advanced telepresence program strawman

telecommunications with realistic avatars

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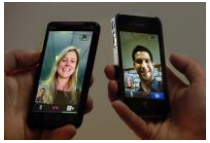
arpa·e

digital presence technical space

immersive 3D

dimensionality

small 2D window



real life

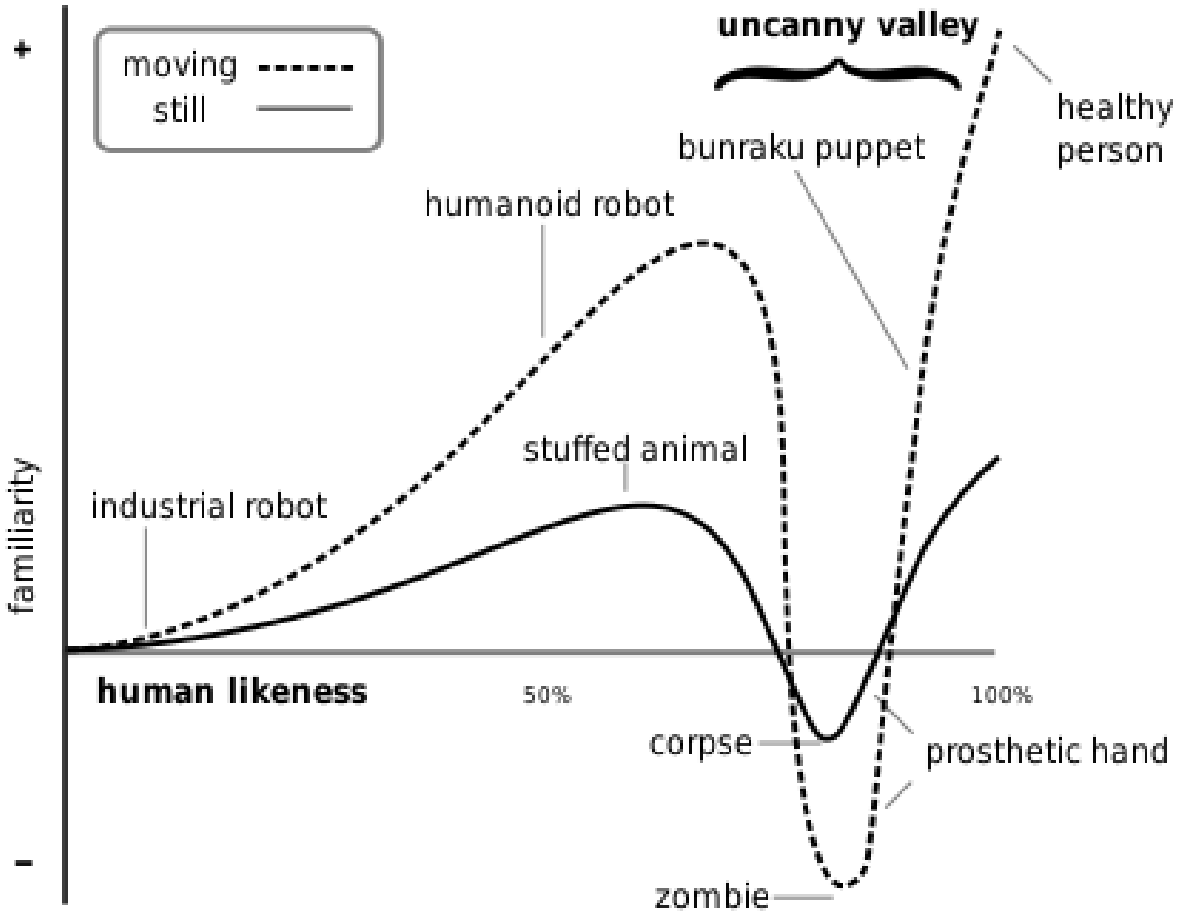
cartoon or caricature

fidelity

high resolution human

N.B. presence = audiovisual

the uncanny valley



the problem is making avatars move.

Light Stage Scanning

Video Performance Capture

FACS Poses

Digital Ira SIGGRAPH 2013 Real-Time Live

Oleg Alexander
Graham Fyffe
Jay Busch
Xueming Yu
Ryosuke Ichikari
Paul Graham
Koki Nagano
Andrew Jones
Paul Debevec

USC Institute for Creative Technologies

Joe Alter - Joe Alter, Inc.

Jorge Jimenez
Etienne Danvoye
Bernardo Antionazzi
Mike Eheler
Zybnek Kysela
Xian-Chun Wu
Javier von der Pahlen

ACTIVISION

E-Tech: *Holographic Ira*
Talk in "Face The Facts"
Thursday 9AM Ballroom E

it’s hard because we’re incredibly good at noticing something is wrong

digital presence technical space

immersive 3D

dimensionality

small 2D window

digital ira
+ mocap
+ virtual world
+ display

real life

Bitmoji

cartoon
or
caricature

fidelity

high
resolution
human

N.B. presence = audiovisual

program category #1: telecommunication with credible avatars

mission: create a real time, uncanny valley-free immersive telepresence system that users would prefer over travel.

expectations

digital ira level fidelity for avatar
real-time capture and actuation
ability to run on commercial hardware
full body mocap and IK
vertically integrated system

investment

10 teams
$20MM

program metrics

latency	< 250 ms across the US
bandwidth	< 100 kB/s
comfort	very good
cost of system	mocap+display < $1000

teams

computer graphics
computer science
graphics hardware
motion capture

potential outcome: completely alter the course of telepresence. solve gaze, microexpressions, lighting, body gestures, immersion, multi person meeting, 3D audio and video, all at once.

digital presence technical space

trick
a human

immersive
3D

dimensionality

Bitmoji

small 2D
window

cartoon
or
caricature

fidelity

high
resolution
human

N.B. presence = audiovisual

program category #2: trick a human into believing an avatar is real

mission: advance real time mocap and rendering of digital human to perfection

expectations
human guesses wrong > half the time
live 4k 3D video vs.
real time mocap + digital reconstruction

investment, PRIZE COMPETITION
5-10 funded teams @ $10MM
$1MM in prize, open competition

program metrics

latency	< 250 ms
bandwidth	< 100 kB/s
4k resolution	

teams
computer graphics
computer science
graphics hardware
motion capture

potential outcome: completely alter the course of telepresence. solve gaze, microexpressions, lighting, body gestures, immersion, multi person meeting, 3D audio and video, all at once.