IIBM

Intelligent **I**nteraction **B**ased on **M**otion

Mathieu Barnachon, **Mathilde Ceccaroli**, Amélie Cordier, Erwan Guillou, Marie Lefevre

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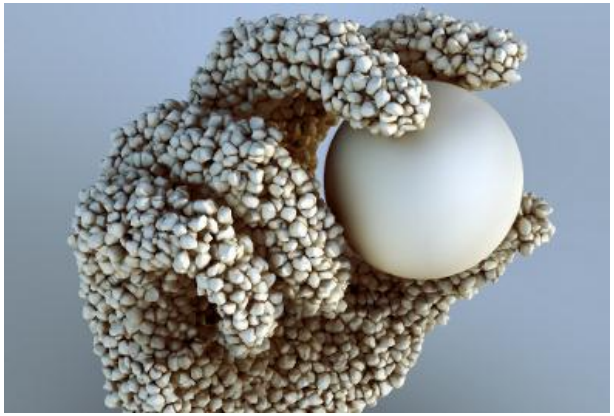
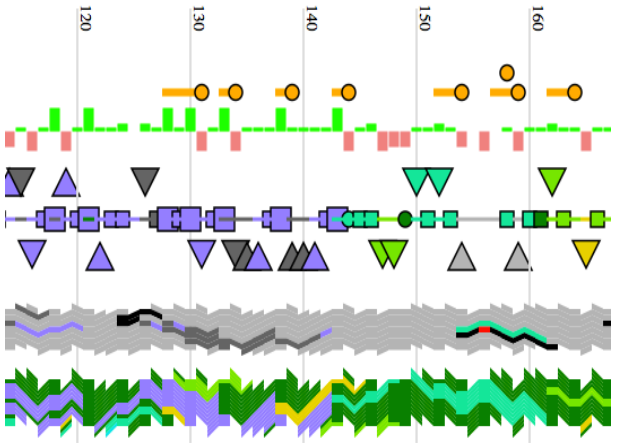
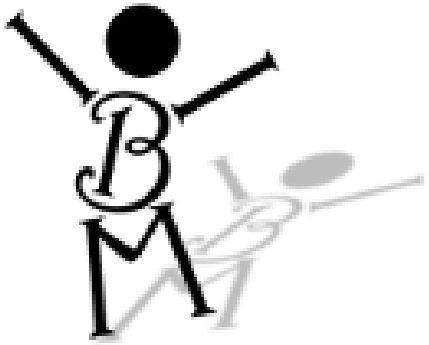
LIRIS

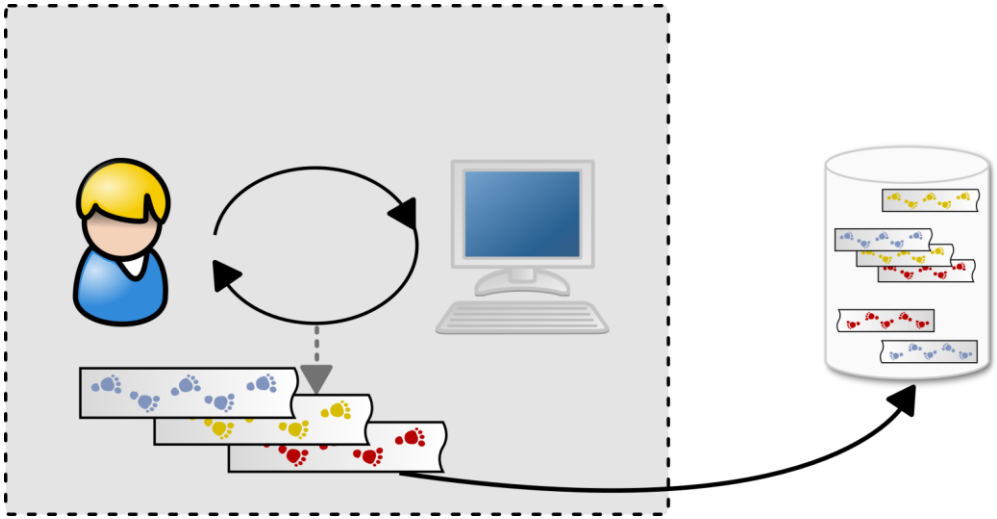






Research topics

Motion Capture
MoCap



Trace-based Reasoning

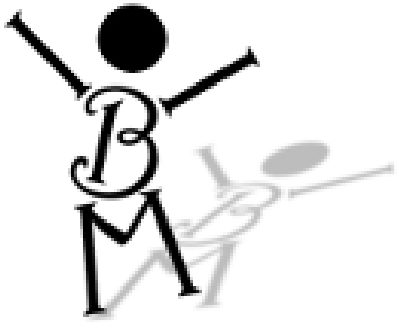
Why IIBM?

+ Motion-based interfaces all around us
+ Mocap algorithms are now efficient

- Interfaces are usually **not self-adaptable**
- **Creativity** is limited

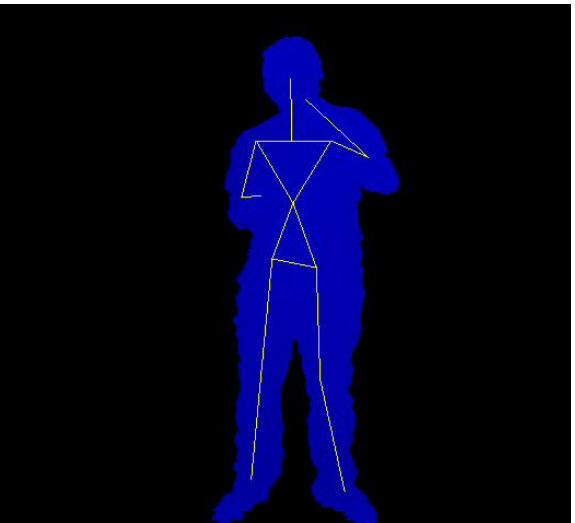
Who does adaptability better than AI?

Related Work in Mocap

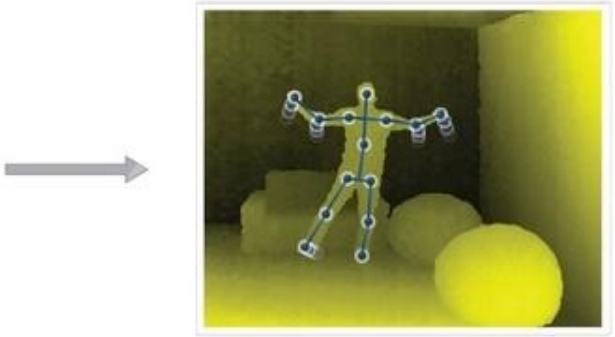


A lot of related work...

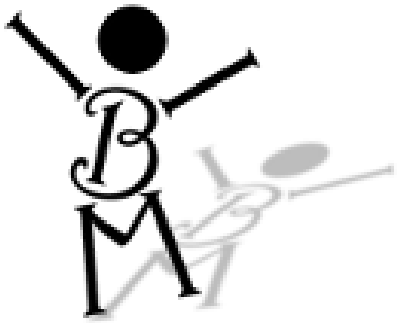
Dance Revolution (before Kinect)

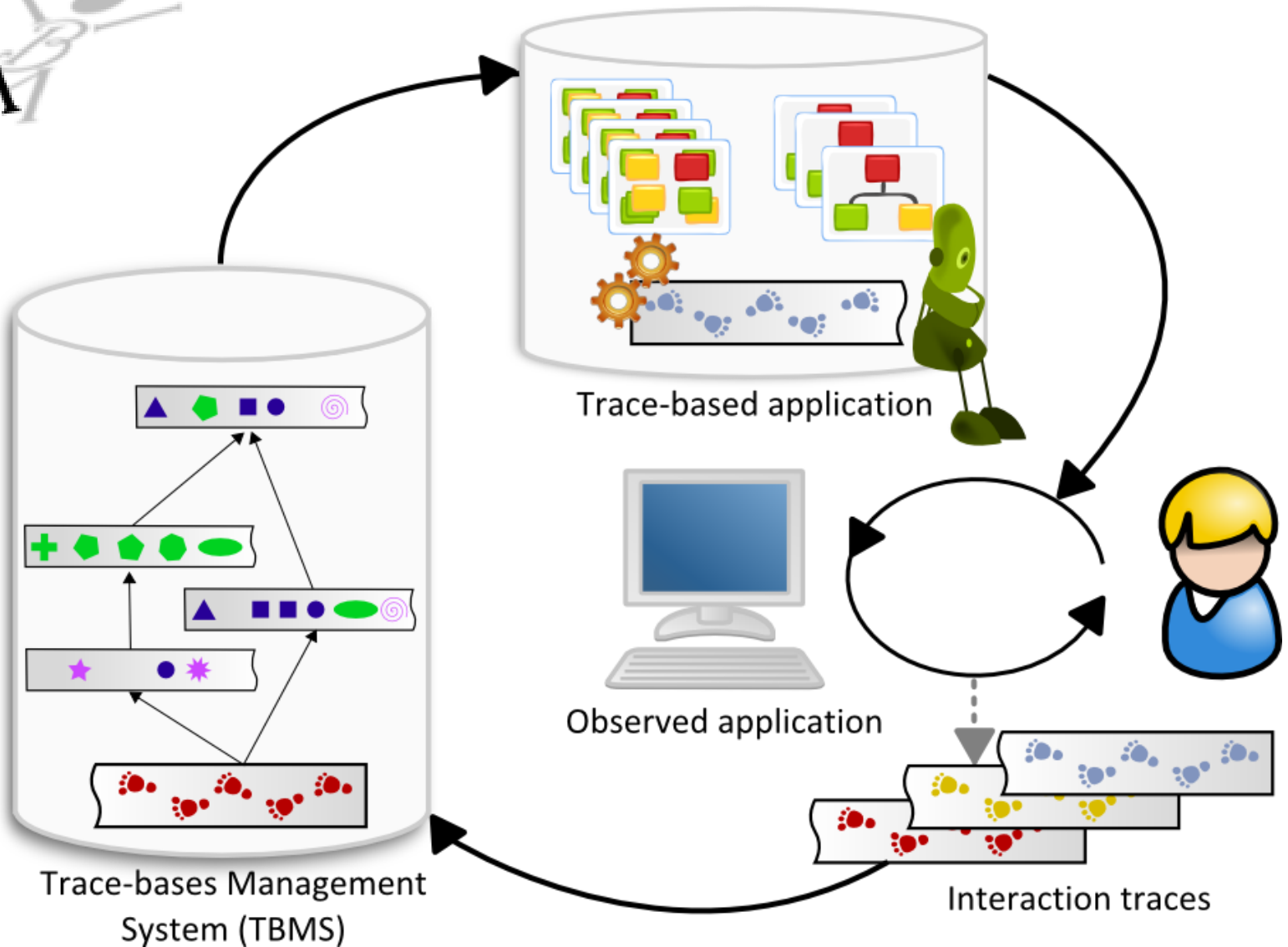


Real-Time Marker-Free Motion Capture



Related Work: Trace-Based Reasoning





What can we do with traces?

Tasks

We can:

- Replay a trace
- Finish a task for the user
- Recognize a task an recommend a possible “next step”

Gestures

We can:

- Help the user learn a new gesture
- Negotiate a new way of doing a gesture
- Create a new gesture

Based on:

- The user’s traces
- Other users traces

Applications to video games

- *"Develop systems able to adapt themselves"*
  - To create new behaviours in the game, depending on the user
  - To be able to learn new things
- *"... to dramatically improve the interaction possibilities in the game..."*

Creativity

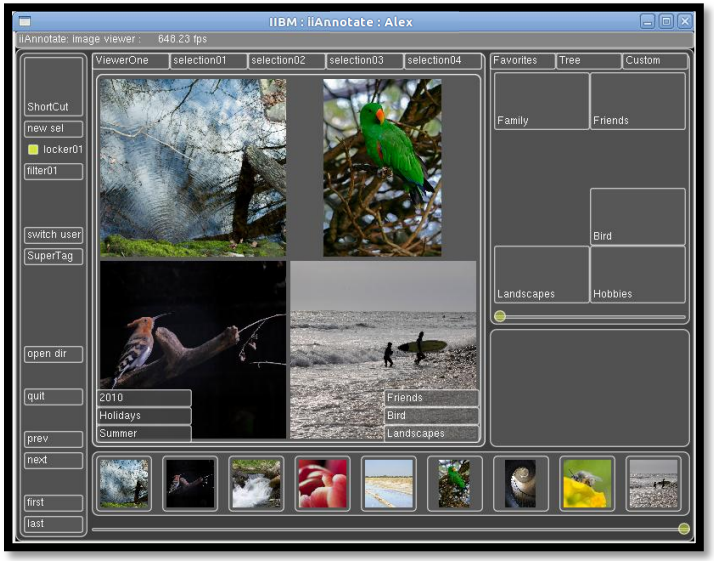
+

TIME

+

MONEY

=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selection01
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prev
next
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Friends
Bird
Landscapes
Hobbies
2010
Holidays
Summer
Friends
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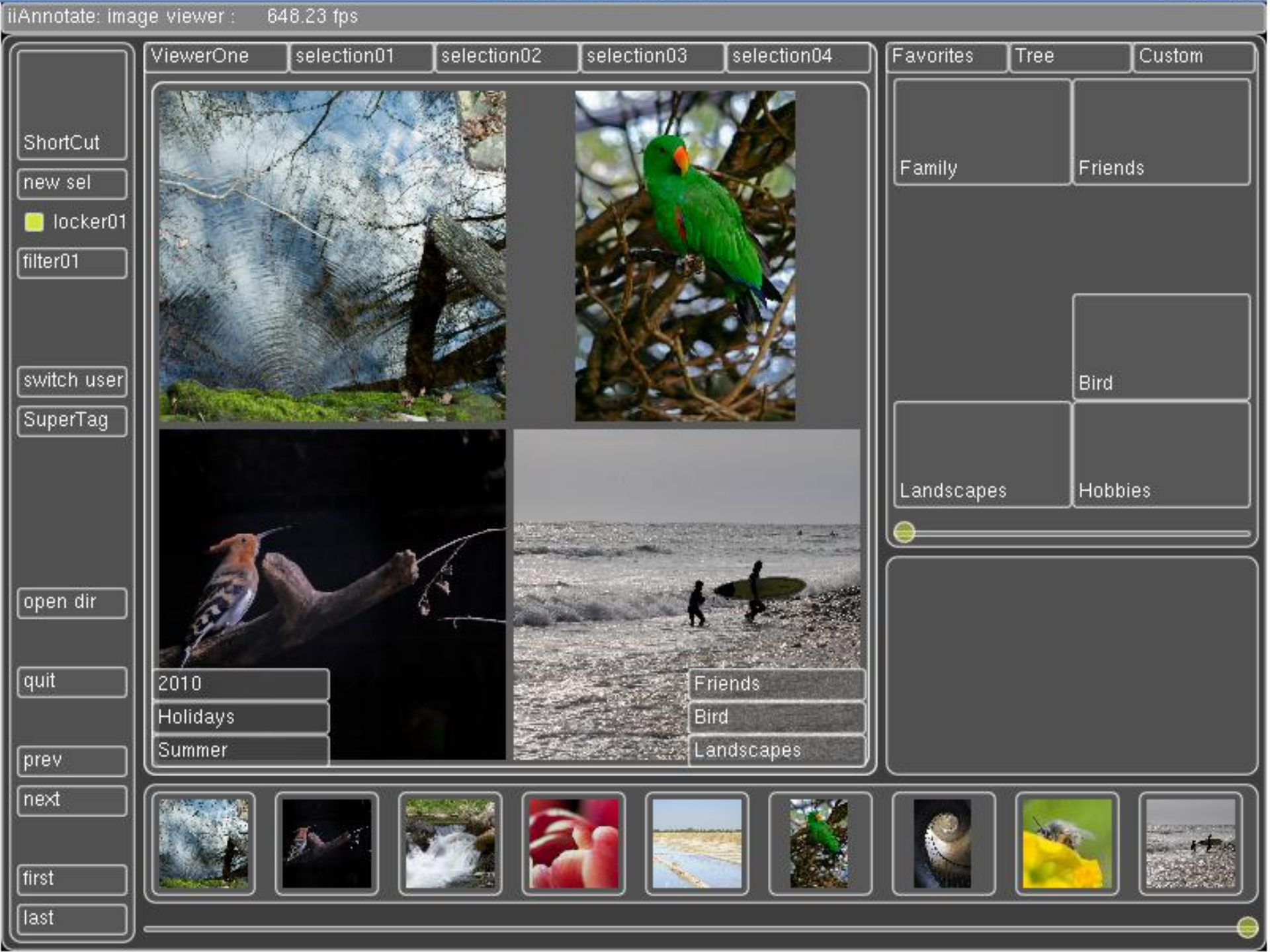
Landscapes

iiAnnotate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selection02
selection03
selection04
2010
Holidays
Summer
Friends
Bird
Landscapes
Favorites
Tree
Custom
Family
Friends
Bird
Landscapes
Hobbies

What can the user do?

Tasks

- Select photos
- Create “selections”
- Create tags and meta tags
- Apply and remove tags to photos or selections

Gestures

- Control the application with a virtual mouse
- Use predefine gestures
- Create new gestures and associate them with specific action

How can we help?

Tasks

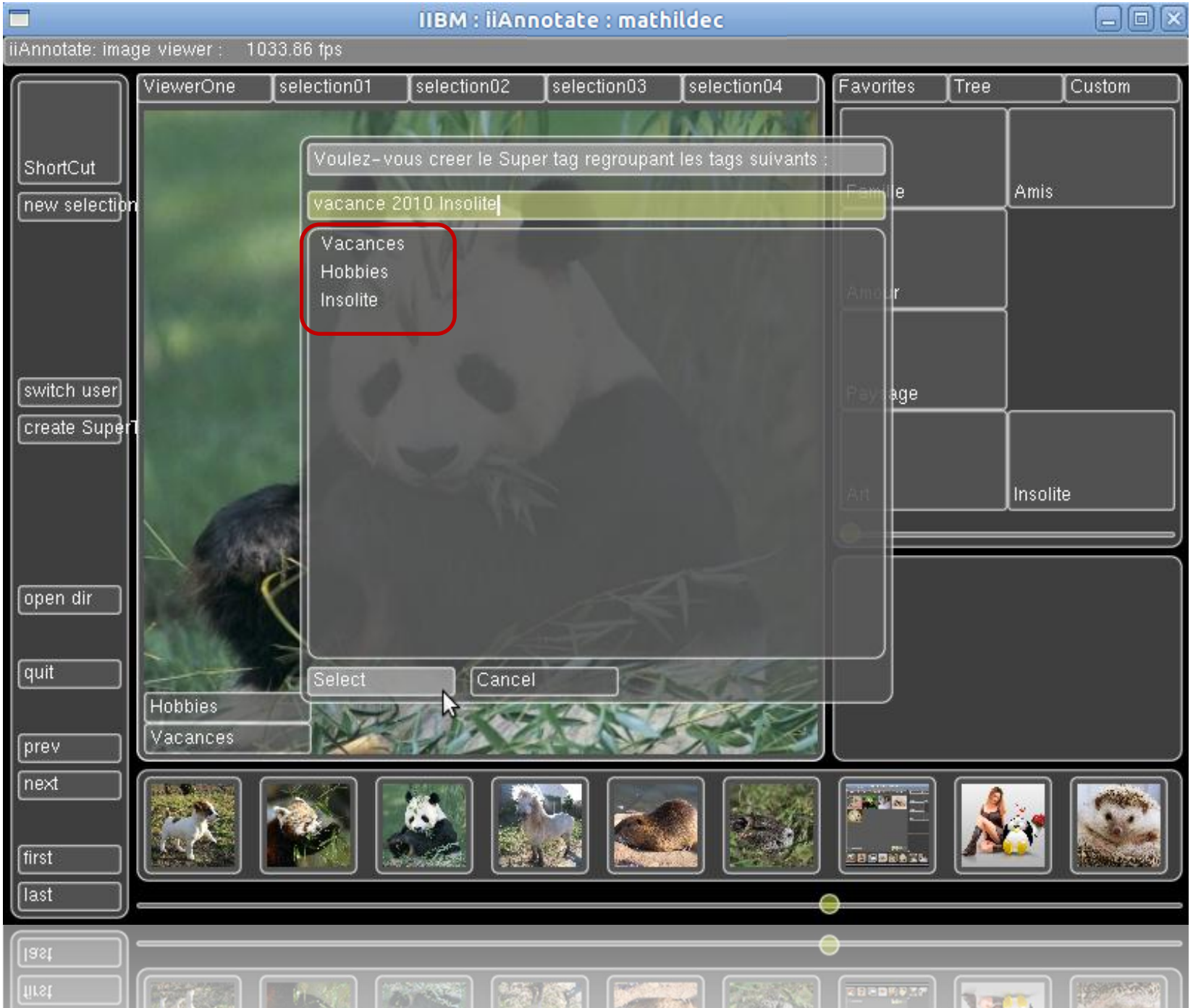
- Recognize a task
- Fulfil a task
- Make recommendations on the basis of other users' actions

Gestures

- Identify that a user has problem performing a certain gesture
- Improve gesture recognition abilities
- Learn new gestures (by example)

ViewerOne
selection01
selection02
selection03
selection04
Vacances
Hobbies
Insolite
Dessins

ViewerOne
selection01
selection02
selection03
selection04
Paysage
Insolite
Hobbies
Vacances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selection02
selection03
selection04
Favorites
Tree
Custom
Famille
Amis
Amour
Paysage
Art
Insolite
Voulez-vous creer le Super tag regroupant les tags suivants :
vacance 2010 Insolite
Vacances
Hobbies
Insolite
Select
Cancel
Hobbies
Vacances

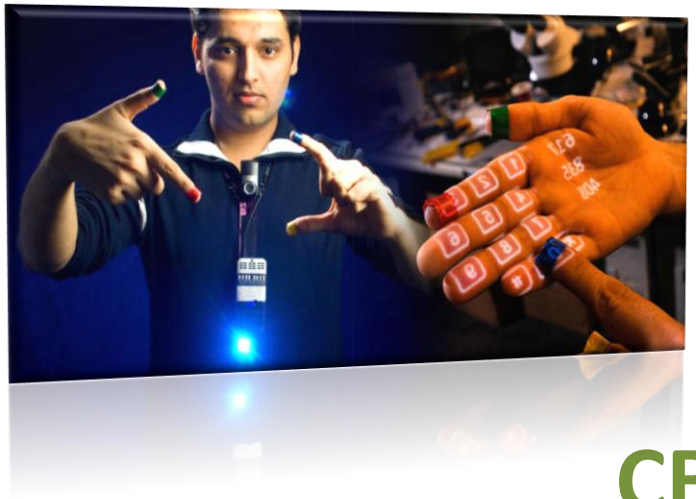
Future work

- Improve gesture-based features
- Add more trace-based assistance scenarii
- Experimentations with end-users
- Implementation of the idea in a video game ☺

CBR helps while developing
natural interactions

CBR supports
experience sharing

CBR helps improving
system's adaptability



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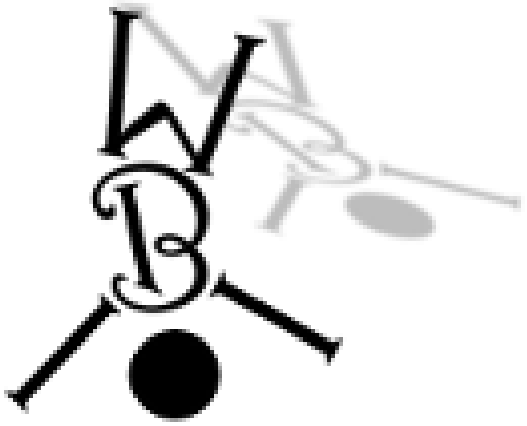
CBR needs to be there!