OB3D: a 3D Object DataBase for studying Visuo-Cognitive Functions

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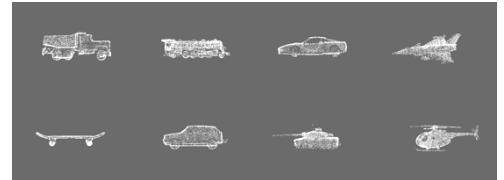CNRS, Cricm UMR 7225, Paris, France; Inserm, Cricm U975, Paris, France

Aims

- We constructed a database of natural objects laser-scanned available on-line (http://ob3d.risc.cnrs.fr/).
- The database is a free open source at the cost to feedback such as new object, datas, articles…
- Objects are versatile 3D clouds of X,Y,Z coordinates allowing multiple transformations.
- The OB3D project is to provide researchers with stimuli but also with a large set of data from different disciplines.

Construction of the DataBase

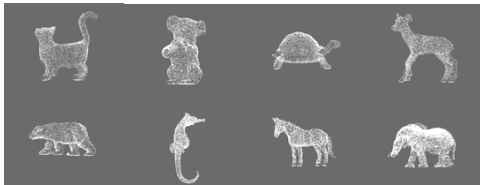3D laser scan → Real object → 3D scatter plot
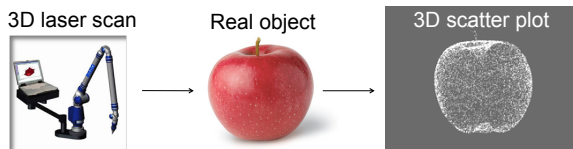
Snapshot of 32 3D objects in four categories. Objects are displayed in a canonical point of view and are made of 10 000 white dots (the online Database counts more than 80 objects)
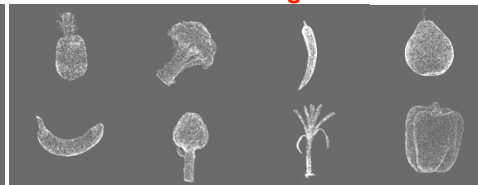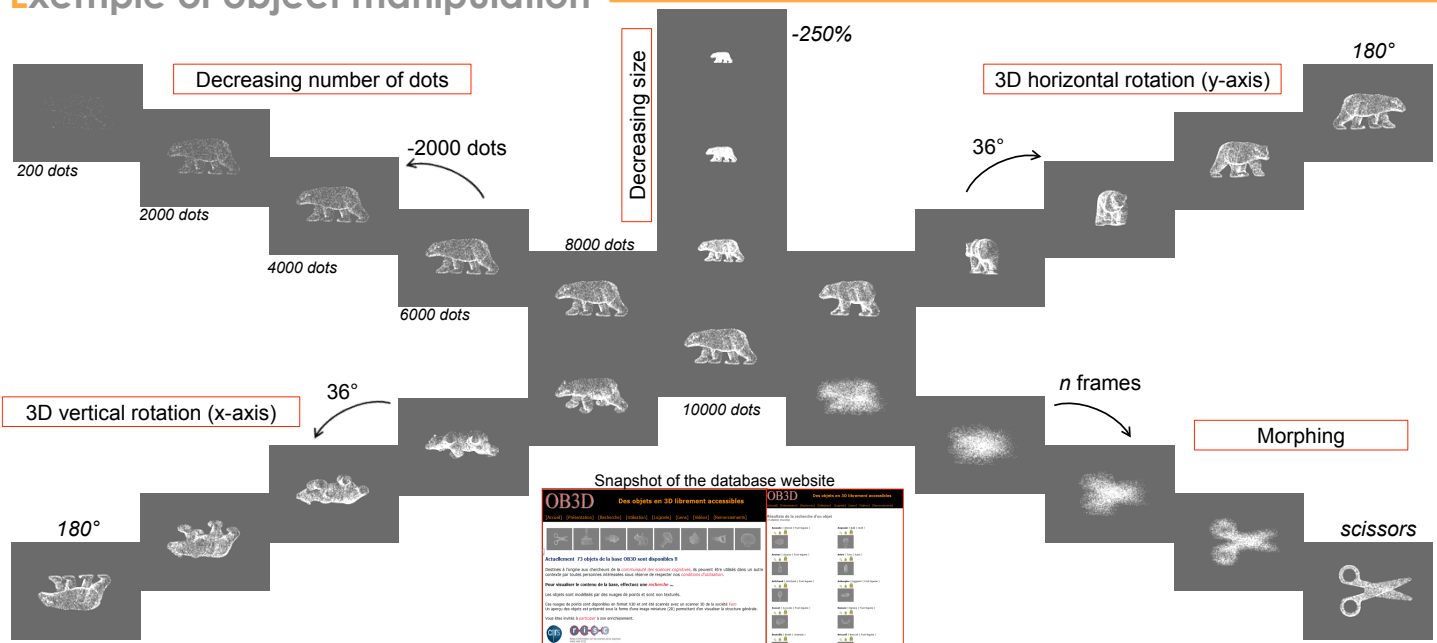
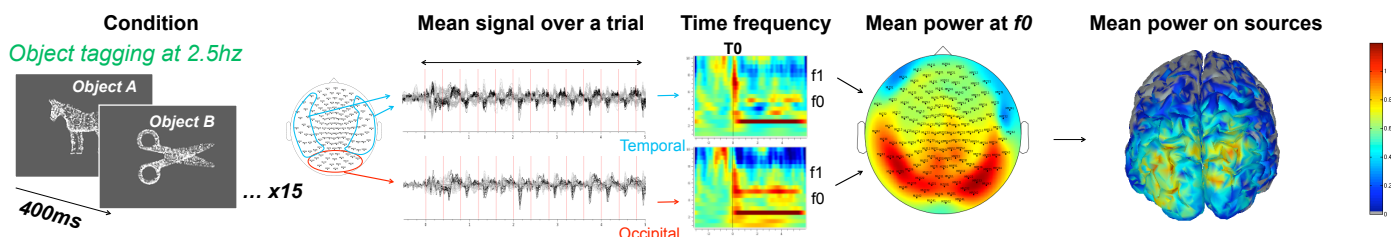**Vehicles**

Animals

Fruits and vegetables

Tools

Exemple of object manipulation

Decreasing number of dots
200 dots
2000 dots
-2000 dots
4000 dots
6000 dots
8000 dots
10000 dots

Decreasing size
-250%

3D horizontal rotation (y-axis)
36°
180°

3D vertical rotation (x-axis)
36°
180°

Morphing
n frames
scissors

Snapshot of the database website

Experimental results obtained with the DataBase

We conducted an MEG experiment using a frequency tagging protocol with these object (See Benmussa et al.[2] This ECVP (poster 13)). Streams of several objects are presented at 2.5hz during 6 seconds (400ms/objects). Below the results of the ERP's, time frequency map and sources reconstruction.

Condition
Object tagging at 2.5hz
Object A
Object B
… x15
400ms

Mean signal over a trial
Temporal
Occipital

Time frequency
T0
f1
f0
f1
f0

Mean power at f0

Mean power on sources

References

[1] for .wrp (wraped file) with *geomagic software* tm
http://www.geomagic.com/
[2] Benmussa, F., Paradis, A.L., Dornbierer, J.G. & Lorenceau, J. (2011). Looking for the LOC with MEG using frequency-tagged natural objects. (abstract), this ecvp.

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Conclusions

The database counts more than 80 objects and is willing to be developed further
3D objects can be saved in several format (.wrl, .obj, .wrp…)
Scatter plot object can be wraped and meshed [1]
We look forward getting you feedback on OB3D website.