Assorted Ideas & Applications

Insight:

1. Ad
2. Adz
3. Adu

Alice

Bob
Alice's camera/visual data → Extract motion from video data → Alice's expected IMU data

Address

$¥ /$ ☐

10% discount on toothpaste

Bob

Alice

③ created a temporary identifier for a user that can be used for communication.

③

If you see this motion, delete me

3-5 seconds.
\[ \frac{d^2}{dt^2} P(t) = \text{acceleration of pixel } P \]

Diagram:
- Red arrows indicating direction and movement.
- Graphs showing time and pixel changes.
- Map with directions indicated.
cancel out all reflections and only get reflections from the moving human.

instead of \( x \), I send \( x' = -h_1h_2^{-1}x \)

Receives \( = h_1x + h_2(-h_1h_2^{-1})x = 0 \)
When user moves, received signal ≠ 0

Red + Blue = Black signal.

FMCW = Freq. modulated continuous wave.
Liquid

Coke / Pepsi / tea / vodka /
tap water / mineral water.

$T_{fair} - T_{wire}$

$T_{wire} - T_{liquid}$

$T_{air} - T_{liquid}$

$T_{air} = T_{liquid} - T_{wire}$

$T_{air - wire} = T_{air - liquid}$
Farm Beats

\[ \Delta \phi_1 \]

\[ \Delta \phi_2 \]

\[ \rightarrow \text{moisture} \]
(4) Spikey

(5) nulls mainlobe

(6) Gyro Attack

MEMS
\( x(t) \ast h_{\text{Head}}(t) = y(t) \)

\[ x_f \cdot H_f = y_f \]

HRTF

\( x(t) = "\text{follow me}" \rightarrow \)

\[ \begin{align*}
  & y_r \\
  & \Downarrow \text{Bob} \\
  & \begin{align*}
  & \ast h_0^r(t) = y_r \\
  & \ast h_0(t) = y_f
  \end{align*}
\]

Personalized HRTF