



GIPSA-lab / DIS / G π G / Grenoble Models of Visual Perception



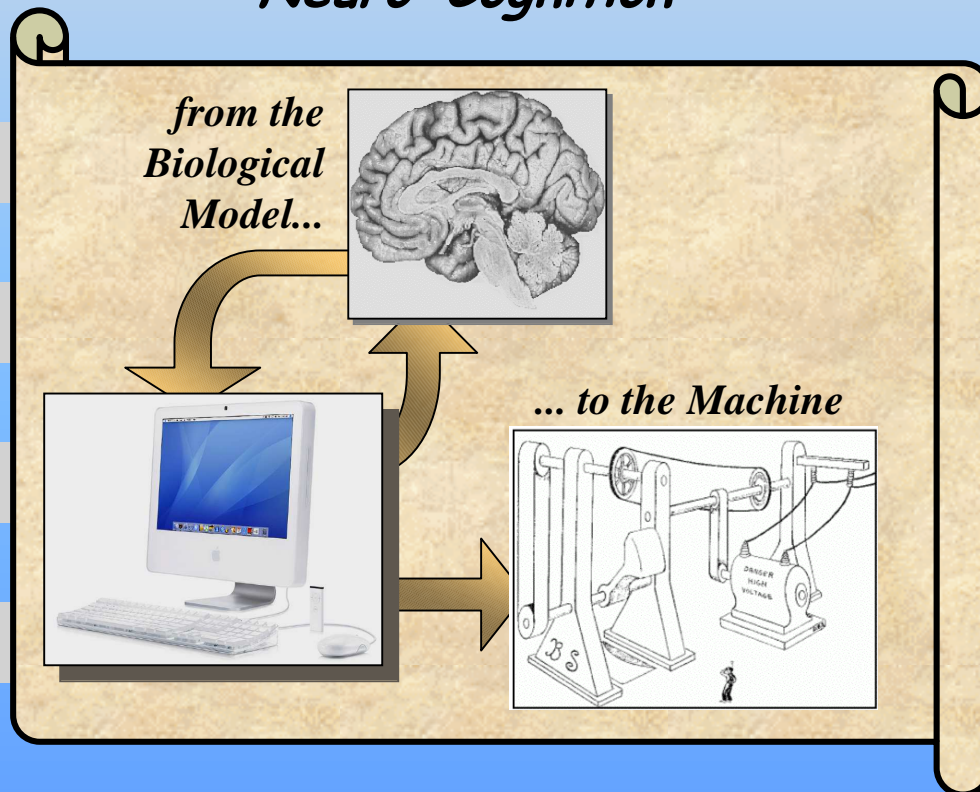
*Signals, Images
&
Neuro-Cognition*

Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

High-dimensional Data Analysis





gipsa-lab

GIPSA-lab Grenoble Models of Visual Perception

GIPSA-lab: *N. Guyader, J. Héroult, A. Guérin-Dugué, D. Pellerin*
Collab.: *C. Marendaz, D. Alleysson (LPNC)*
S. Chokron (TREAT Vision), P. Mamassian,
A. Chauvin, M. Mermillod, ST-Microelectronics

Ph-D's: *B. Chaix, M. Chanceaux, T. Couronné,*
B. Durette, H. Goéau, T. Ho Phuoc,
A. Manolova, S. Marat, P. Anh Do Hoang,
J. Malsert, R. Corvino.

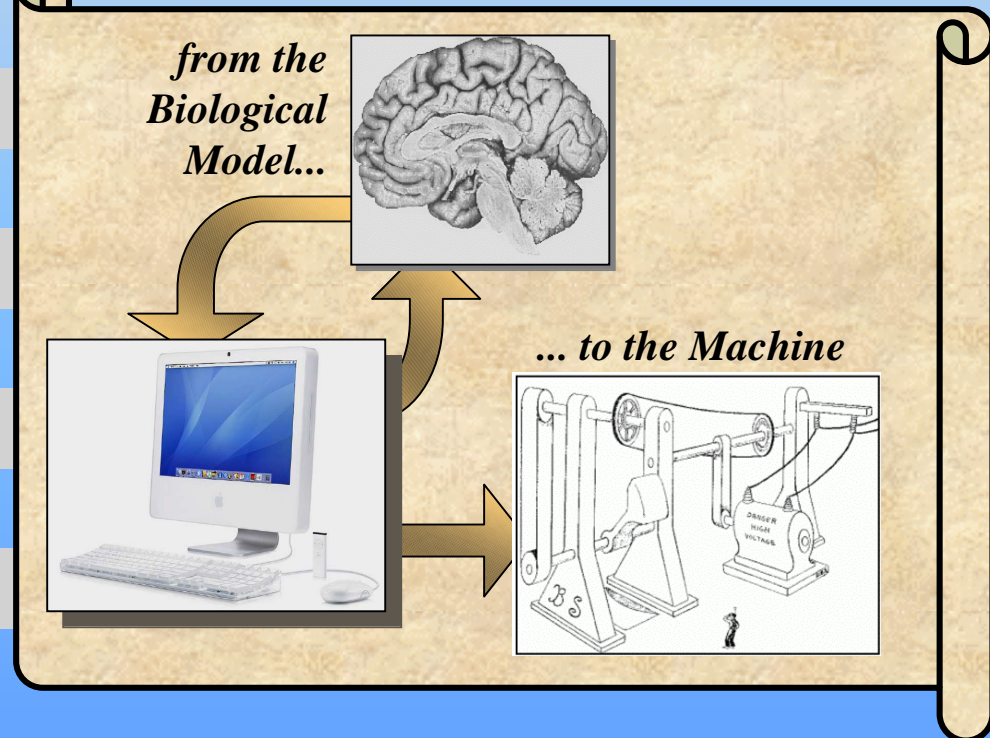
Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

High-dimensional Data Analysis

Signals, Images & Neuro-Cognition





Models of Visual Perception

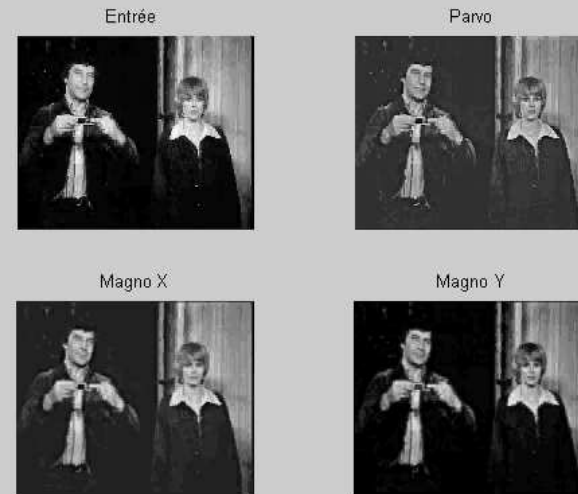
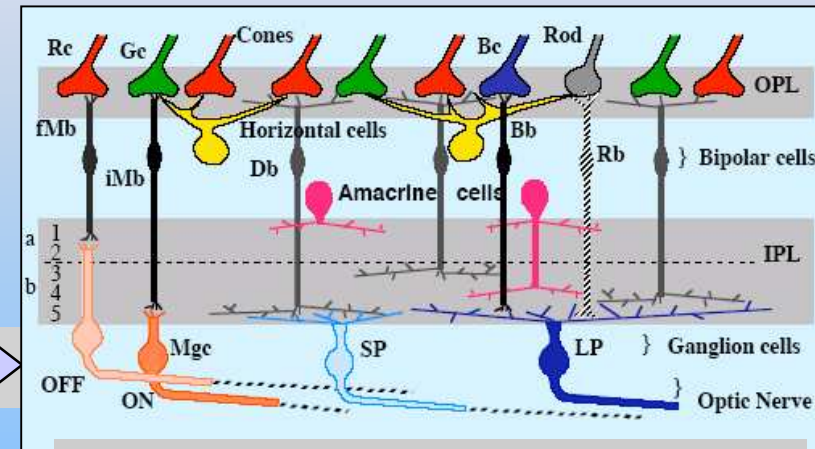
Models of Retinal Processing

- Anatomico-functional analysis
- Spatiotemporal Filtering

Cortical Analysis of Images

Perception Psychophysics

High-dimensional Data Analysis





Models of Visual Perception

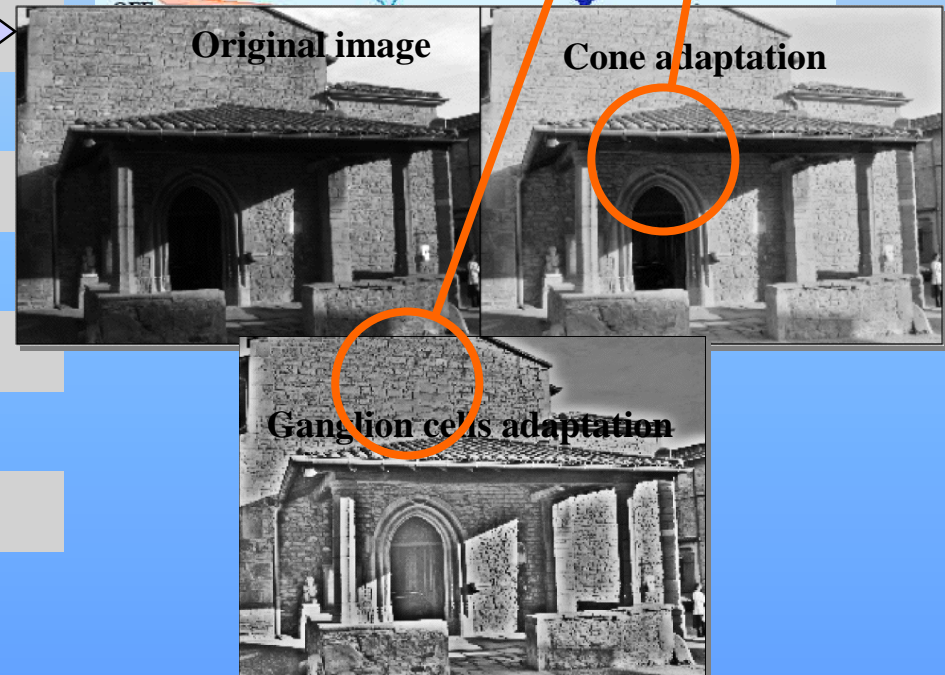
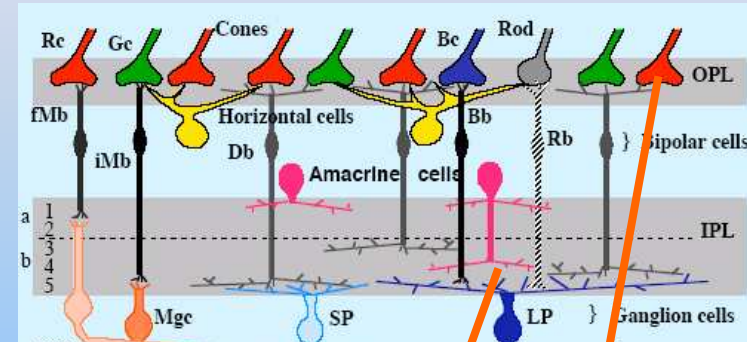
Models of Retinal Processing

- Contextual Adaptation of Cones & Ganglion Cells

Cortical Analysis of Images

Perception Psychophysics

High-dimensional Data Analysis





Models of Visual Perception

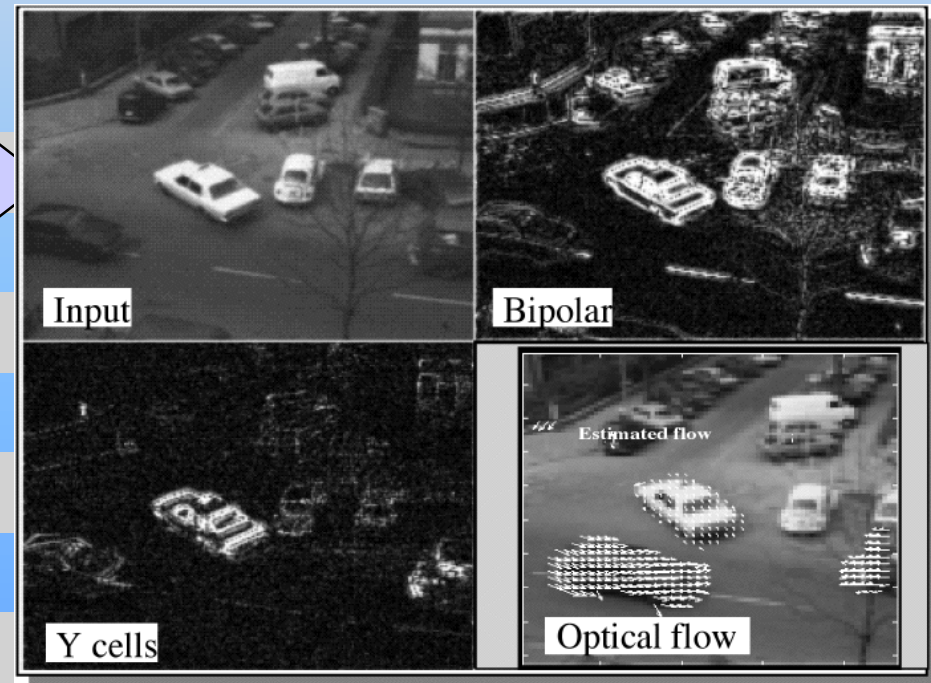
Models of Retinal Processing

- Neuromorphic Circuits
- Velocity estimation

Cortical Analysis of Images

Perception Psychophysics

High-dimensional Data Analysis



Th. A. Benoit

A. Caplier



Models of Visual Perception

Retinal Processing

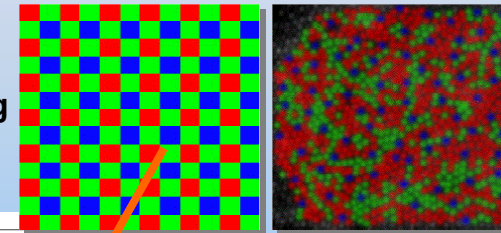
- Color Coding

Cortical Analysis of Images

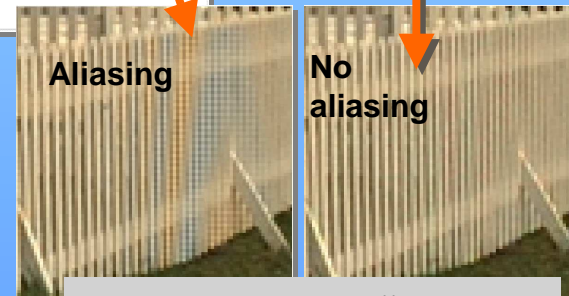
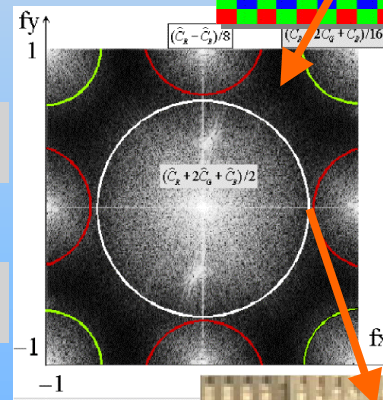
Perception Psychophysics

High-dimensional Data Analysis

CCD Camera:
regular sampling



Retina:
random sampling



Th. B. Chaix

*D. Alleysson
J. Héroult*



Models of Visual Perception

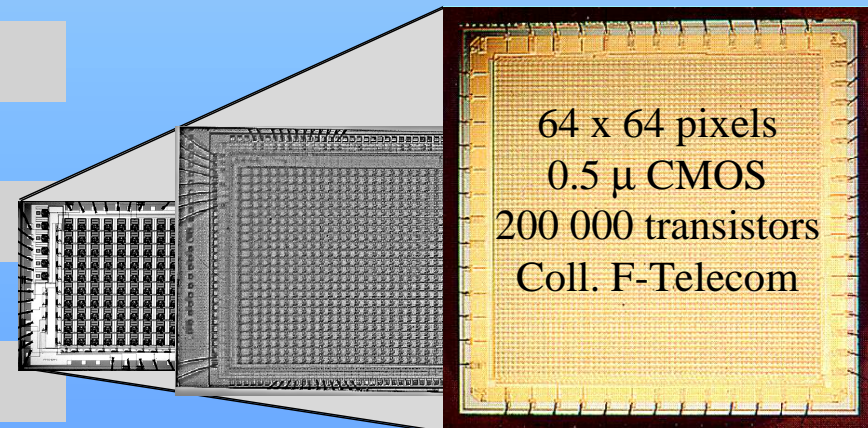
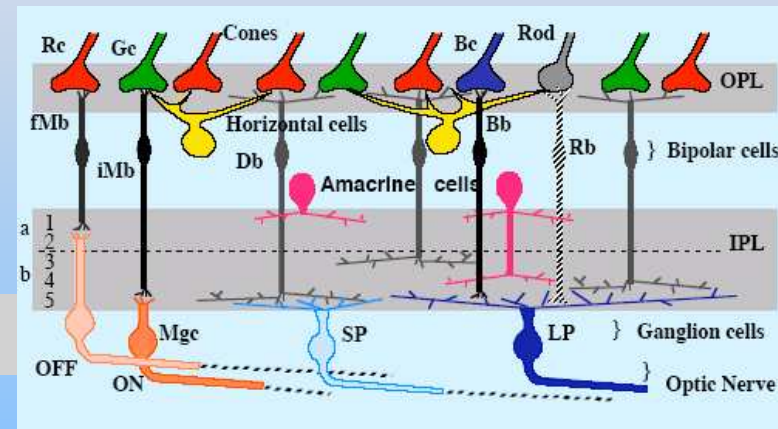
Models of the Retina

- Silicon Retinae (Analogue & Digital)

Cortical Analysis of Images

Perception Psychophysics

High-dimensional Data Analysis





Models of Visual Perception

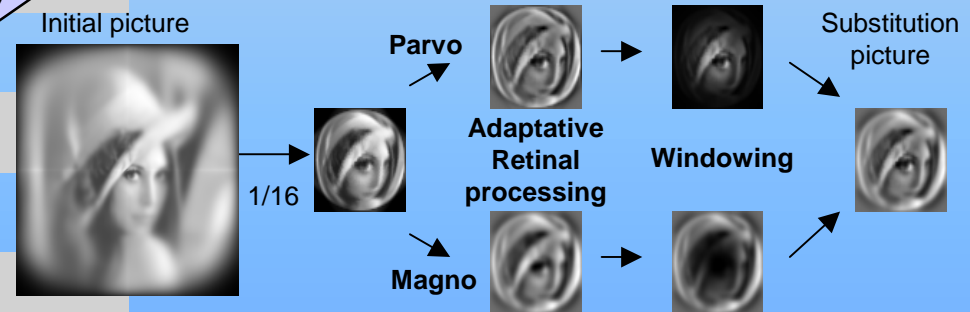
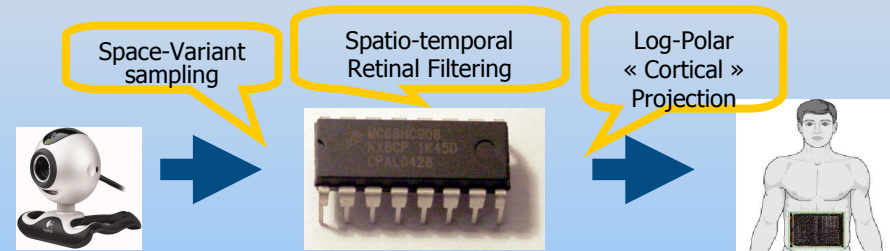
Models of the Retina

- Sensory Substitution (Audio & Tactile)

Cortical Analysis of Images

Perceptual Psychology

High-dimensional Analysis



Th. B. Durette D. Alleysson, J. Héroult
R. Corvino S. Mancini, ST-Microelectronics



Models of Visual Perception

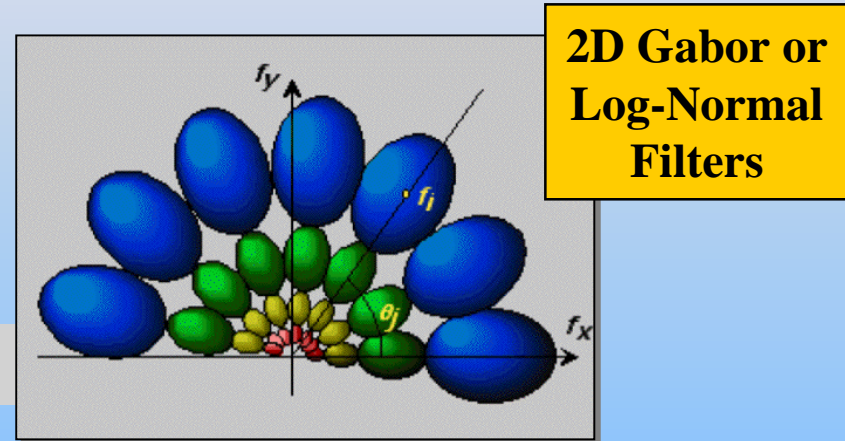
Models of Retinal Processing

Models of the V1 cortex

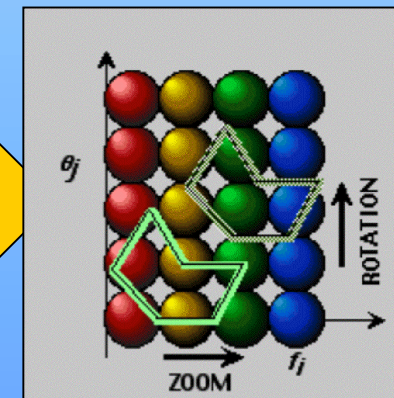
- Principles

Perception Psychophysics

High-dimensional Data Analysis



Log-Polar representation





Models of Visual Perception

3D Spatio-temporal Gabor Filters

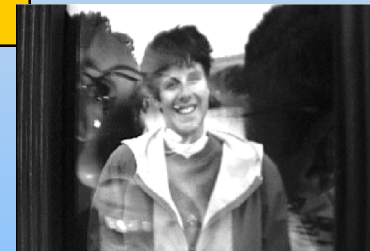
Models of Retinal Processing

Models of cortex V1

- Second order Motion

Perception Psychophysics

High-dimensional Data Analysis



Th. M. Pingault

D. Pellerin



Models of Visual Perception

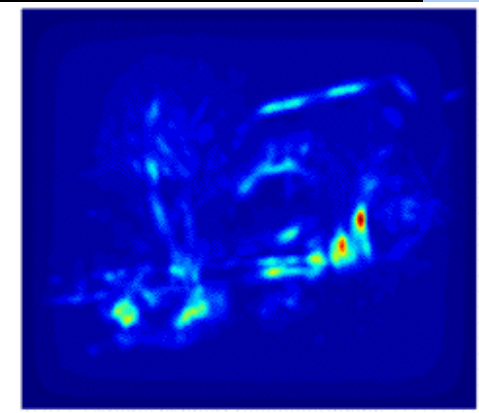
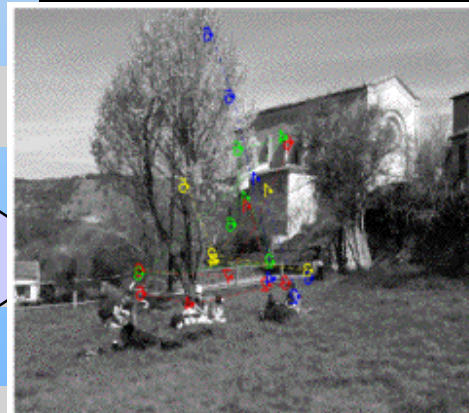
Models of Retinal Processing

Cortical Analysis of images

- Attention & Saillancy Maps

Perception Psychophysics

High-dimensional Data Analysis



*Th. T. Ho Phuoc
S. Marat*

*N. Guyader
A. Guerin-Dugué
D. Pellerin
C. Marendaz
J. Hérault*



Models of Visual Perception

Models of Retinal Processing

Cortical Analysis

- Images and Videos Indexation

Perception Psychophysics

High-dimensional Data Analysis



M. Guironnet

H. Le Borgne

A. Guérin, N. Guyader, J. Hérault, D. Pellerin



Models of Visual Perception

**2D
Log-Normal
Filters**

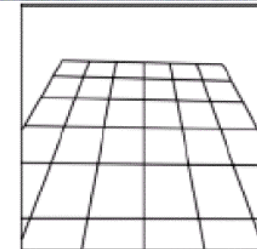
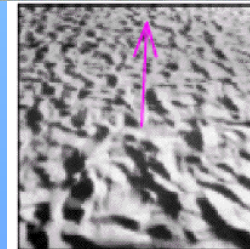
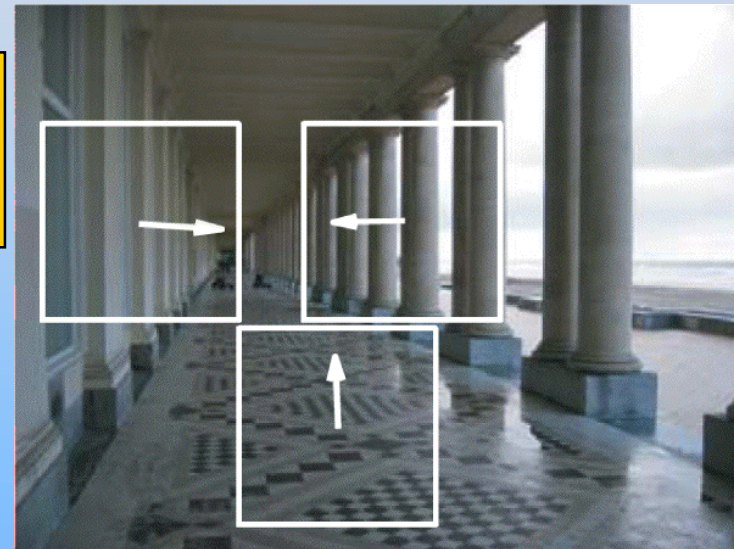
Models of Retinal Processing

Cortical Analysis

- Perspective Estimation

Perception Psychophysics

High-dimensional Data Analysis



Th. C. Massot

*J. Hérault
P. Mamassian*



Models of Visual Perception

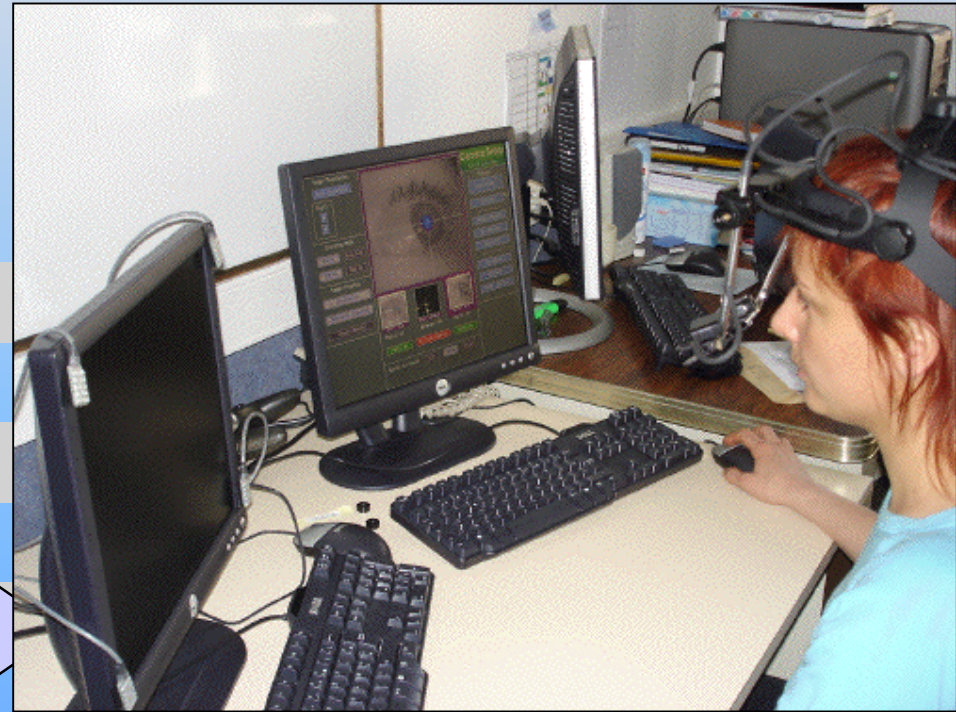
Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

- Experimental platform

High-dimensional Data Analysis



N. Guyader, P. Ladret, D. Pellerin, A. Guérin



Models of Visual Perception

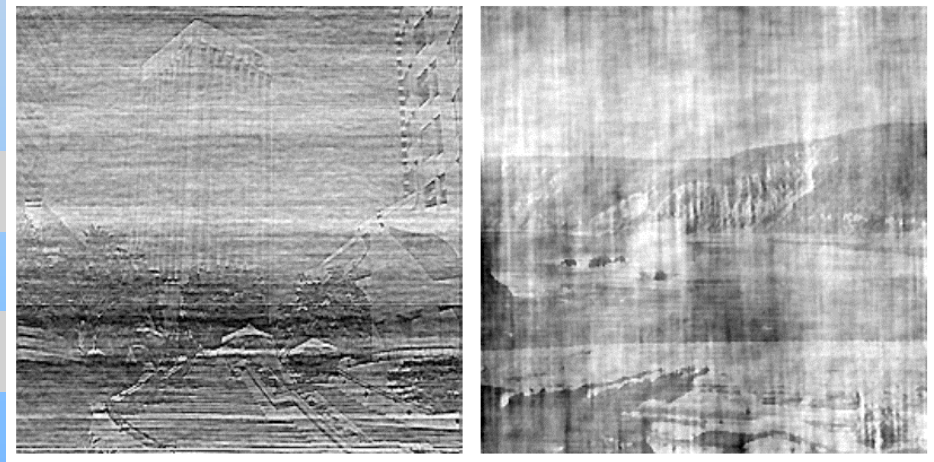
Models of Retinal Processing

Cortical Analysis of Images

Perception

- HF/BF - Amplitude/Phase

High-dimensional Data Analysis



N. Guyader, J. Hérault, C. Marendaz



Models of Visual Perception

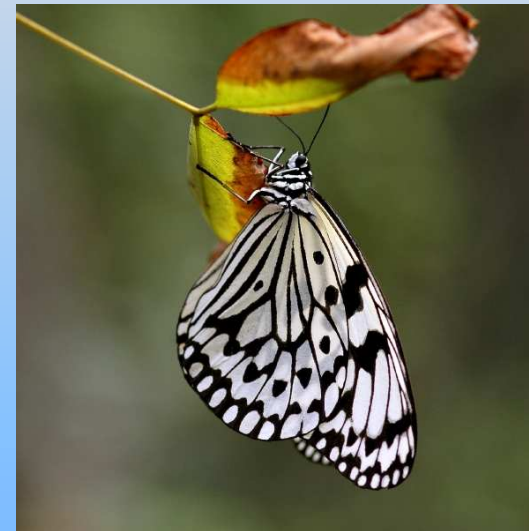
Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

- Quality of Images

High-dimensional Data Analysis



Utilisez les flèches
pour donner une note
et appuyez sur
(1) pour valider



Excellent

Assez bon

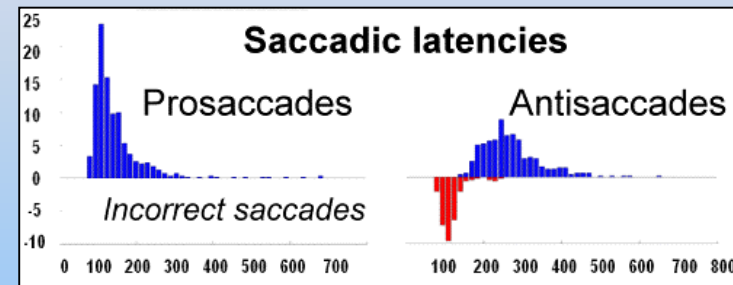
Mauvais

F. Créte
T. Dolmière

P. Ladret
ST-Microelectronics



Models of Visual Perception



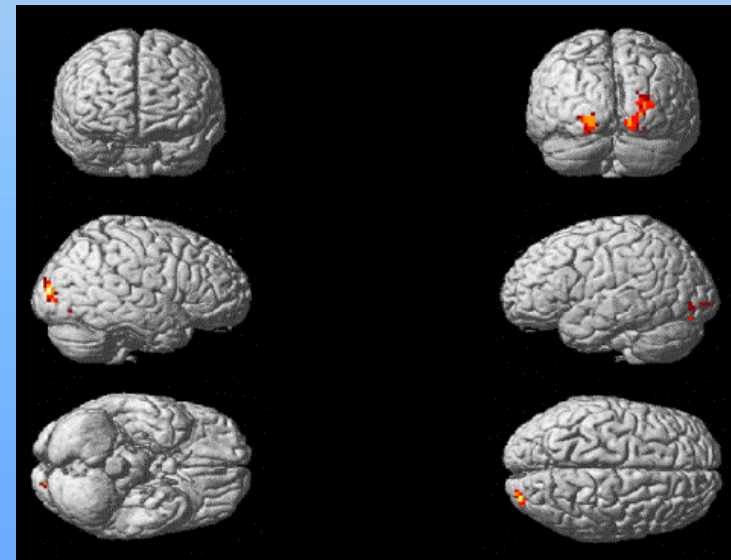
Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

- Saccadic latency
- Experimental platform, fMRI...

High-dimensional Data Analysis



N. Guyader, C. Marendaz



Models of Visual Perception

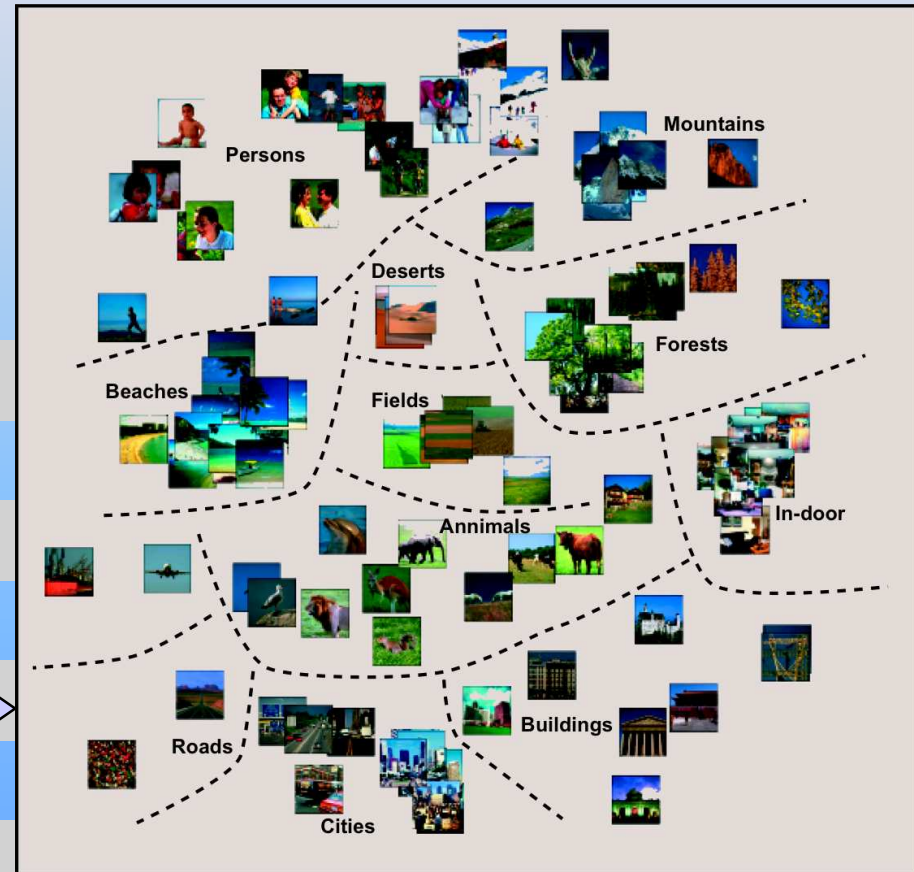
Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

- Scene Categorization

High-dimensional Data Analysis

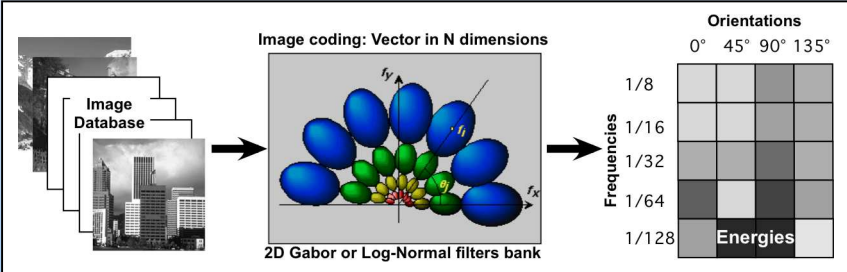


*A. Guérin, N. Guyader, J. Hérault,
D. Pellerin, P. Villemain*



Models of Visual Perception

Pin wheel models of V1 Complex cells



Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

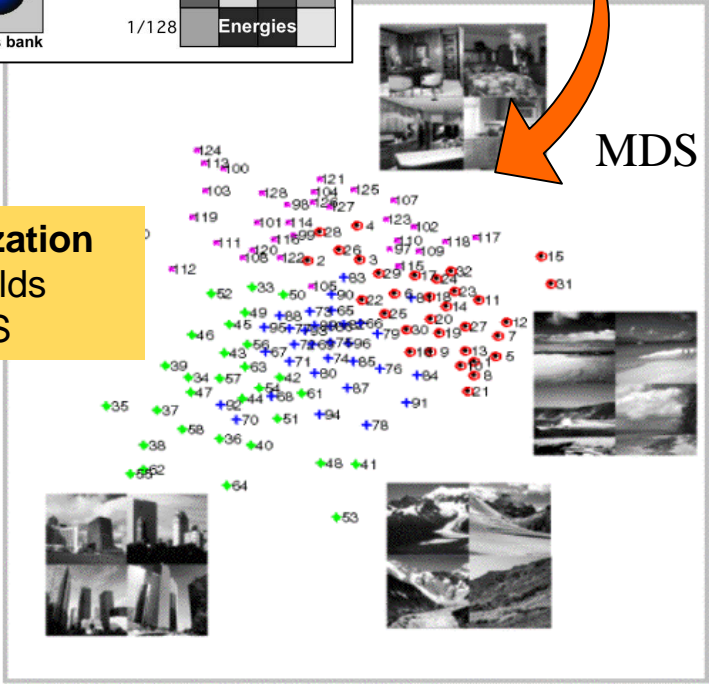
High-Dimensional Data Analysis

- Search for the Intrinsic manifold

Scene Categorization

Metrics, Manifolds

Non-linear MDS



A. Guérin, N. Guyader, J. Hérault, P. Villemain



Models of Visual Perception

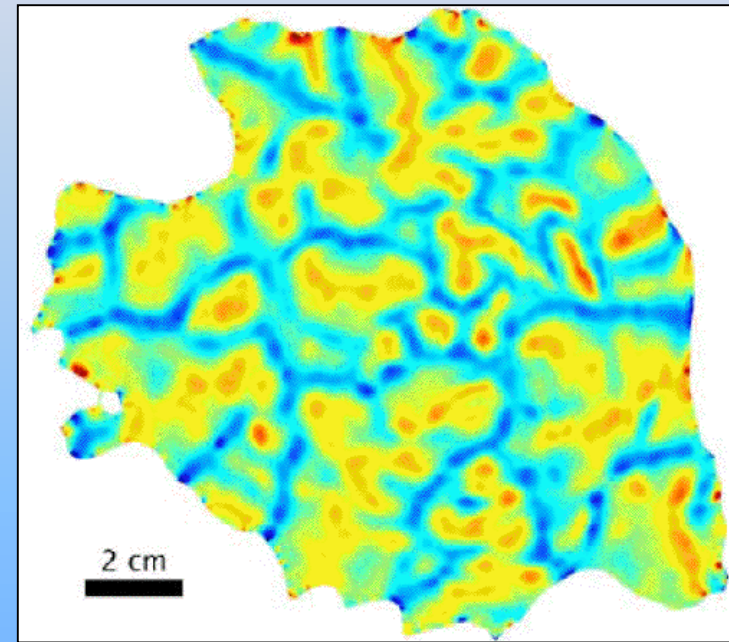
Models of Retinal Processing

Cortical Analysis of Images

Perception Psychophysics

High-Dimensional Data Analysis

- Cortical Unfolding



Jan Waring

A. Guérin

C. Seghebart

M. Dojat