ISEK:
Iowa State Engineering Kid

HCI 575x

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ISU Robotics Club

But, why?

- Commissioned as a fun demonstration of technology for kids around 9-14 years old.

- Originally debuted at FIRST Lego League 2005

Capabilities

- "Convincing" chat
  - Uses AIML (Artificial Intelligence Markup Language) to pick appropriate responses based on input template and a large database

- Face-tracking
  - Actuated pan and tilt allows camera to track faces.

Chat
Demo

Chat - AIML Database

- For general conversation, the number of replies need not be infinite

- User writes something; ISEK replies.
  - Only a limited number of responses make sense
  - Make sure to have replies for these responses
  - Repeat

Chat Example

User: Hi

ISEK: Hello there.

User: I want to record this conversation.

ISEK: Why do you want to do record this conversation so much?

User: Because I want to.

ISEK: May you get your wish.

Example categories

<pattern>HI</pattern>

<template>Hi there.</template>

<pattern>I WANT TO * </pattern>

<template>Why do you want to do
  </template>

<pattern>BECAUSE I WANT TO</pattern>

<template>May you get your wish.</template>

Conclusions

- Positives:
  - Fast
  - Effective

- Negatives:
  - Brittle
  - Dead end for AI

Related Project Ideas

- Add voice recognition to replace typing input.

- Affective computing
  - Is the user sad or happy?
  - Is ISEK happy or sad?

Face Tracking

- Track face == Make face be the center of the image.
  - If face is at top in image, *tilt up*
  - If face is to the left in image, *pan left*

Face Tracking

- OpenCV face detection not fast enough or reliable enough to run in the loop.

- Instead, face detector grabs color histogram around face and tracks color blob.
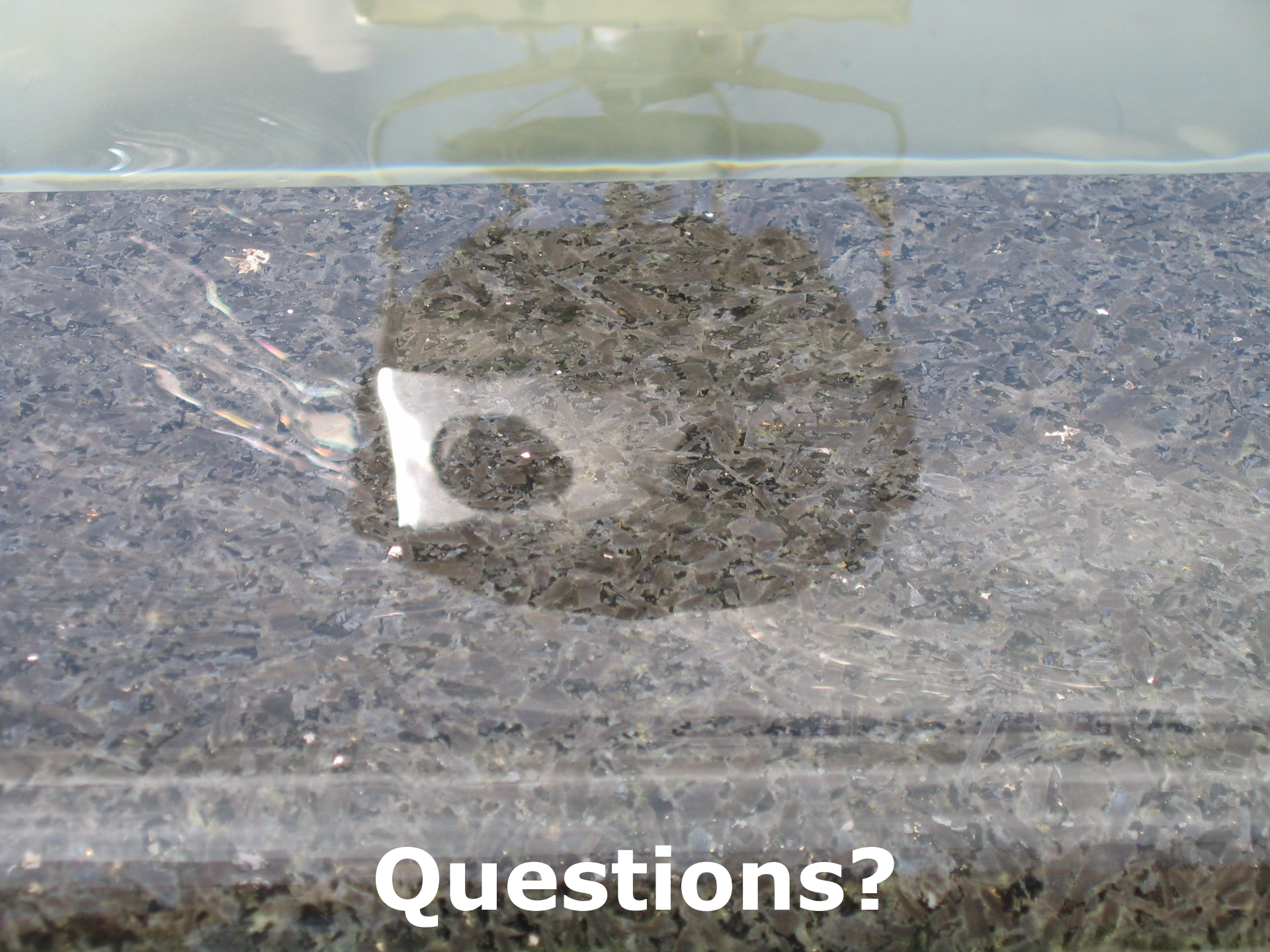
Face-Tracking Demo

Conclusions

- Positive
  - Works!

- Negative
  - Using only screen coordinates means it has no sense of space

Related Project Ideas

- Improve face detection
- Improve face tracking
    - Transform screen coordinates to servo angles

- Add two microphones as "ears" to have ISEK move toward loud sounds

Questions?