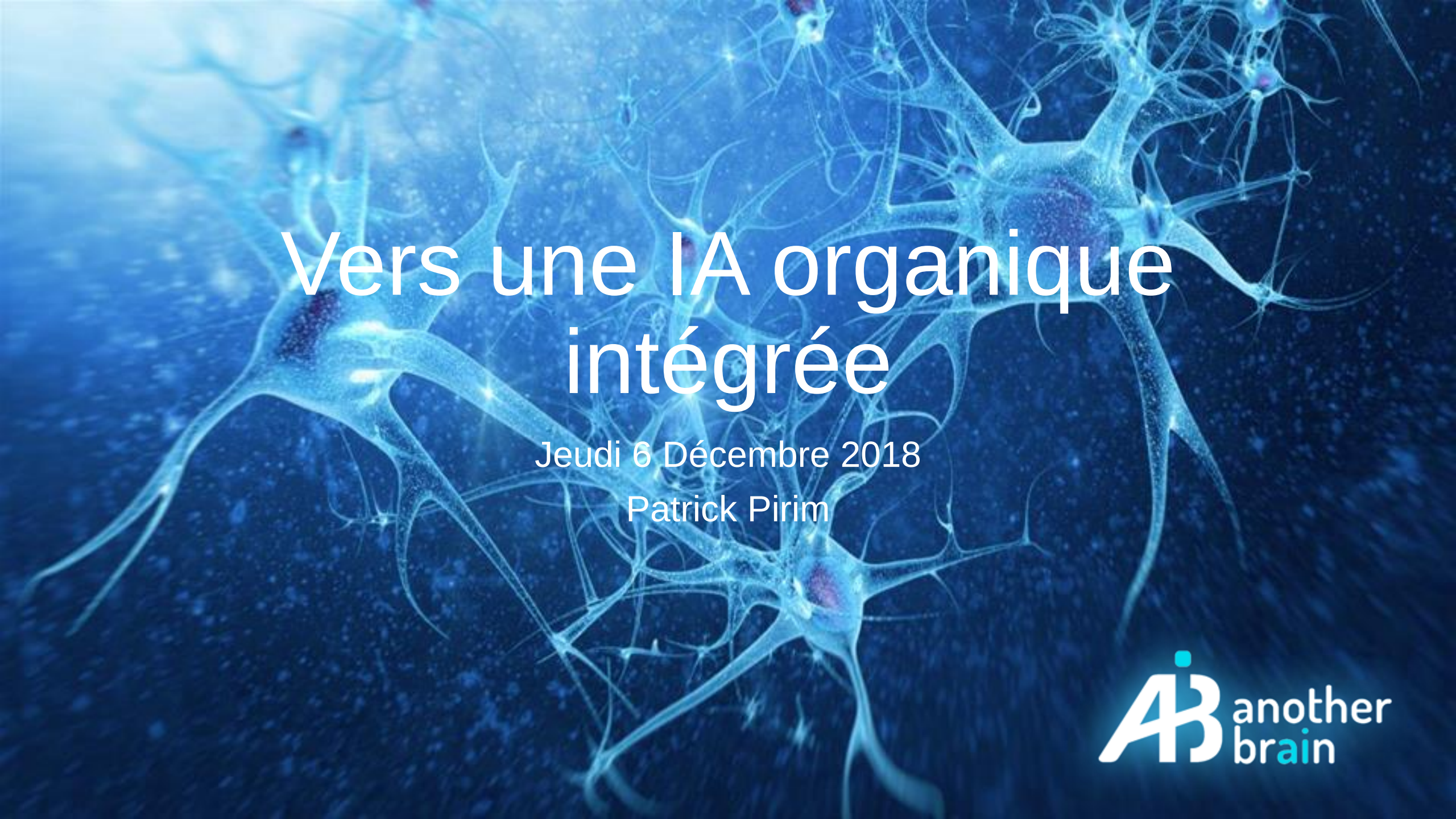


Vers une IA organique intégrée

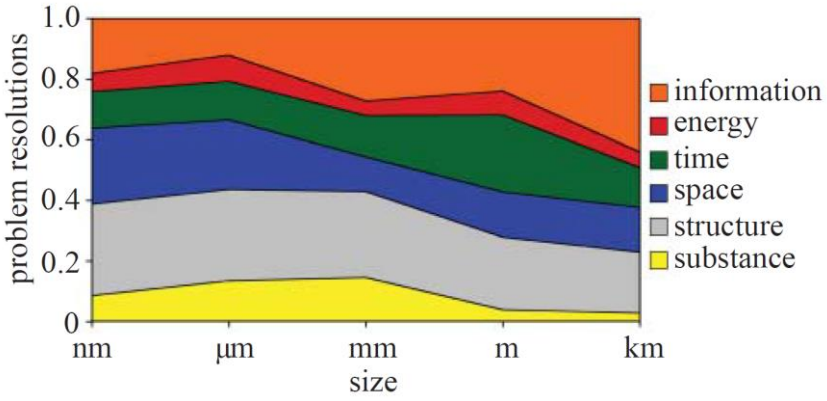
Jeudi 6 Décembre 2018

Patrick Pirim

another brain

Choix de méthode conceptuelle

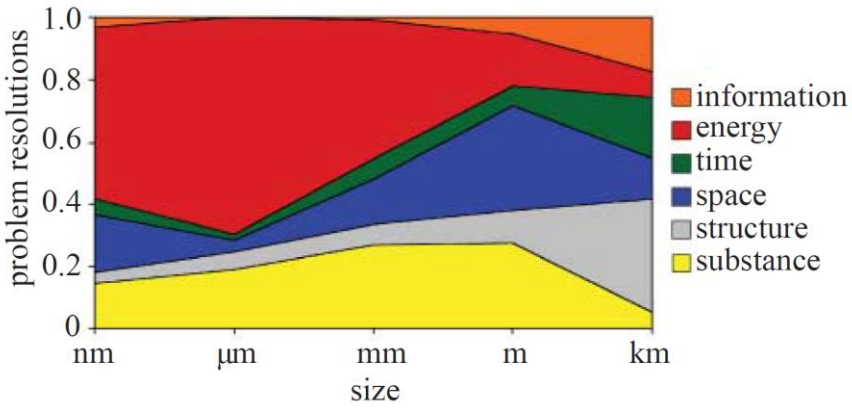
Conception par la biologie



Biological effects arranged according to size/hierarchy.

Minimisation de l'énergie, environ 2% quelque soit l'échelle de réalisation tout en maintenant un % de temps respectable.

Conception par l'humain



Engineering TRIZ solutions arranged according to size/hierarchy.

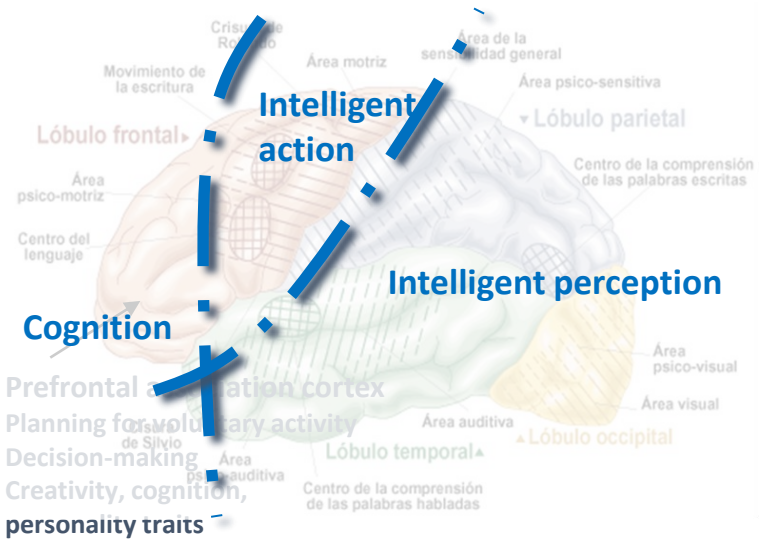
Minimisation du temps, quelques % dépendant de l'échelle de réalisation, la dépense en énergie est très importante.

Une méthode bio-inspiré donnera de meilleurs résultats.

Biomimetics: its practice and theory (2006)

Julian F. V. Vincent*, Olga A. Bogatyreva, Nikolaj R. Bogatyrev, Adrian Bowyer and Anja-Karina Pahl

Partage du cortex en 360 zones



A multi-modal parcellation of human cerebral cortex

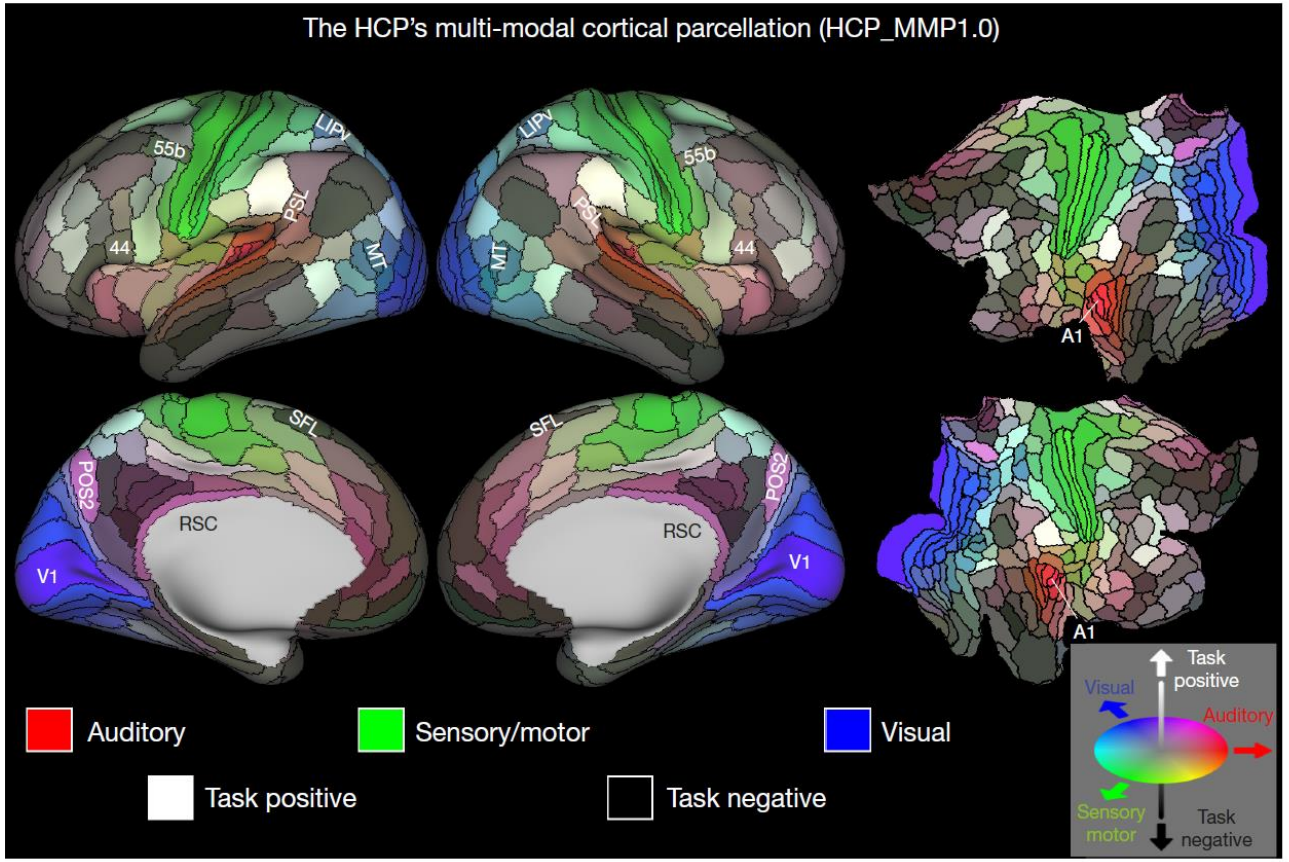
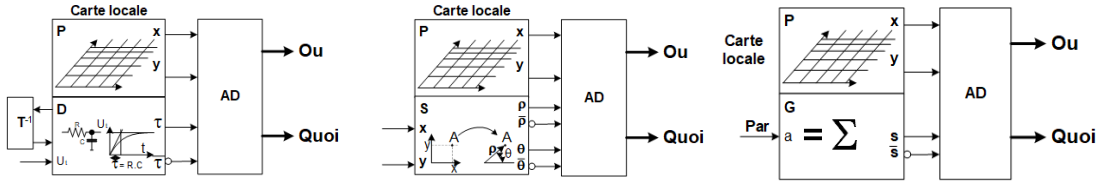


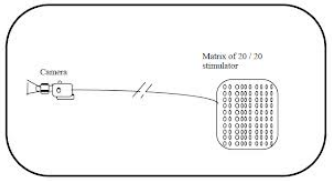
Figure 3 | The HCP's multi-modal parcellation, version 1.0 (HCP_MMP1.0). The 180 areas delineated and identified in both left and right hemispheres are displayed on inflated and flattened cortical surfaces. Black outlines indicate areal borders. Colours indicate the extent to which the areas are associated in the resting state with auditory (red), somatosensory (green), visual (blue), task positive (towards white), or task negative (towards black) groups of areas (see Supplementary Methods 5.4). The legend on the bottom right illustrates the 3D colour space used in the figure. Data at http://balsa.wustl.edu/WN56.

G. D. S.

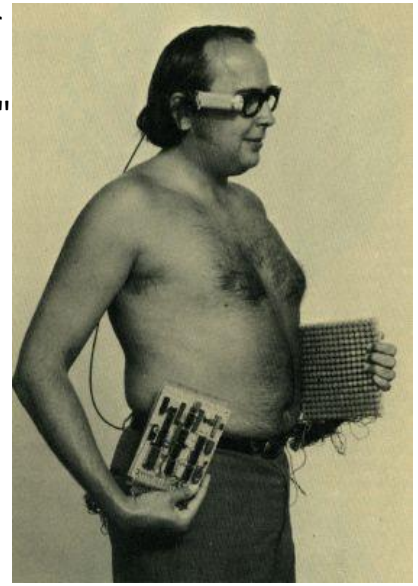


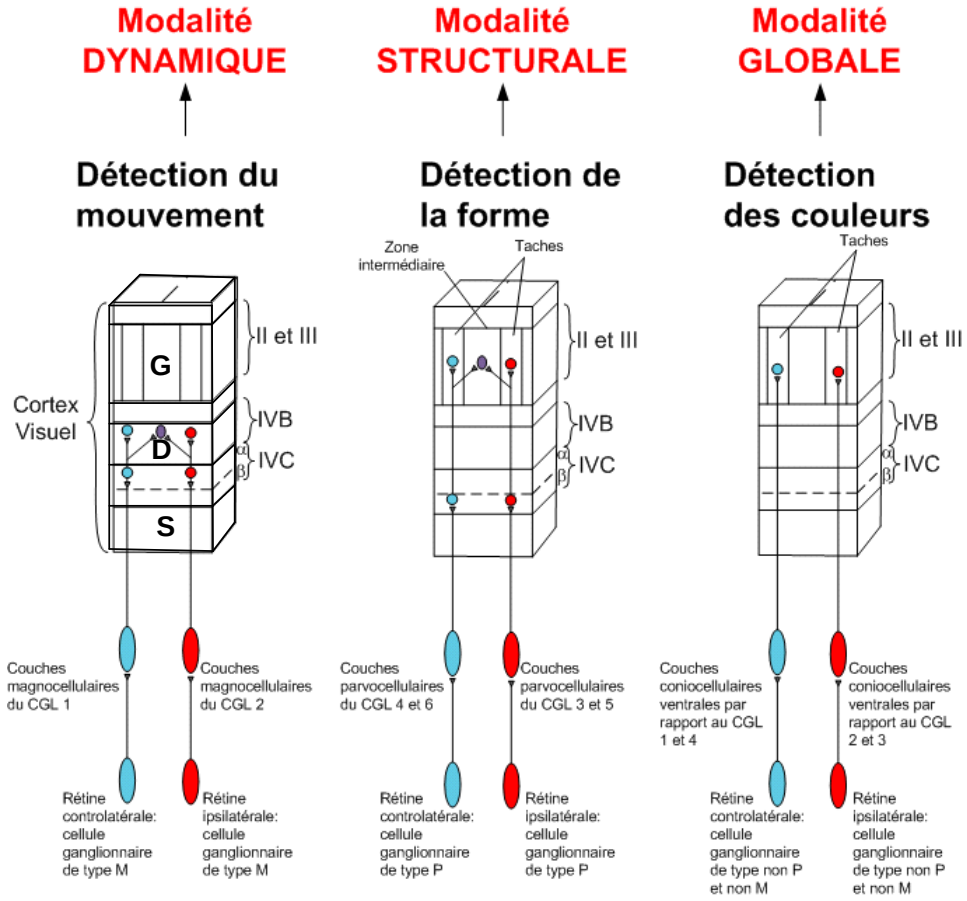
Substitution sensorielle

- "You don't see with your eyes,
- you see with your brain,"



- Bach-y-Rita 1971

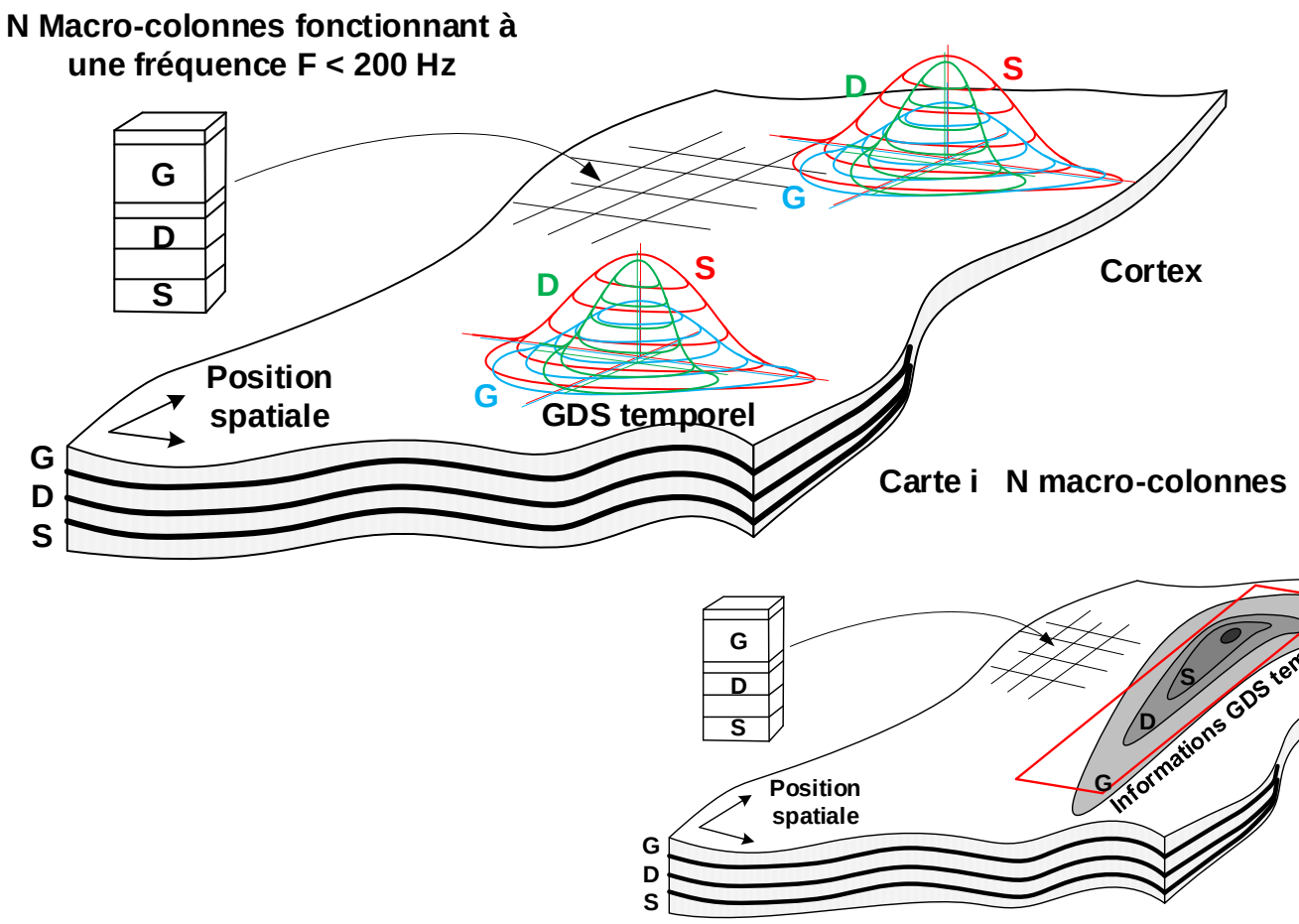




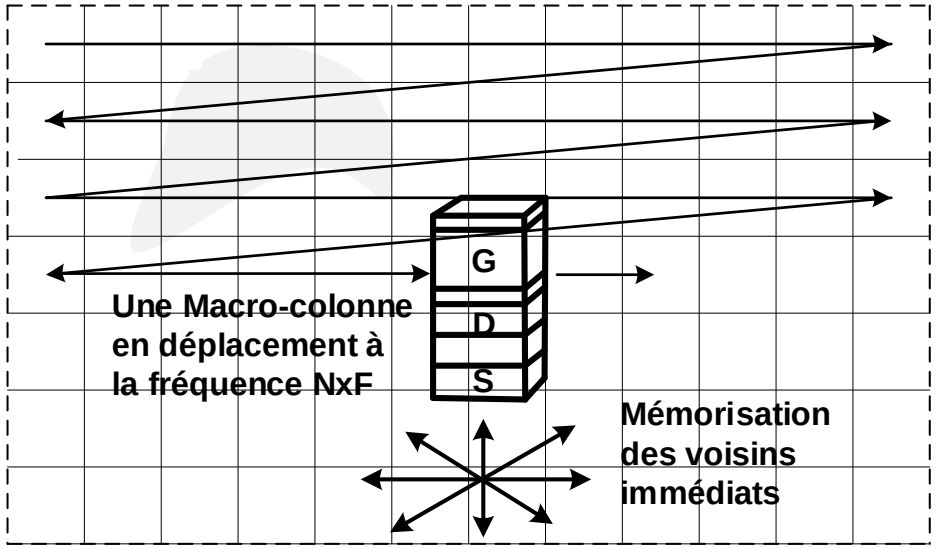
- David Hubel and Torsten Wiesel (Nobel Price medecine 1981)

Attracteur dynamique

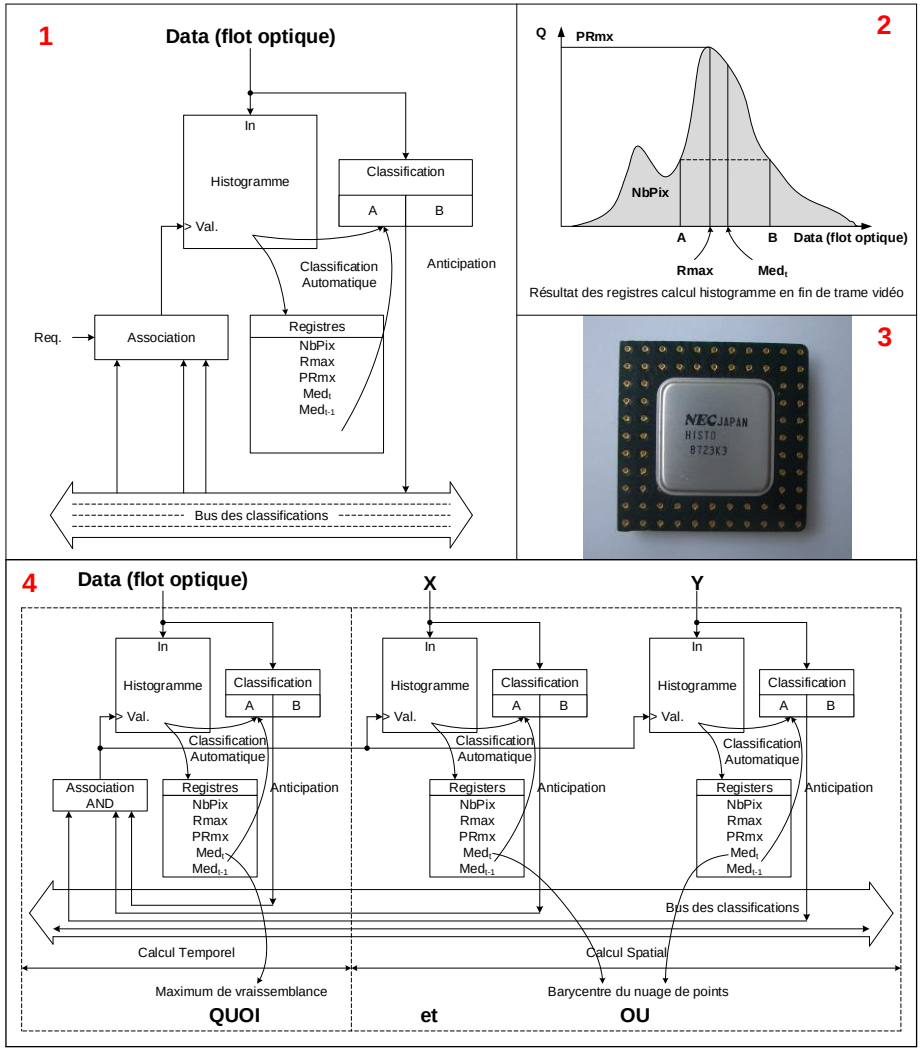
Représentation biologique



Représentation bioinspirée

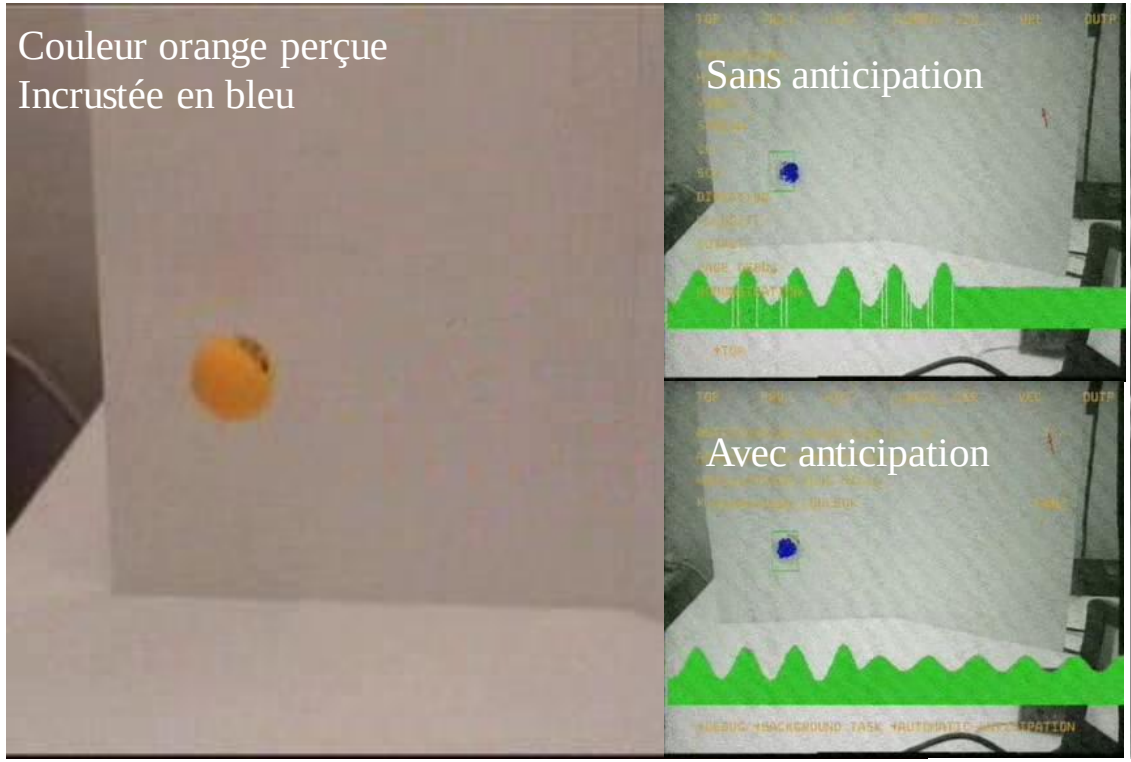


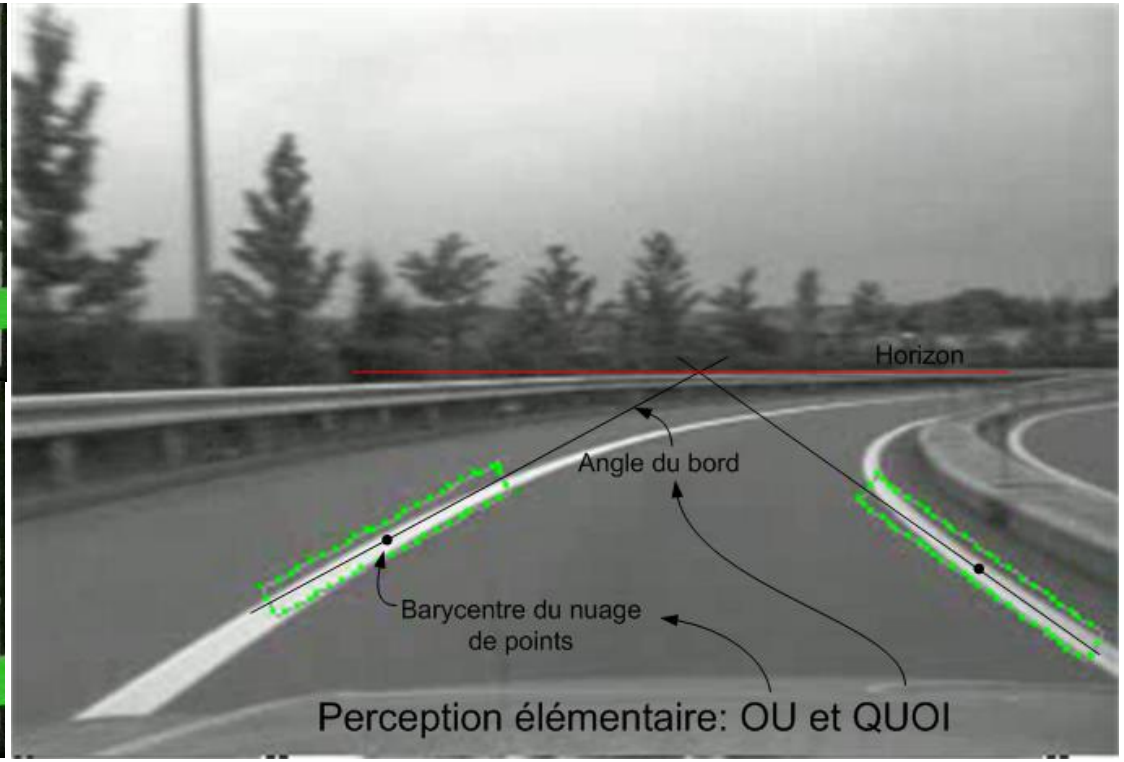
Attracteur dynamique: implémentation



Attracteur dynamique: application

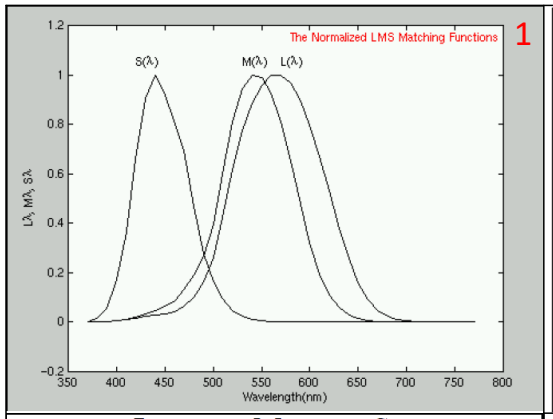
Changement de fonctionnalité par le choix de l'information en entrée

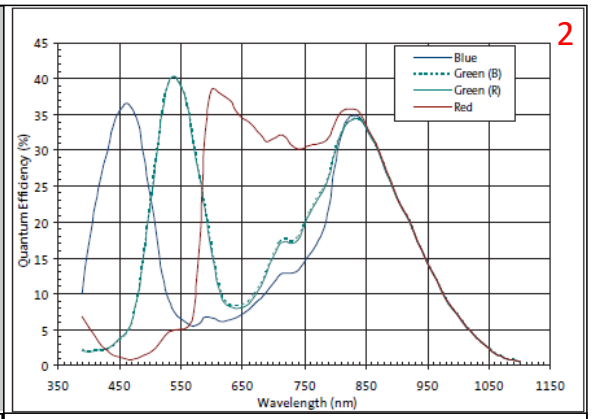


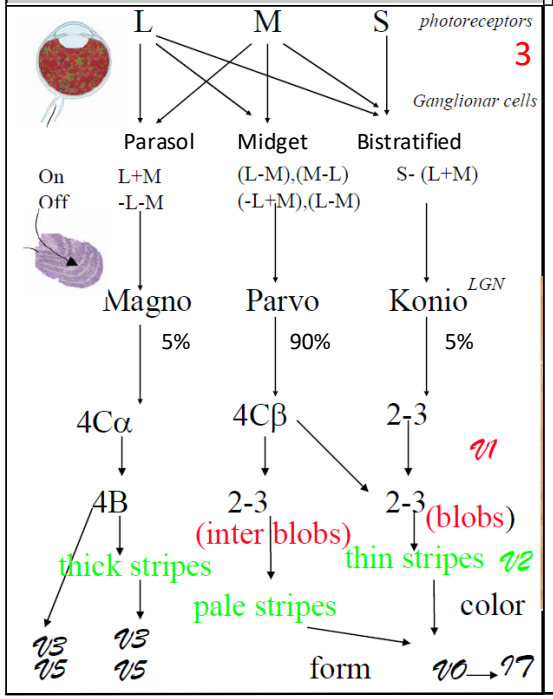


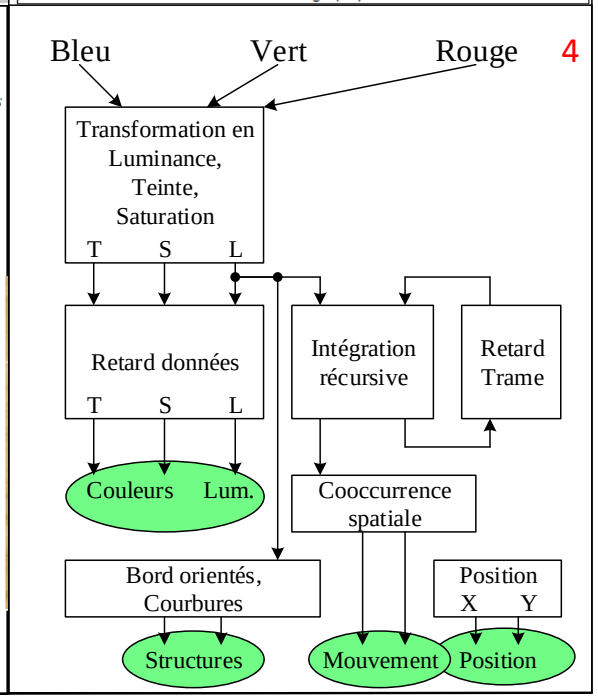
Attracteur dynamique: vidéo

Extraction saillances

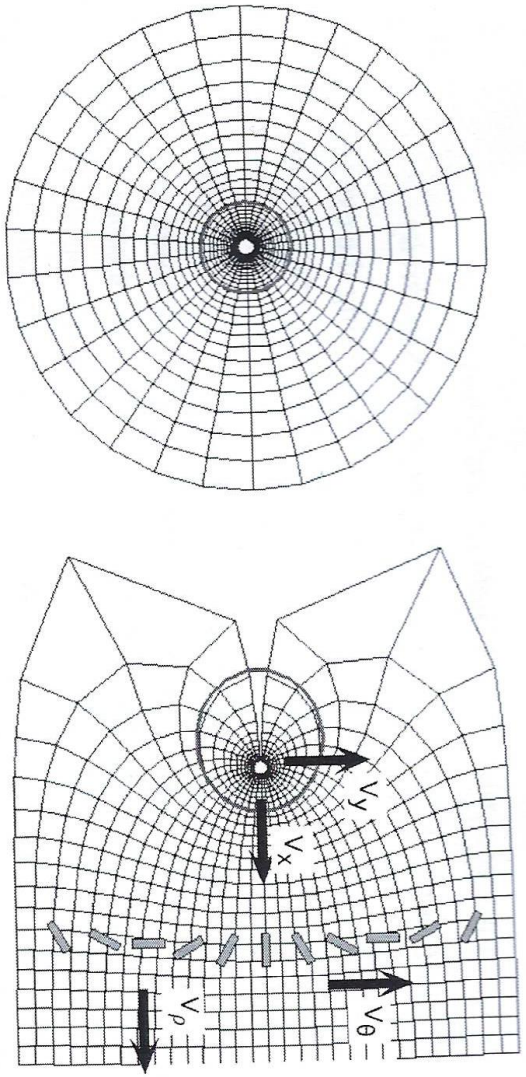


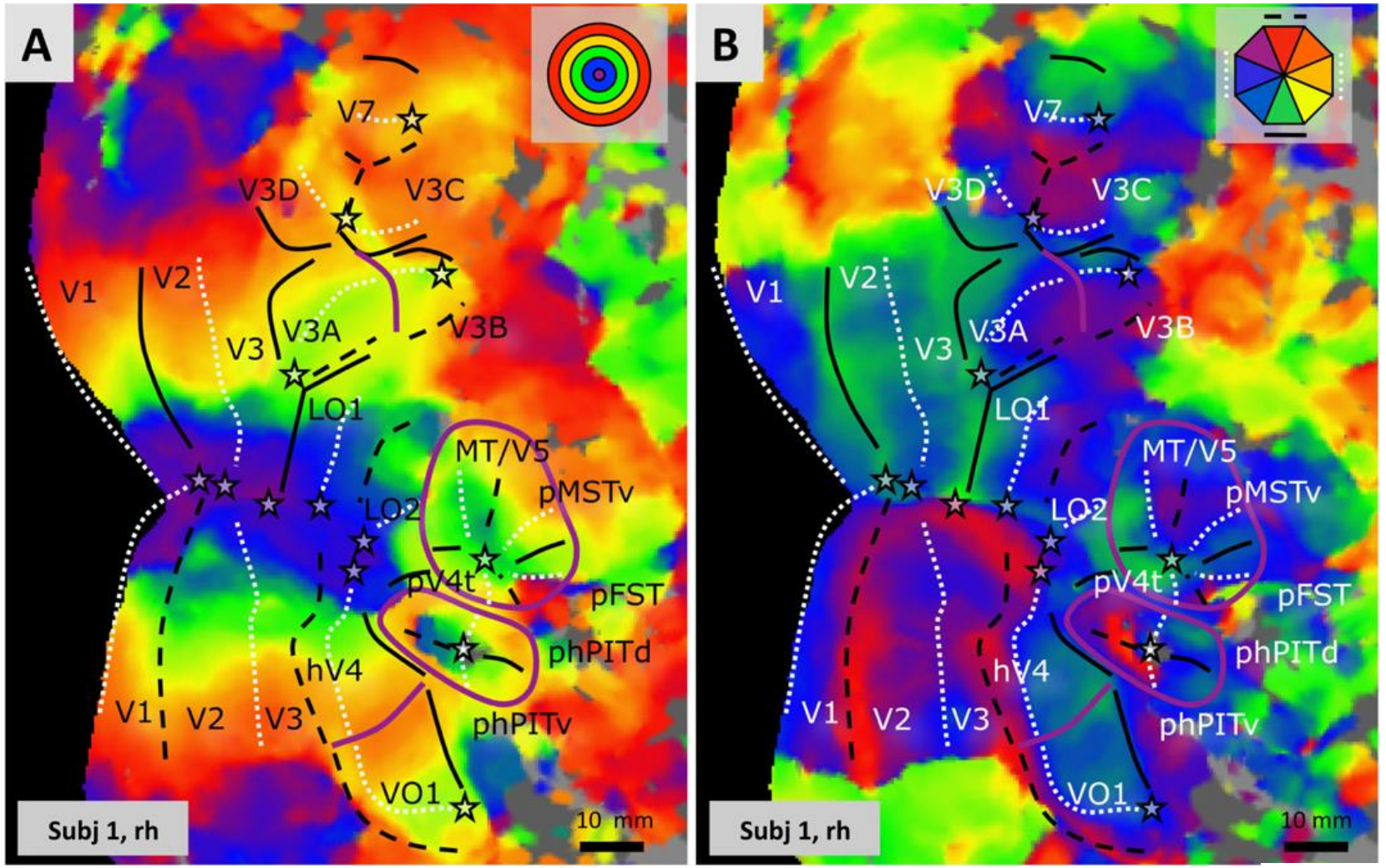




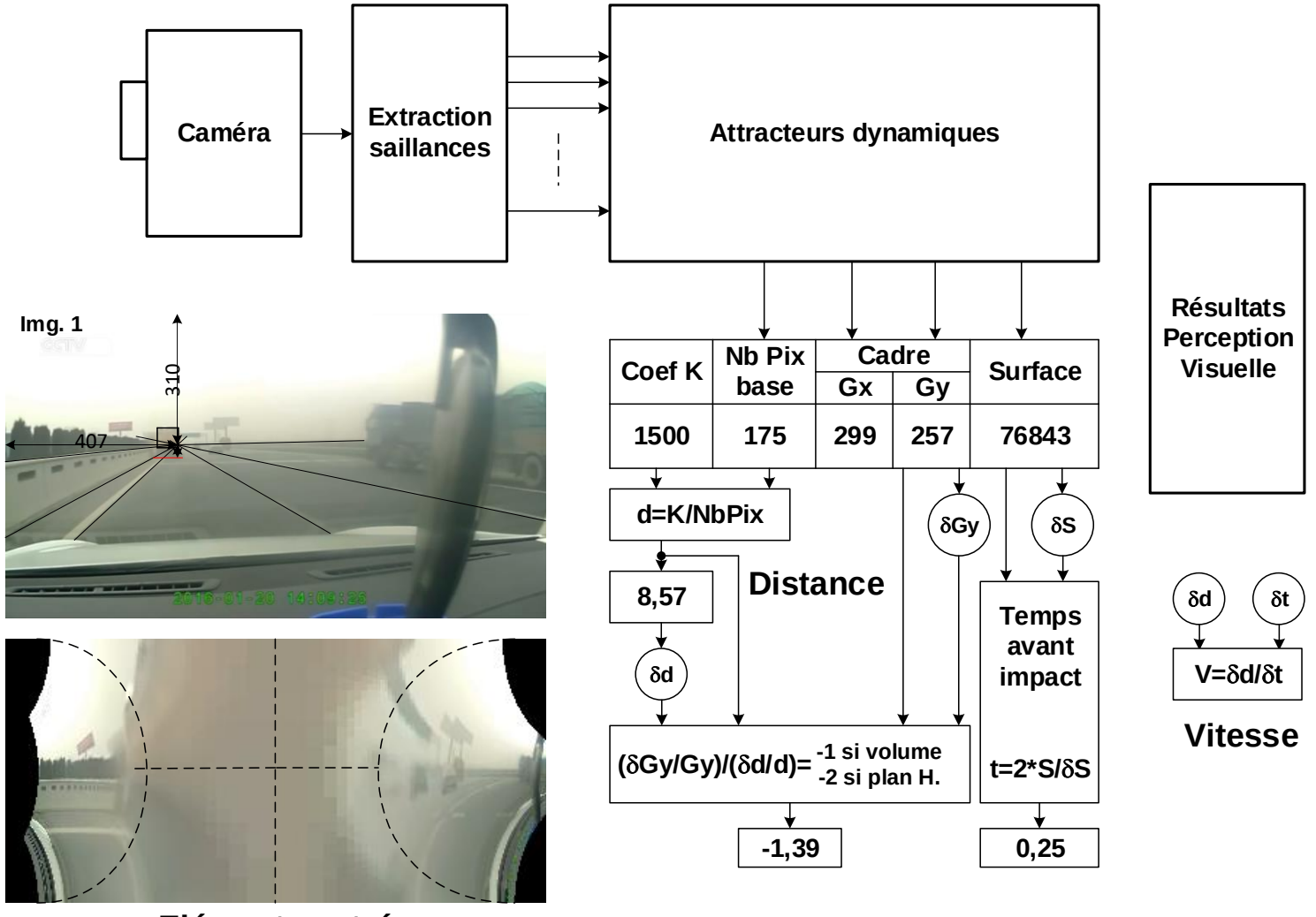


Deux modes de perception visuelle

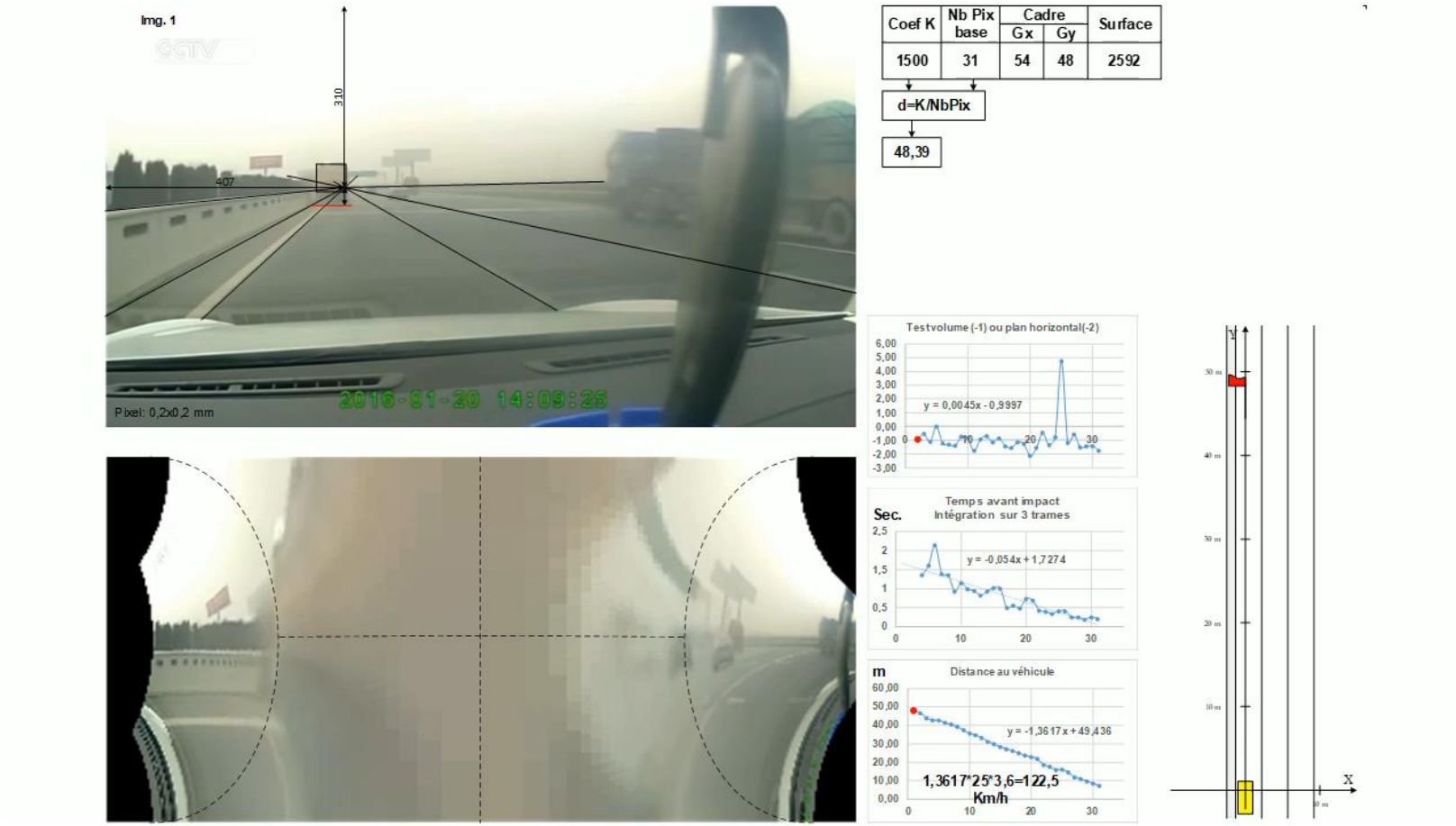




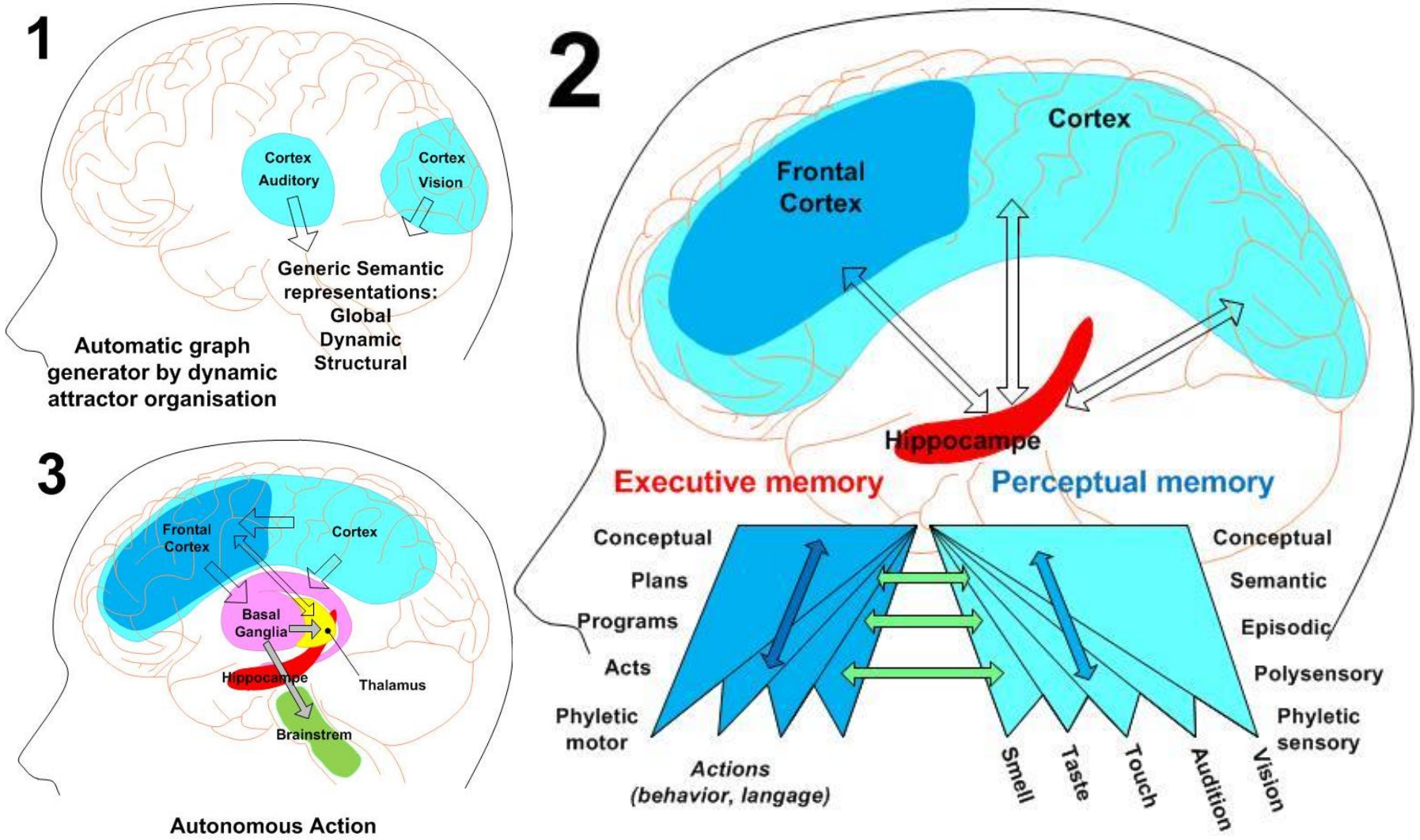
Application: détection d'obstacle



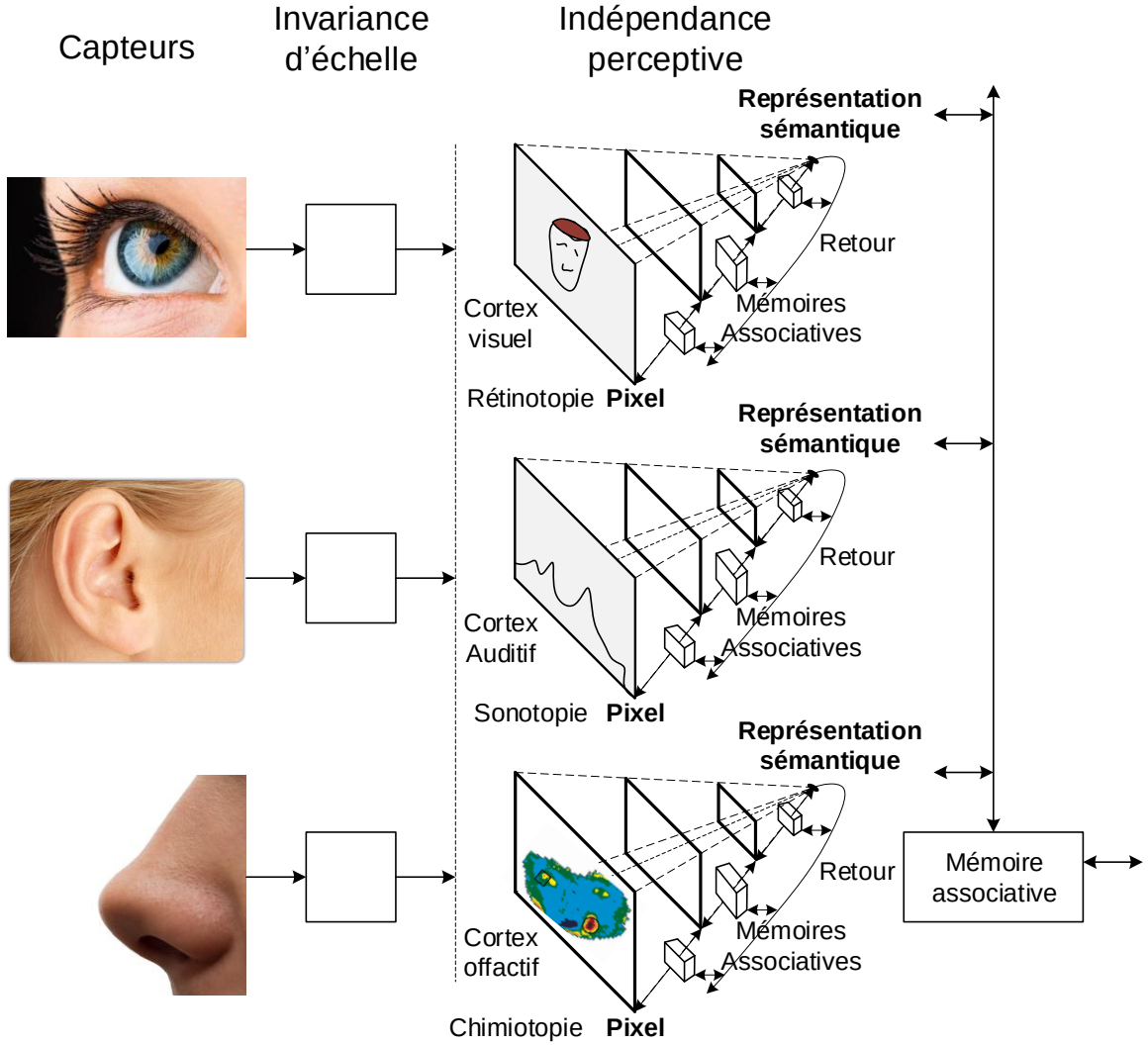
Application: vidéo



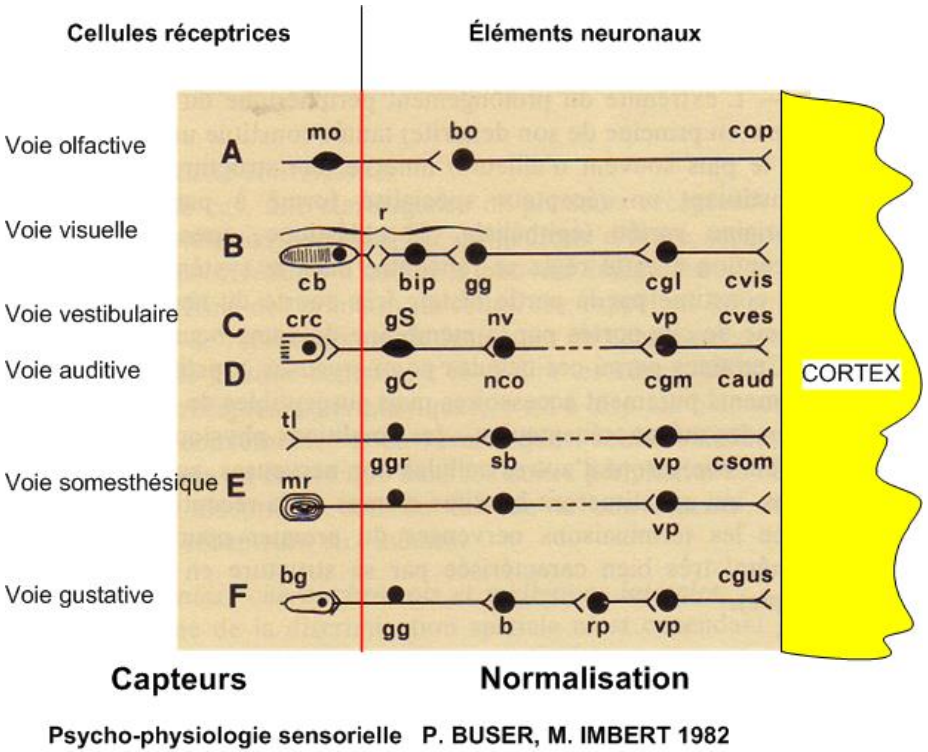
Progression



Perception multimodales

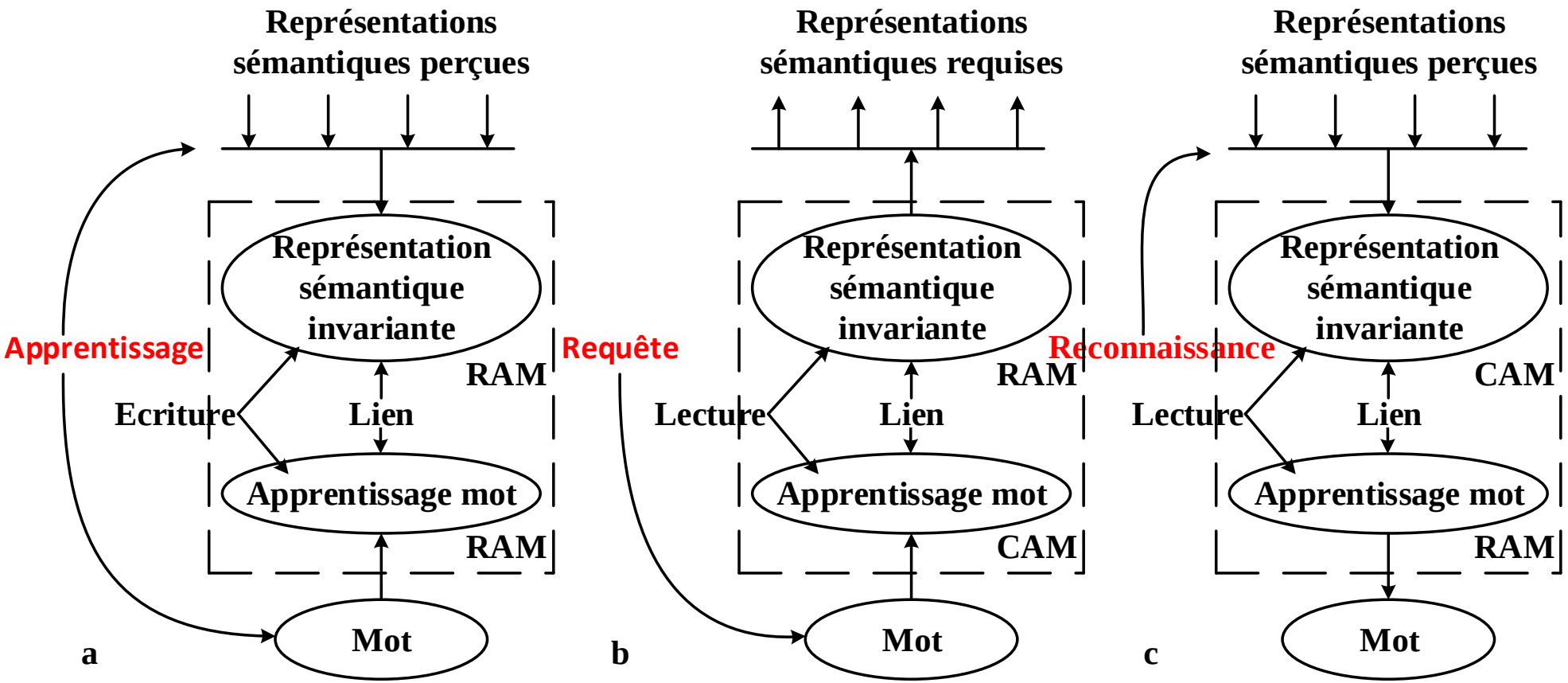


Interface capteurs cortex

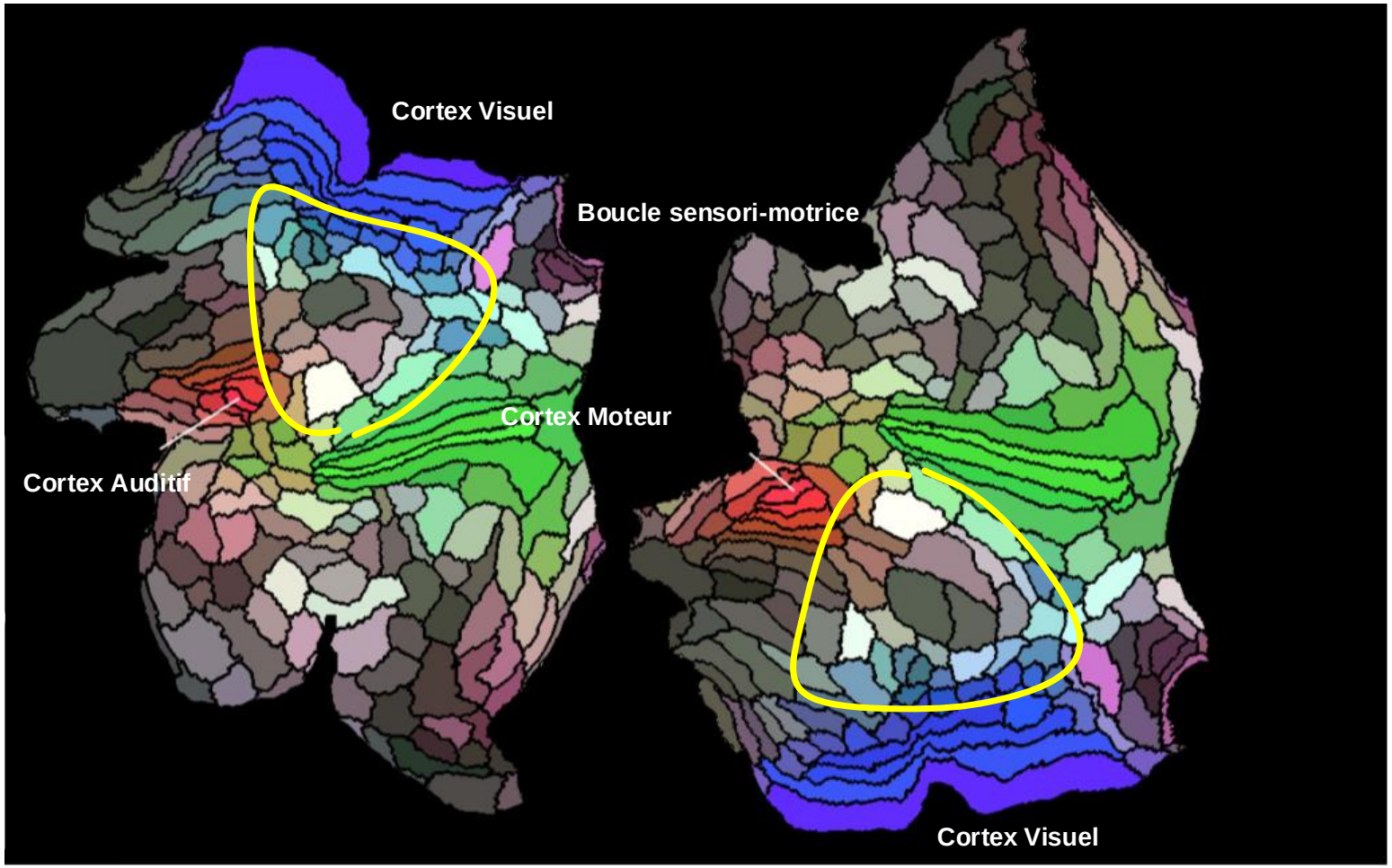


Psycho-physiologie sensorielle P. BUSER, M. IMBERT 1982

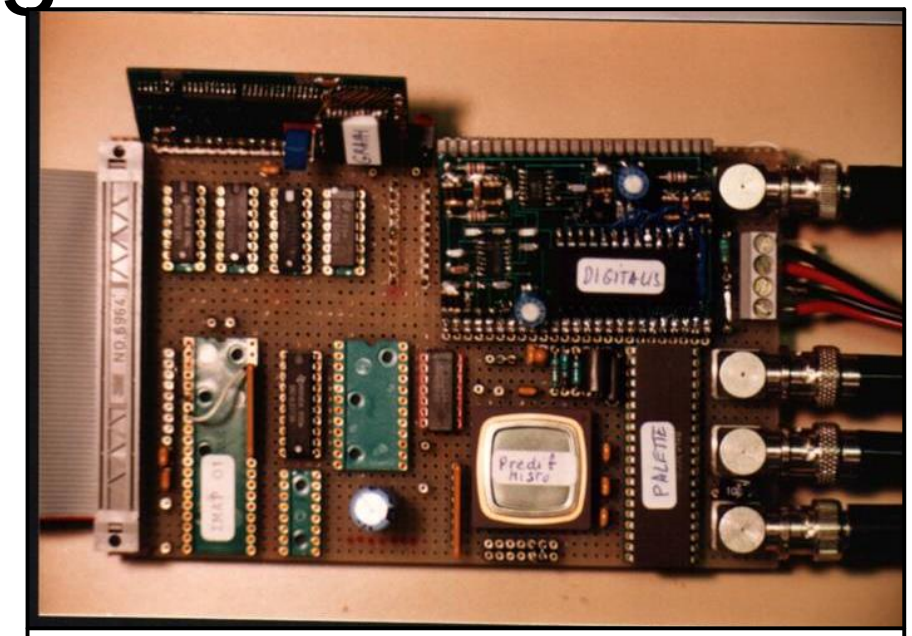
La mémoire associative

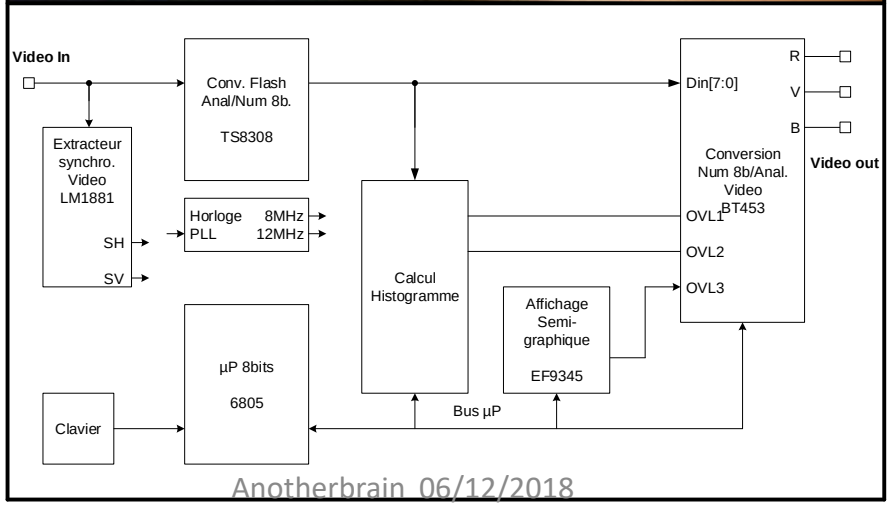


Boucle sensori-motrice

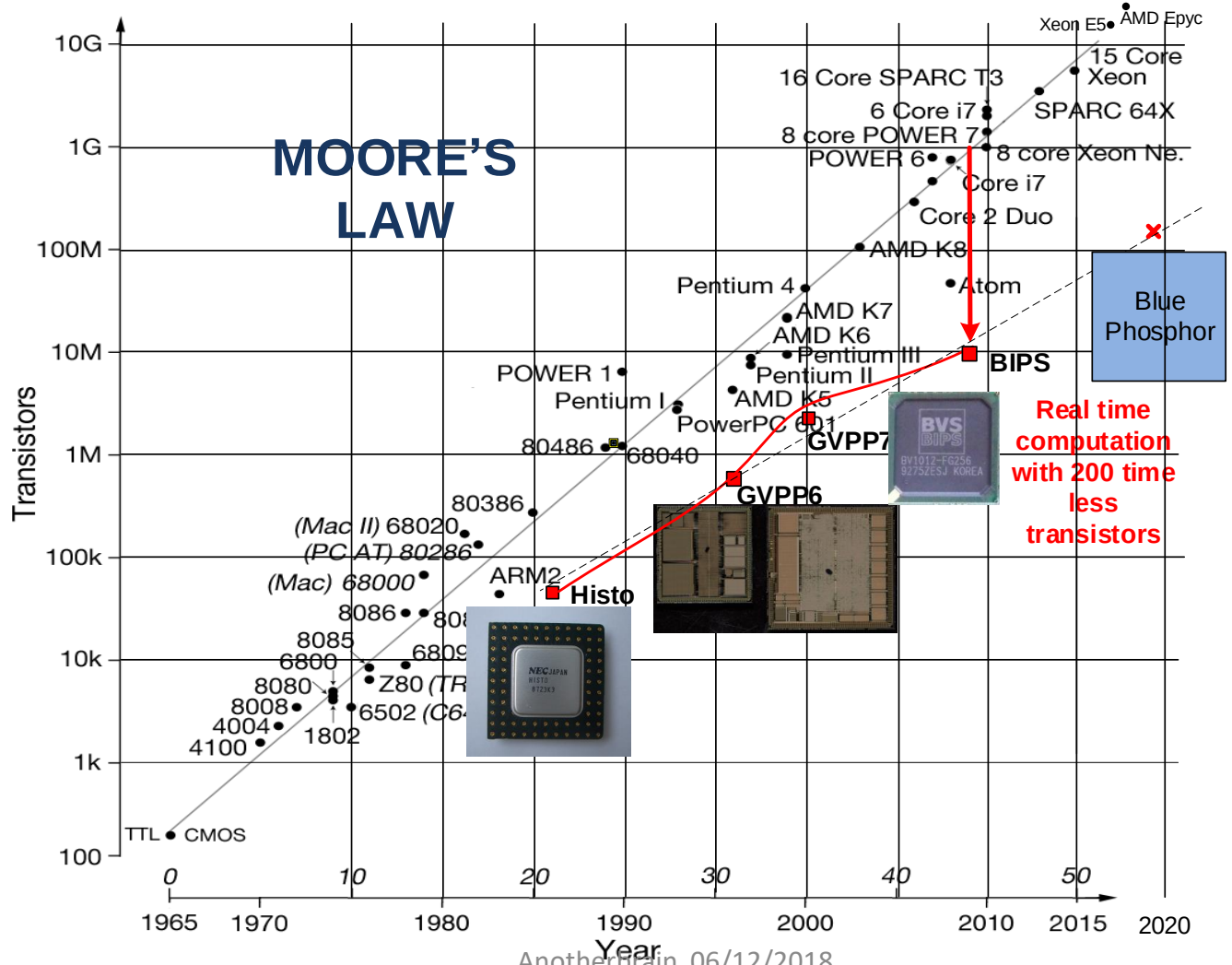


Premier design: 1986





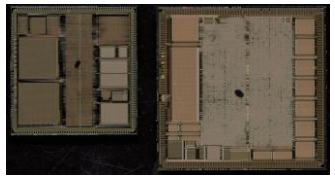
Progression développement



The History of the bio-inspired perceptive process

See of gates
4,4K g*. 5Kbits

Feedback
control 1,5 µm



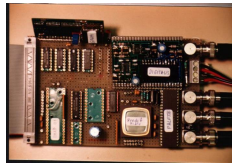
0,7µm, 100 Kg*.
2ML

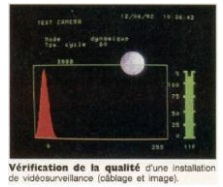
0,5µm, 500 Kg*.
3ML

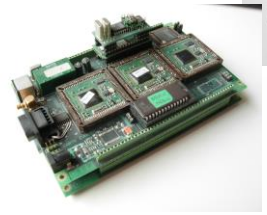
0,22 µm, 900 Kg*.
5ML

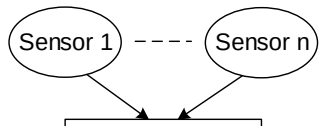
Blue
Phosphor

4x4 mm
28 nm, 45 Mg. 9ML









1986: Spatio-temporal histogram computation definition. « **Dynamic attractor** »
1987: **Patent FR2611063:**
« Method and device for real-time processing of a sequenced data flow, and application to the processing and digital video signal representing a video image »
1989: Second chip to impouve integration
1989: Generic board for imaging processing and video-sensor.
Outdoor applications.
Global modality: (Luminance, hue, and saturation perception)

1994: new chip for motion testing
Dynamic modality:
(temporal variation, direction and velocity of motion)
1996: **Patent FR2751772:**
"Method and device for real-time detection, localisation and determination of the speed and direction of movement of an area of relative movement in a scene."
1997: GVPP presentation

2000: New chip including global and dynamic modalities and a µP
2003: **Patent WO2005010820**
"Automated method and device for perception associated with determination and characterisation of borders and boundaries of an object of a space, contouring and applications."
Structural modality: (oriented-edges, curvatures and texture perception)

2009:New chip: **BIPS**
Generic perception including global, dynamic and structural modalities.
2011: SDK to use it.
2014:Neuromorphic chip orientation
2015: Publication in Technique de l'Ingénieur « Le processeur neuromorphique »
2016: Living Machine 2016: « Perceptive invariance and associative memory ».

2017:Another Brain organisation starts.
3 patents: Associative Memory
2018: More than 20 p.

AnotherBrain's Incredible Team

23 people - 5 nationalities - 6 women & 17 men

Merci de votre attention

Questions ?

contact@anotherbrain.ai