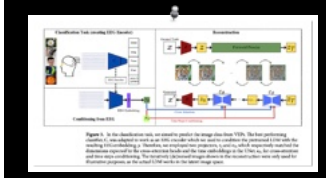


https://doi.org/10.1117/12.3023316

Image classification and reconstruction from low-density EEG

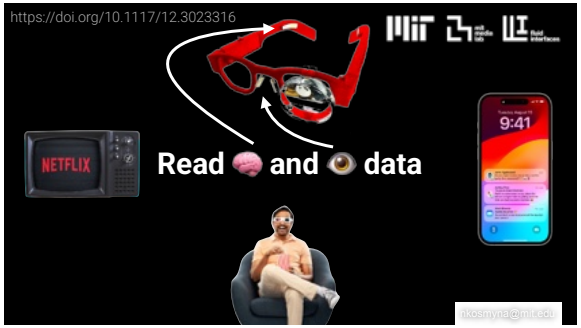
doi.org/10.1038/s41598-024-66228-1



Detecting Reading-Induced Confusion Using EEG and Eye Tracking

doi.org/10.48550/arXiv.2508.14442

https://doi.org/10.1117/12.3023316




BDOG
Autonomous, Wireless, Eyes-Free BCI Interaction for Assistive Use Cases
https://doi.org/10.3390/s24010080
nkosmyna@mit.edu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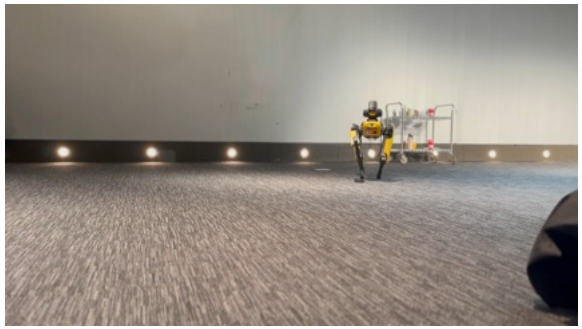
https://doi.org/10.1038/s41598-024-66228-1
nkosmyna@mit.edu


https://doi.org/10.1038/s41598-024-66228-1
nkosmyna@mit.edu



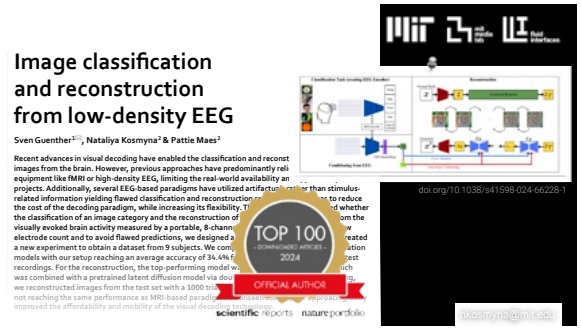


Image classification and reconstruction from low-density EEG
Sven Guenther, Nataliya Kosmyna & Pattie Maes
TOP 100
2024
OFFICIAL AUTHOR
scientific reports
nature portfolio
doi.org/10.1038/s41598-024-66228-1
nkosmyna@mit.edu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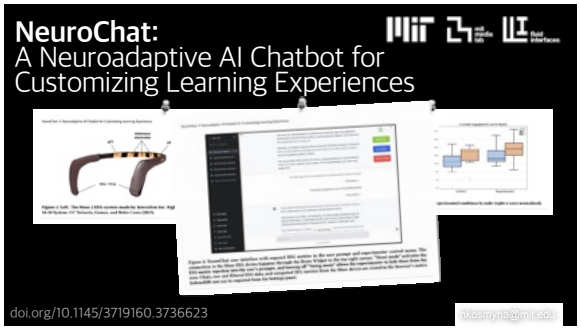
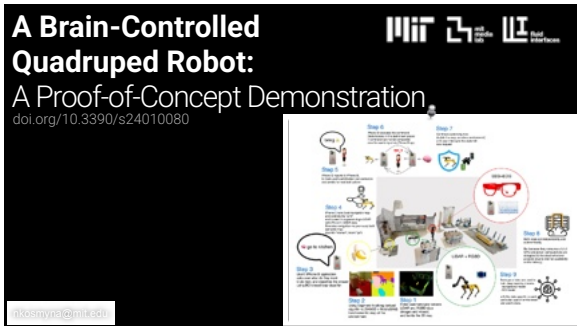
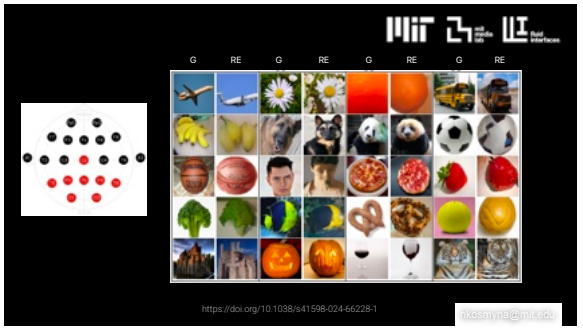
https://doi.org/10.1038/s41598-024-66228-1
nkosmyna@mit.edu


NeuroChat:
A Neuroadaptive AI Chatbot for Customizing Learning Experiences
doi.org/10.1145/3719160.3736623
nkosmyna@mit.edu


A Brain-Controlled Quadruped Robot:
A Proof-of-Concept Demonstration
doi.org/10.3390/s24010080
nkosmyna@mit.edu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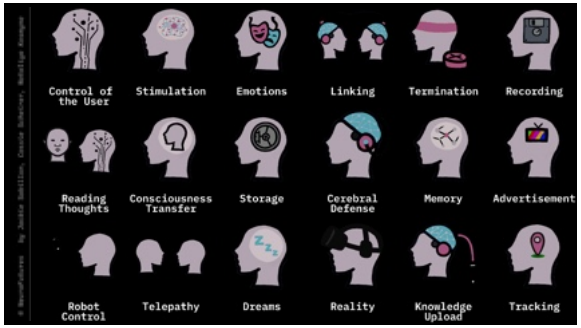
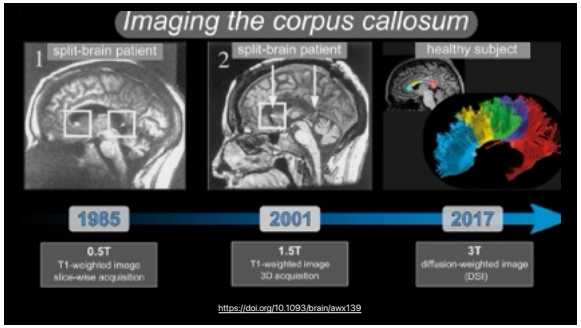
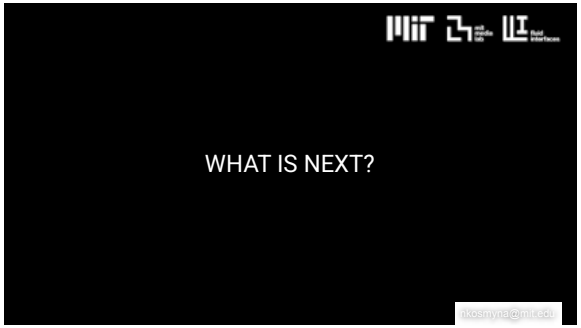
https://doi.org/10.1038/s41598-024-66228-1
nkosmyna@mit.edu


Control of the User
Stimulation
Emotions
Linking
Termination
Recording
Reading Thoughts
Consciousness Transfer
Storage
Cerebral Defense
Memory
Advertisement
Robot Control
Telepathy
Dreams
Reality
Knowledge Upload
Tracking


Imaging the corpus callosum
1
split-brain patient
2
split-brain patient
healthy subject
1985
2001
2017
0.5T
T1-weighted image
slice-wise acquisition
1.5T
T1-weighted image
3D acquisition
3T
diffusion-weighted image
(DSI)
https://doi.org/10.1093/brain/awx139

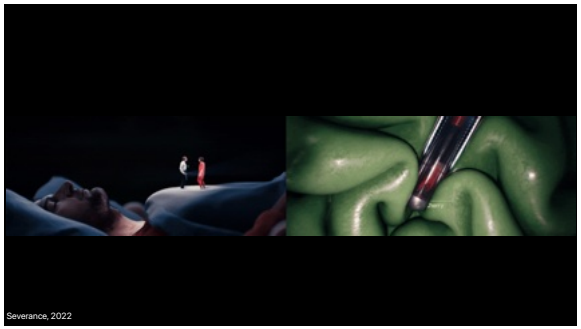

WHAT IS NEXT?

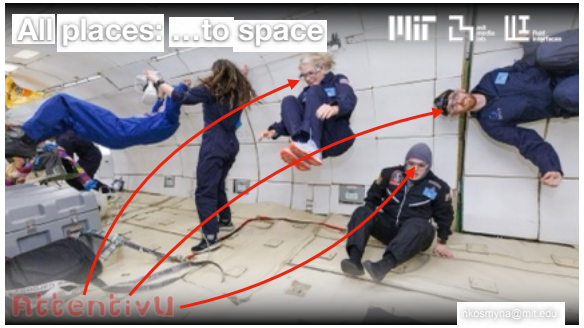

BCI-FI CATEGORIES
TYPES OF BCIS IN SCIENCE FICTION
COMMUNICATION
SURVEILLANCE
PERCEPTION
CONSCIOUSNESS


How Far is **Too** Far?


Severance, 2022

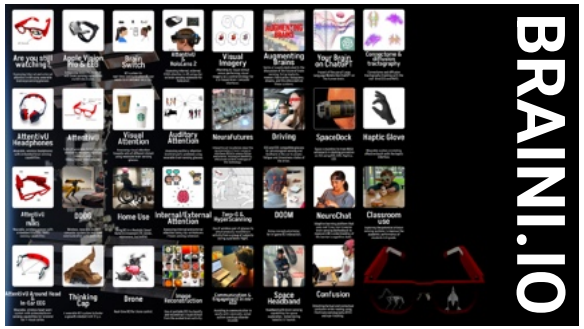

WONDER WOMAN
X-MEN
STAR TREK
JOHNNY MNEMONIC
X-MEN
PACIFIC RIM
HARDWIRED
ELYSIUM
PACIFIC RIM
BLACK MIRROR
THREE BODY PROBLEM
WESTWORLD


Severance, 2022


All places: ...to space
AttentivU


All ages: ...from young
AttentivU


1975
1980
1979
1984
1994
2007
2012
2013
We went through many computing evolutions...


BRAINI.IO


All ages: ...to old
AttentivU


Spatial computing


THANK YOU FOR YOUR ATTENTION
03:33
VIELEN DANK FÜR IHRE AUFMERKSAMKEIT


All places: ...from Earth
AttentivU


Neural computing