

SKILLS Integrated Project: Sport and Entertainment Demonstrations

Developing a Cognitive Trainer for Juggling

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Who Am I?

- South Africa >> Australia
- 2001: B.CogSci (hons)., School of Psychology, University of Western Australia
- 2003: M.CogSci., School of Psychology, University of Western Australia
- 2007: Ph.D., Centre for Human Factors and Applied Cognitive Psychology, The University of Queensland
 - Applied attention and human factors engineering
- Australia >> Israel...
- Currently: Postdoctoral research fellow in SKILLS project. Working on Sport and Entertainment demonstrations



Sport and Entertainment Demonstrations




PERCRO Perceptual
Robotics Laboratory

PERCRO: Perceptual
Robotics Laboratory,
Scuola di Santa Anna




Université Montpellier I

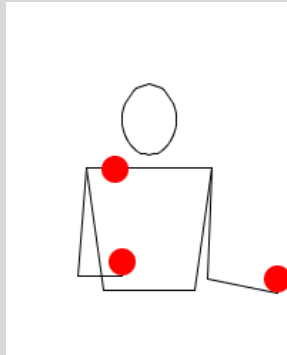
Movement Efficiency
and Deficiency Lab
Université Montpellier



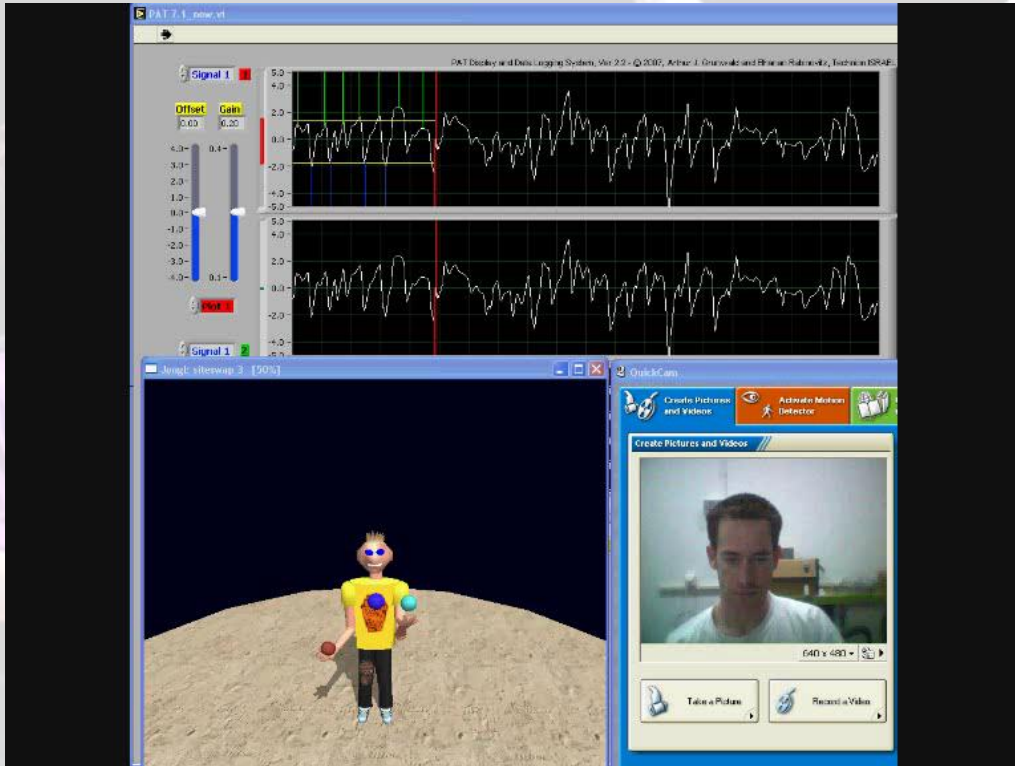
Siteswap

- Siteswap: A juggling notation

- A numerical notation for describing juggling patterns—The number of throws that occur before that ball is thrown again.
- 3 Ball Cascade: 3
- A different pattern: Hold two in your right hand, and one in your left. Start with the '3'; throw one ball across to your left hand - before it lands throw the '4' straight up - now throw the '2', i.e. do nothing with your right hand - catch the '3' and throw it back - now throw the '4' with your right hand - repeat. It is easiest if you juggle with one differently colored ball - make it the first one you throw. This ball should just be thrown back and forth between the hands with ordinary '3' throws. The other two balls stay on their own sides, and are thrown up alternately. The pattern is easy because it has a '2' in it.
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Evidence for a cognitive component



- **Simulators**

- “Once I've got a better image in my head of how what I'm doing is supposed to look like, then I can get along much better”
- “I use it as a base point to, initially, visualise the pattern. I then attempt the siteswap/pattern and refer back to the simulator if I am uncertain about timing/height”
- “I use juggling simulator to increase my ‘pure’ skills... no manipulation or hand movements like mill's mess, just throwing, and catching” timing/height”



Our related study: Cognitive Trainer

- Cognitive Components of Juggling
 - What are they?
 - How do we train people on these skills?
 - How do we measure the effect of training?

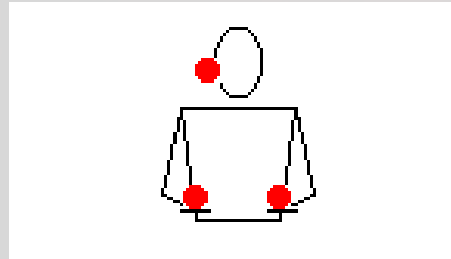
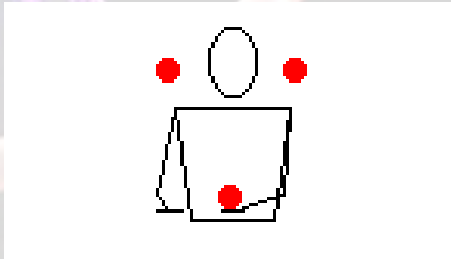
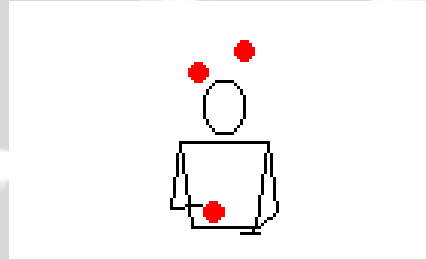
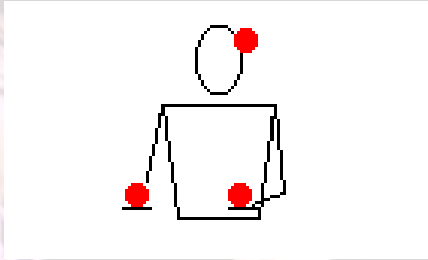


What are the cognitive components?

- Literature Review
 - Few cognitive explanations
 - Observations and discussions
 - Tel Aviv
 - Be'er Sheva
- Laboratory Testing

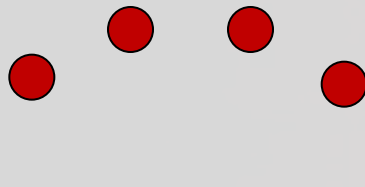


Developing the cognitive trainer



Testing in the virtual world

- Performance measures
 - Number of catches
 - Novices?
 - Dwell Ratio
 - Time consuming





Thank you!

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