



SKETCH SEARCH

Cecilia Mauceri

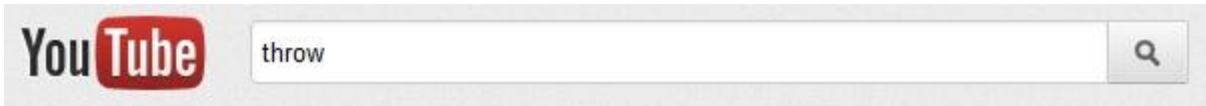
Future Computing Lab

Advisor: Dr. Richard Souvenir

TA: Scott Spurlock

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TEXT-BASED VIDEO RETRIEVAL

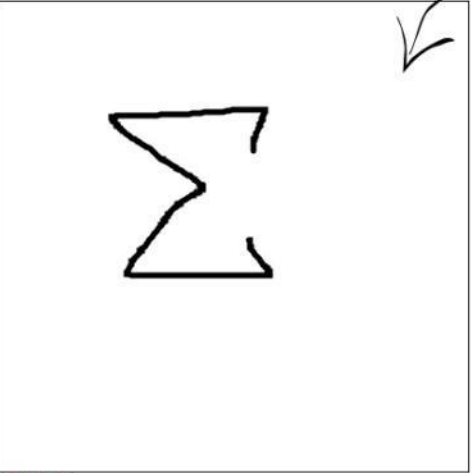


SKETCH-BASED SOLUTIONS

Detexify² - LaTeX symbol classifier

[classify](#) [symbols](#) [blog](#)

Draw here!



Did this help? Hosting Detexify costs money and if it helps you may consider helping to pay the hosting bill.

Σ	Score: 0.134013872811529 <code>\Sigma</code> mathmode
Σ	Score: 0.150191960327428 <code>\usepackage{ upgreek }</code> <code>\Upsilon</code> mathmode

[clear](#)

<http://detexify.kirelabs.org/>

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Chinese-English Talking Dictionary
Simple Character Search

Word Character Adv. Character

Search by Character [Search](#)

Radical: [v](#)

Search by Radical

No. of Additional Strokes: From To

Traditional Script [Search](#)

Handwriting Recognizer

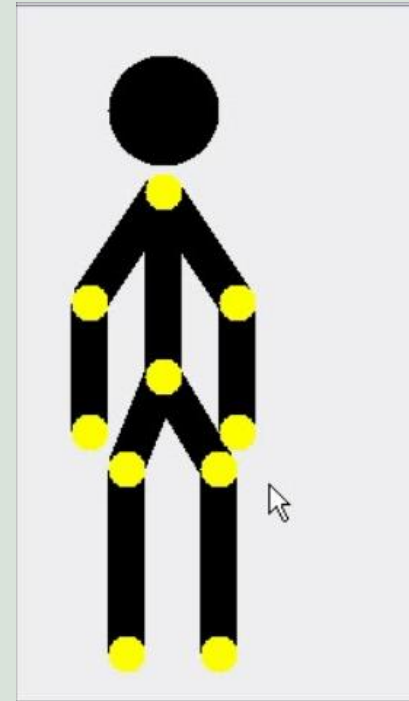
(1) Draw  [Undo](#) [Clear](#)

(2) Choose

产	计	订	申
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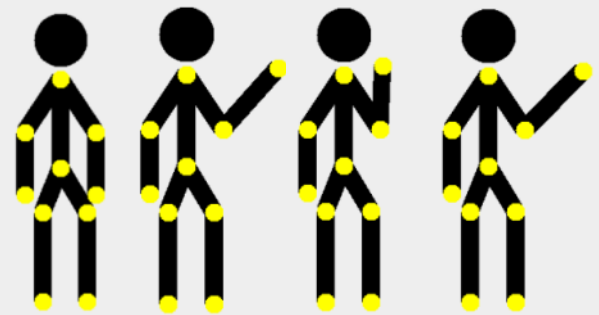
<http://www.yellowbridge.com/chinese/>

OUR INTERFACES

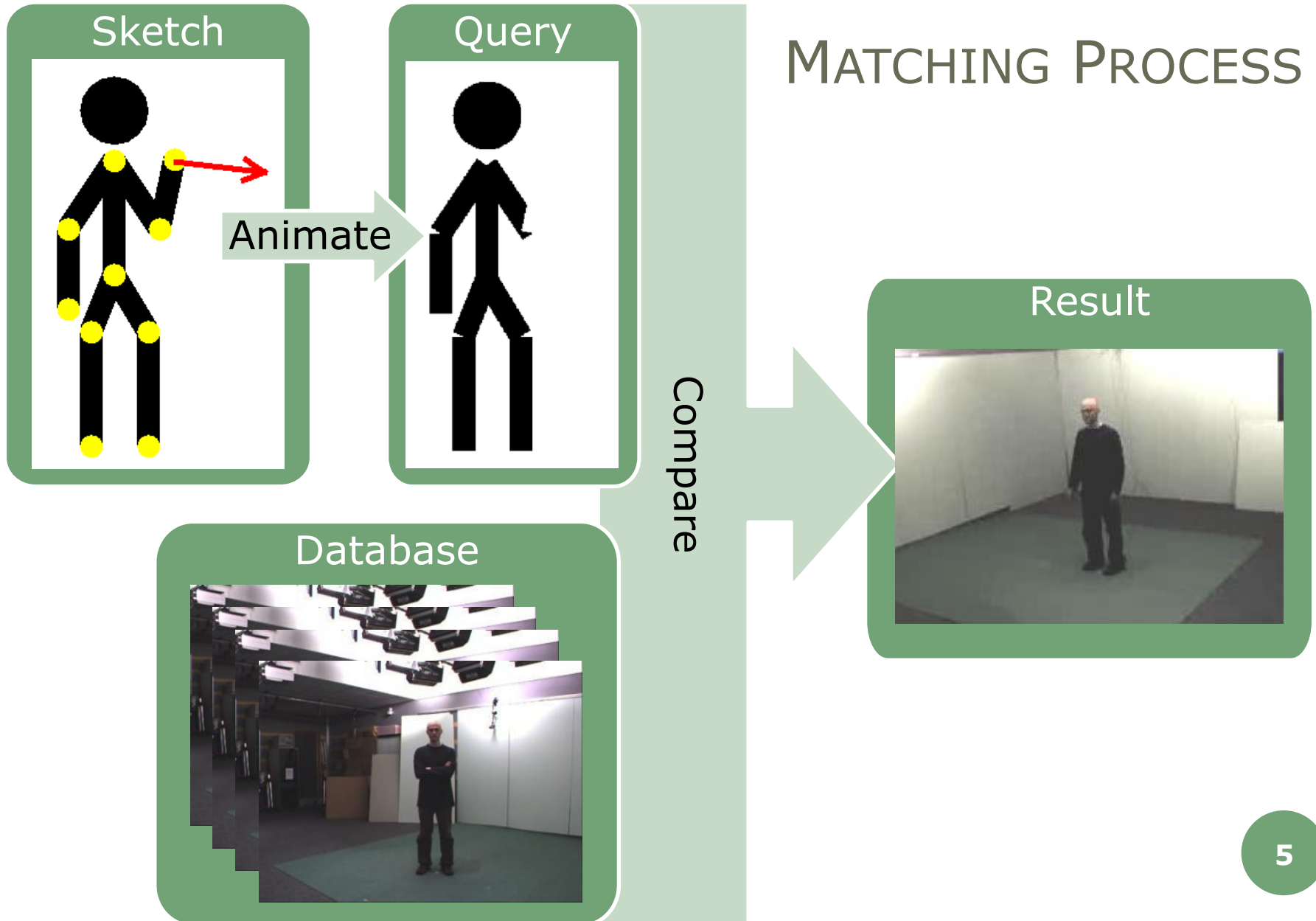


Freehand

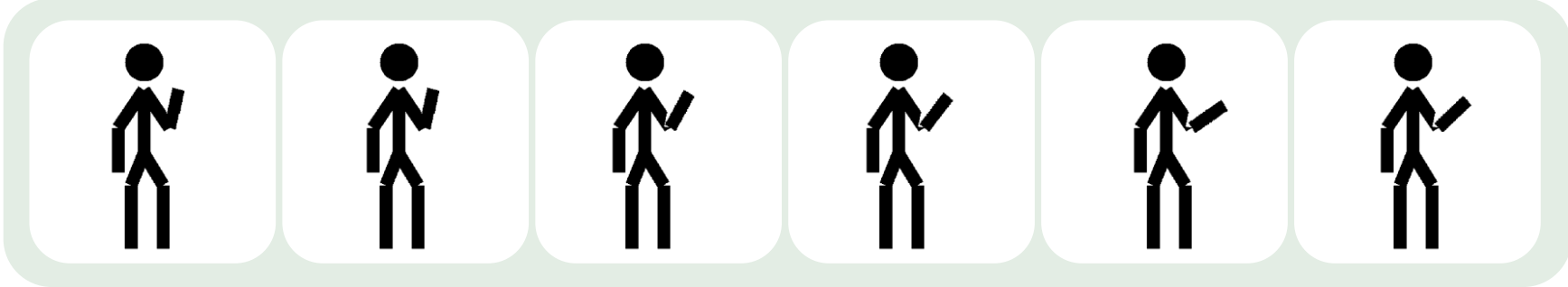
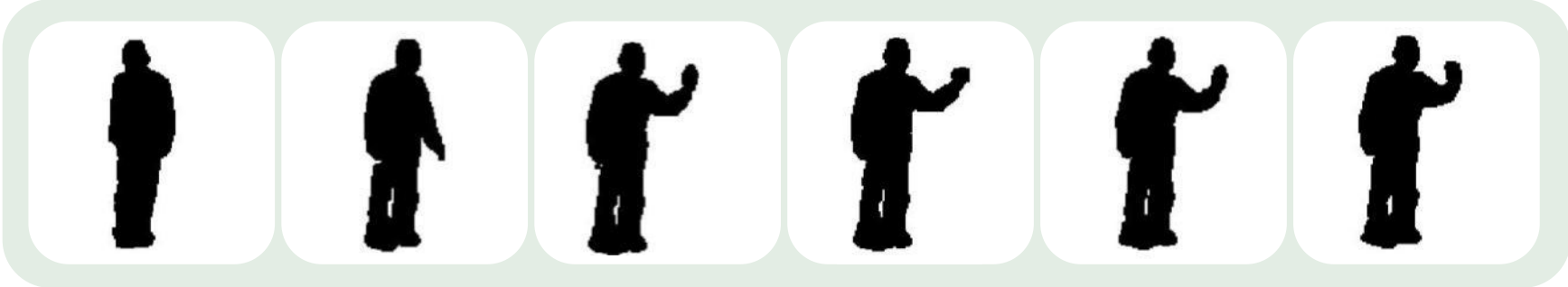
Puppet



MATCHING PROCESS



MATCHING ALGORITHM



USER STUDY PROCEDURE

- 81 Participants

- Test all three interfaces
- Video Prompt vs. Text Prompt

- "Please draw the following action:"



or

throw

- Randomly assigned action from
 - Cross Arms, Scratch Head, Kick, Point, Wave, Throw

HYPOTHESIS

	Freehand	Puppet	Keyframe
Ease of Use		<input checked="" type="checkbox"/>	
Speed		<input checked="" type="checkbox"/>	
Accuracy			<input checked="" type="checkbox"/>

RECORDED DATA

Ease of Use

- Post Survey
- Log of user actions

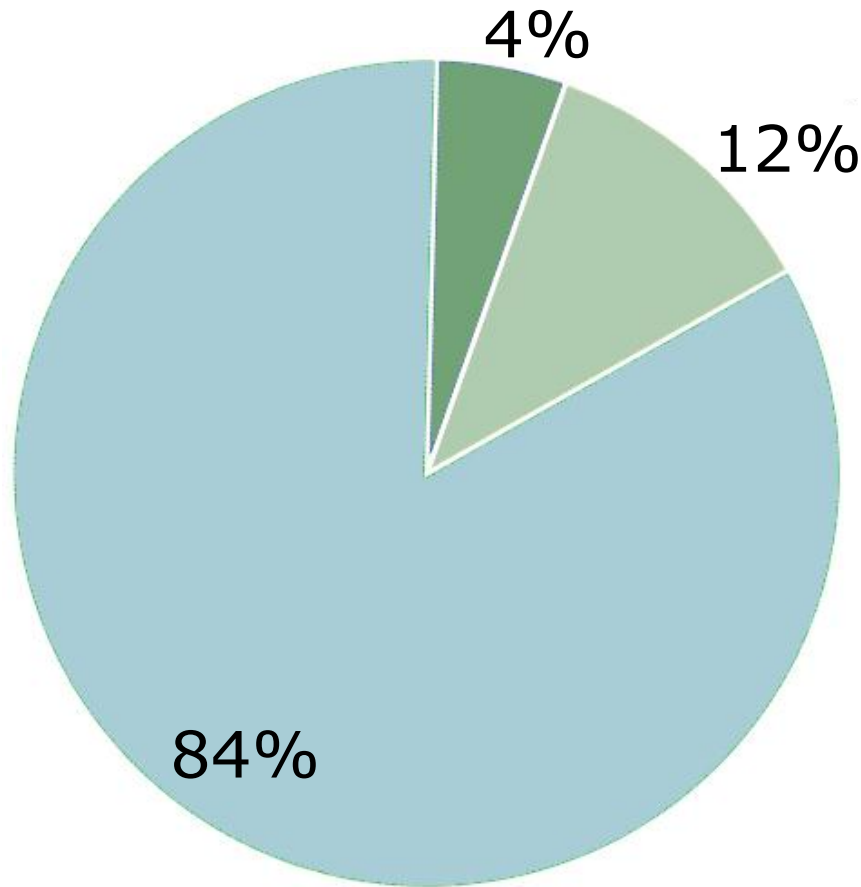
Speed

- Time to complete each sketch

Accuracy

- Snapshot of each sketch
- Animations

"BEST INTERFACE OVERALL"



"(Keyframe) allows more detailed control of the limbs."

"I could break down actions into steps."

"KEYFRAME IS DA BOMB"



Freehand

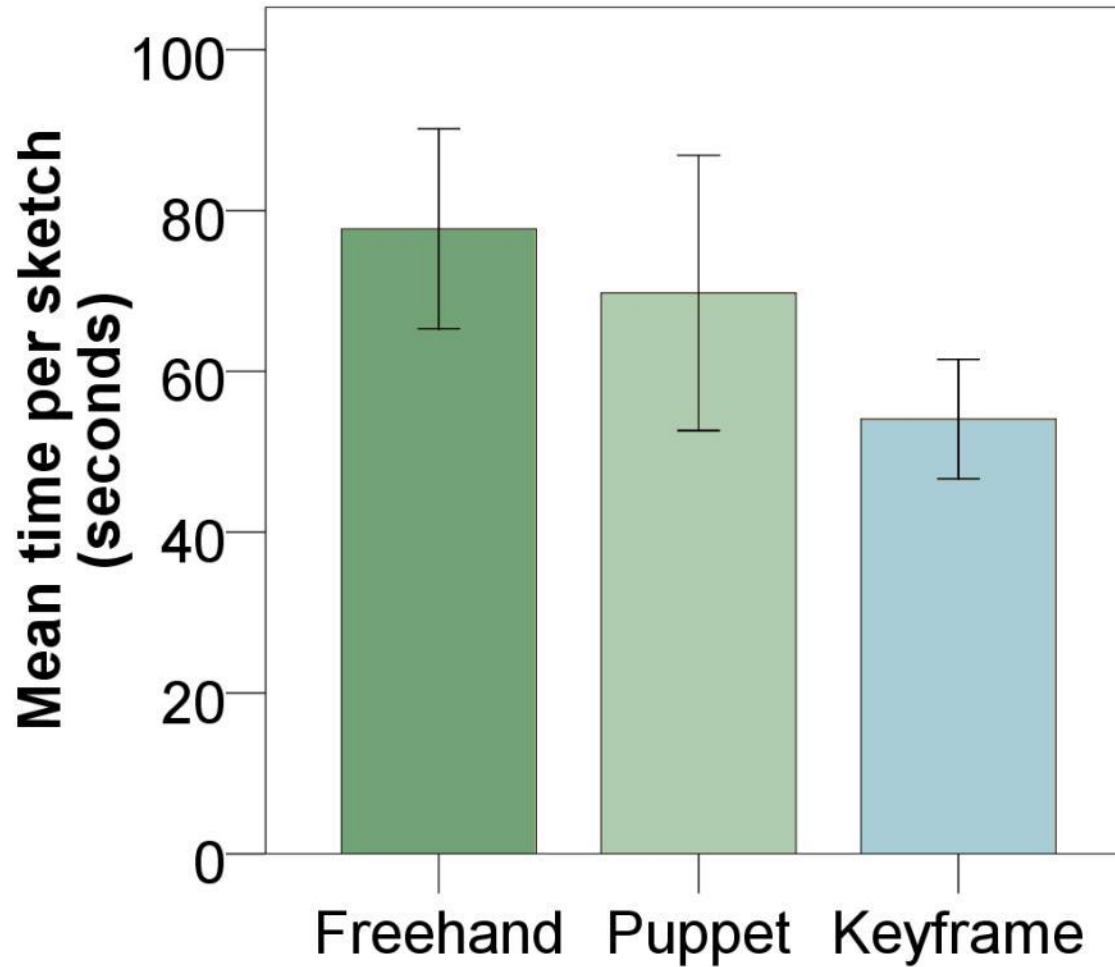


Puppet

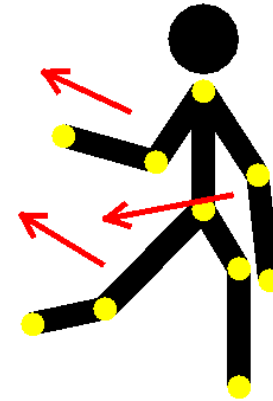
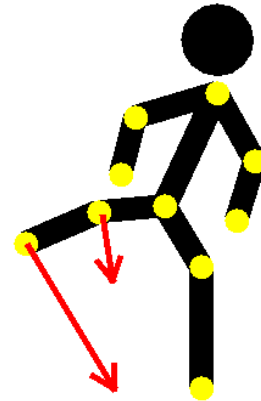
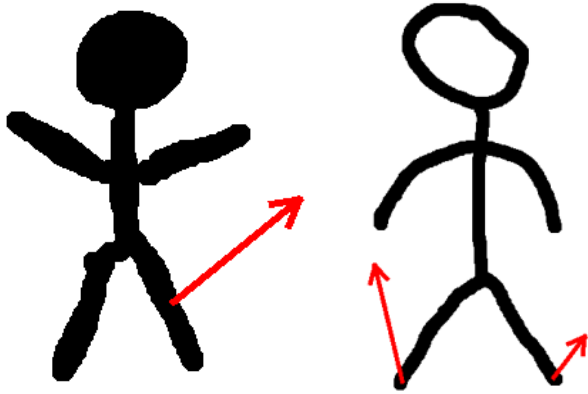


Keyframe

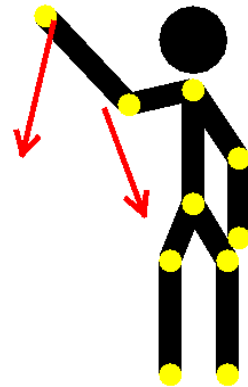
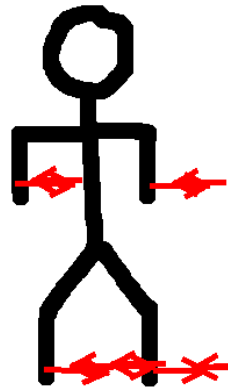
SKETCH TIME



THE GRAIN OF SALT



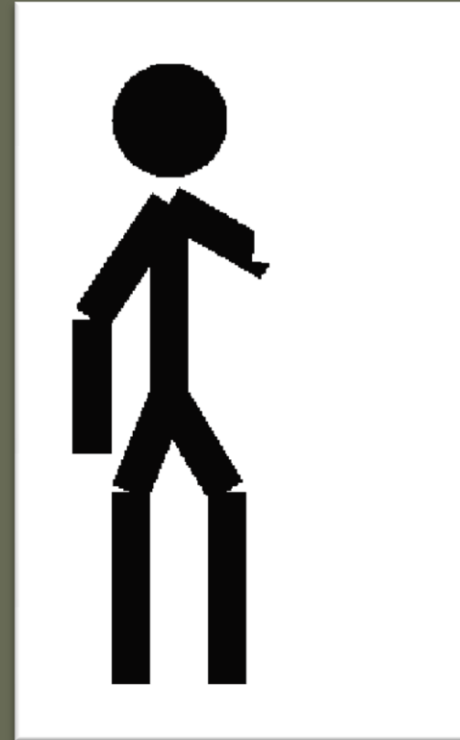
Kick Prompt



Throw Prompt

FUTURE WORK

- Evaluate interfaces on touchscreen device
- View invariant matching for canonical sketches
- Adapting to internet-scale searches (e.g. MPEG-7 descriptors)



QUESTIONS?

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Mauceri, Cecilia, Evan A. Suma, Samantha Finklestein, and Richard Souvenir. Evaluating Sketch Based Interfaces for Human Action Recognition. In *ACM Transactions in Interactive Intelligent Systems*. In preparation.