

# Review and Preview

Daniela Pamplona

U2IS - ENSTA - IPParis

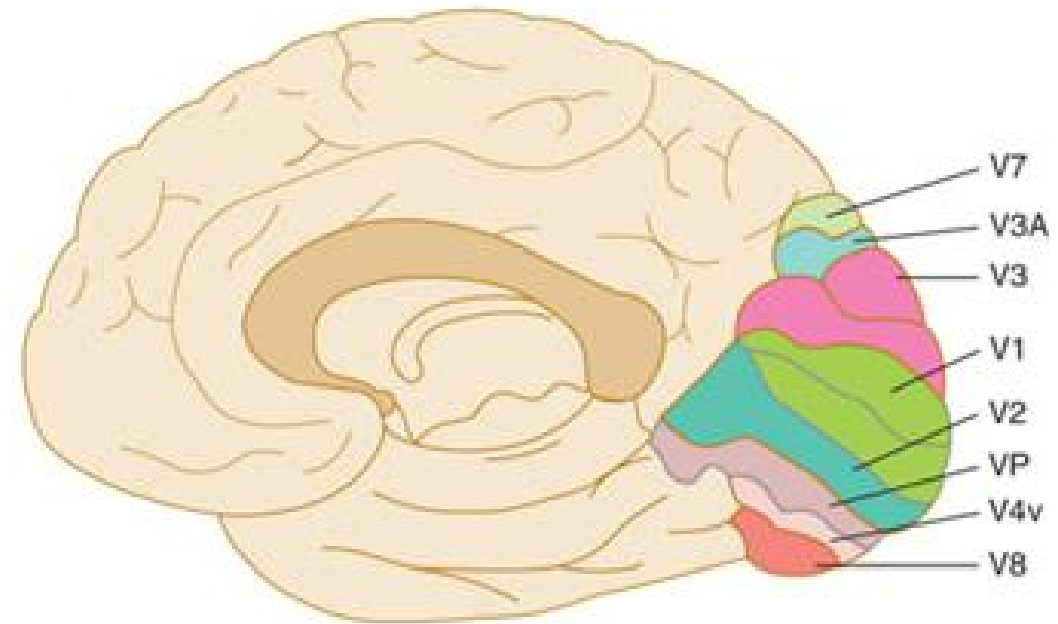
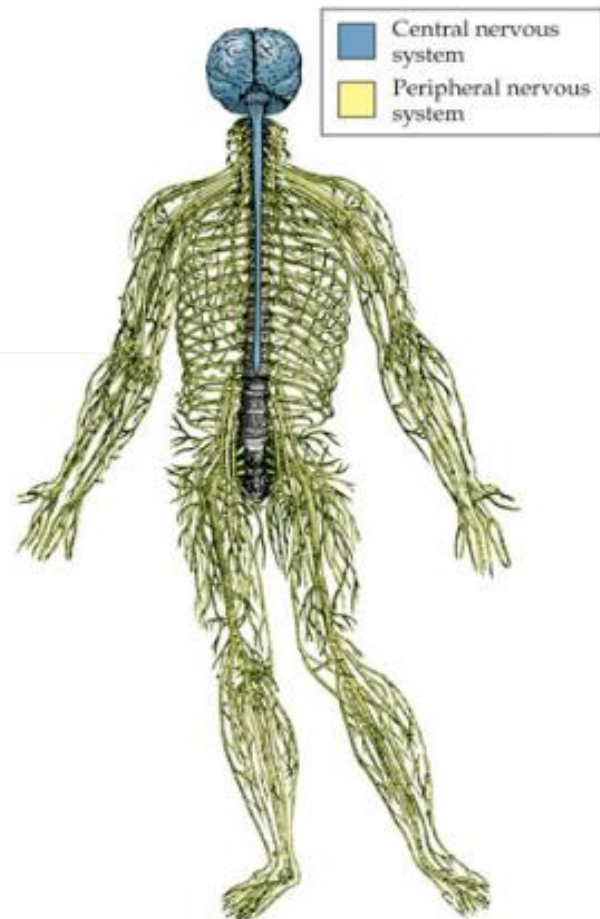
ecampus moodle: MI210 - Modèles neuro-computationnels de  
la vision (P4 - 2020-21)

[daniela.pamplona@ensta.fr](mailto:daniela.pamplona@ensta.fr)

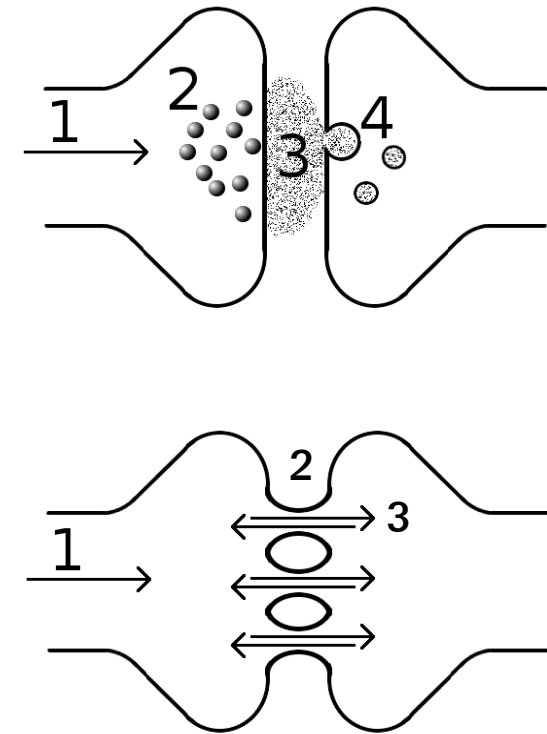
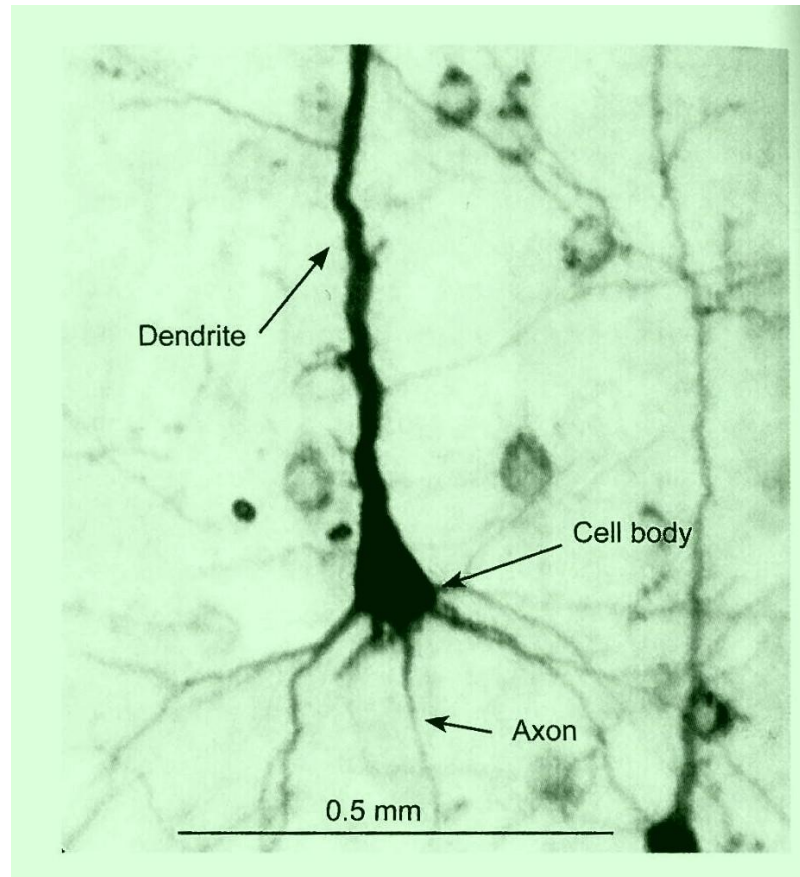
# Plan

Date	Type	Topic	Level of description	Methods
23/03	<b>M + TD</b> written and code	Intro to neuro, neurons, BNN and ANN	Implementational + Computational	Dynamical systems, Neural Networks
30/03	<b>M + TD</b> written	Probabilistic interpretation of visual processing	Computational	Probabilistic/ Bayesian Approaches
06/04	3 M(remote)	Vision and efficient coding	Computational + Algorithmic	Statistics
13/04	3 M (remote)	Receptive Fields, Retina and V1	Computational + Algorithmic	Unsupervised M.L.
27/04	3 TD (remote)	Applications to artificial vision	Computational + Algorithmic	Statistics +Unsupervised M.L.
04/05	<b>M+TD</b> written	Eye movements	Computational + Algorithmic	Reinforcement Learning
11/05	<b>oral</b> <b>(remote?)</b>	General vision and brain	All	All above

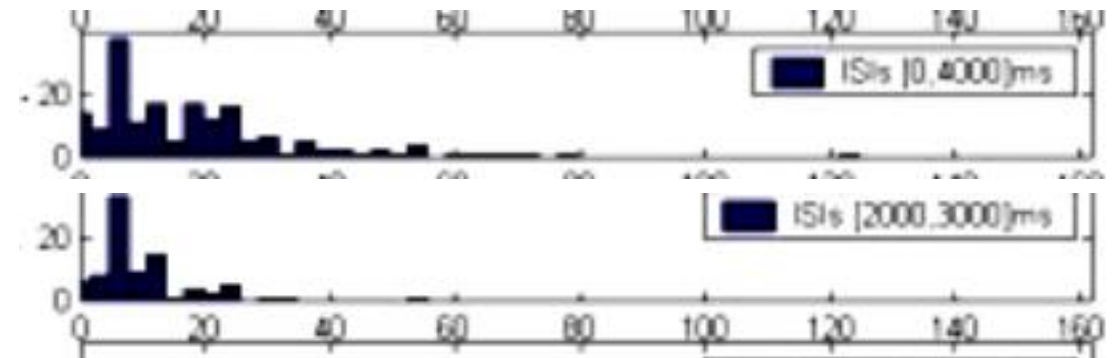
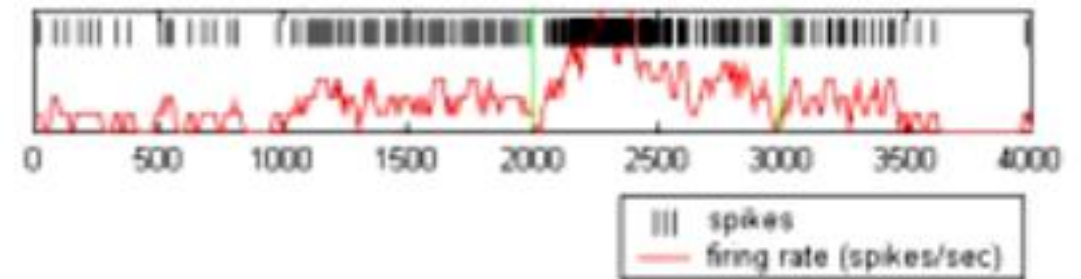
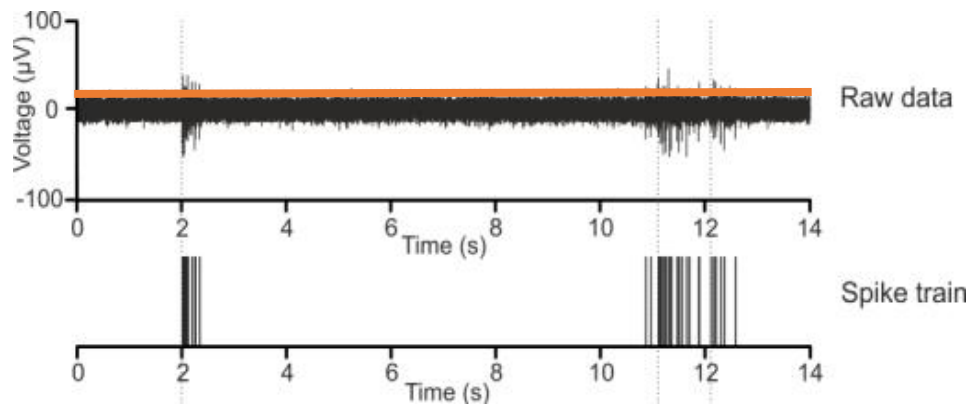
# Last Class



# Last Class

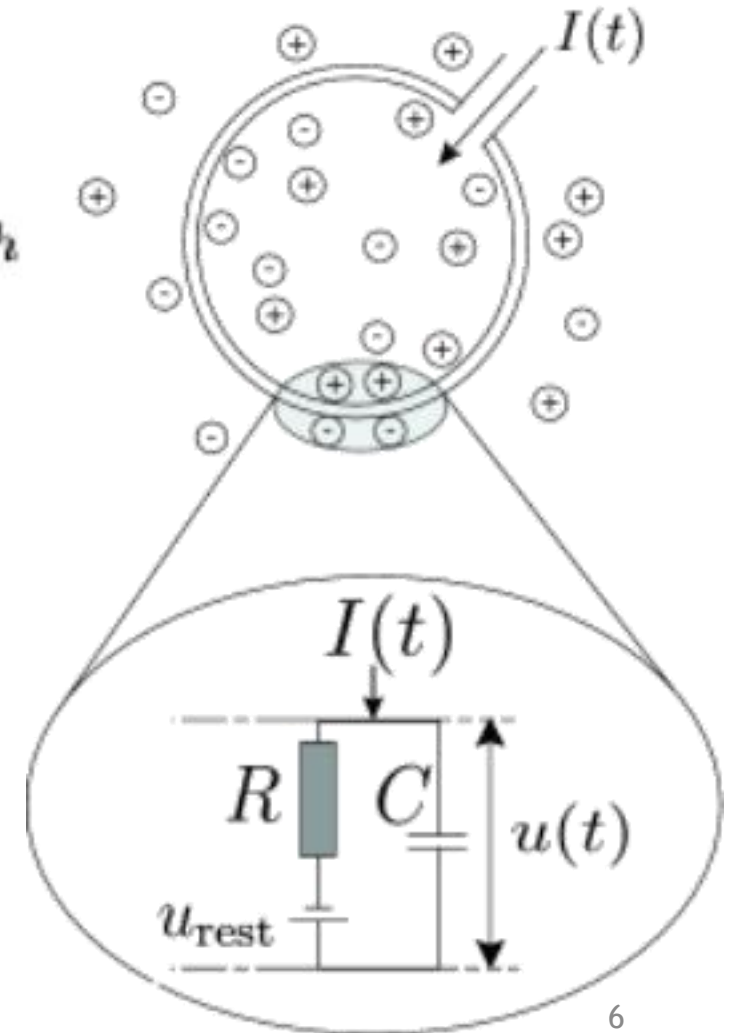
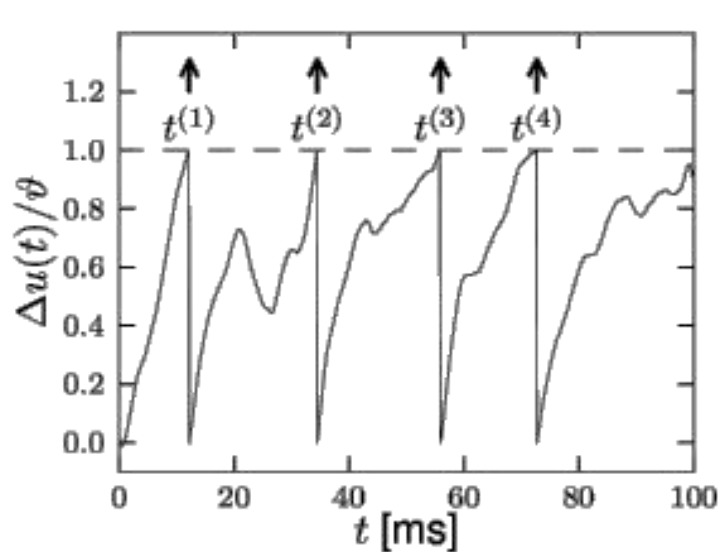


# Last Class

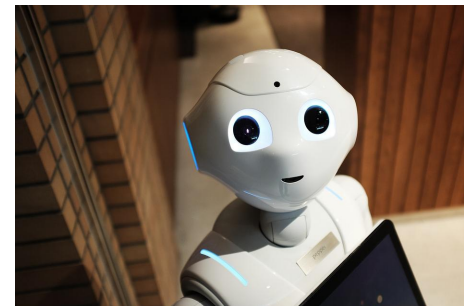
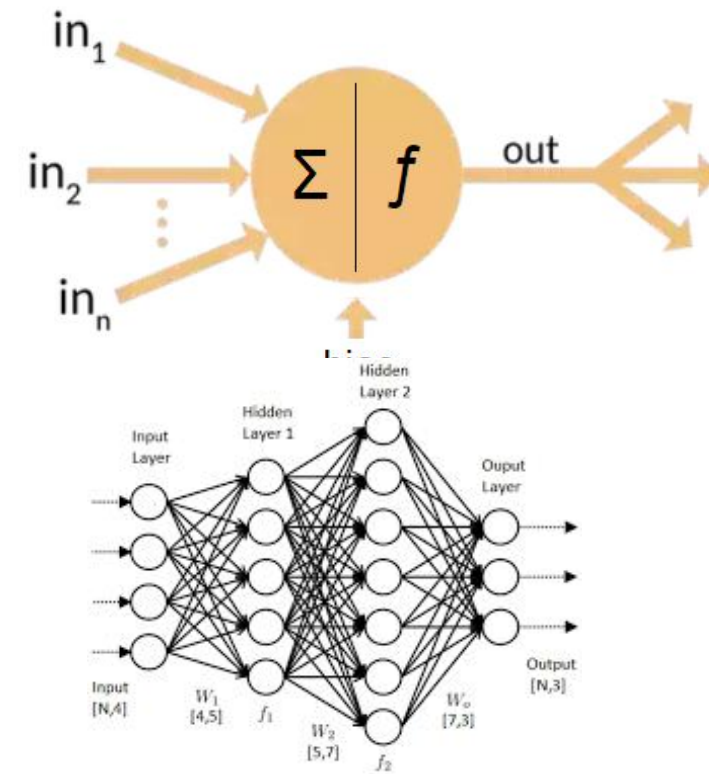
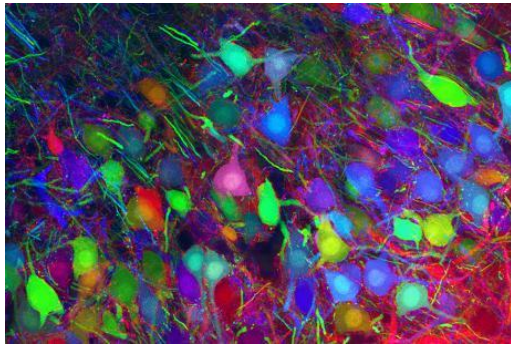
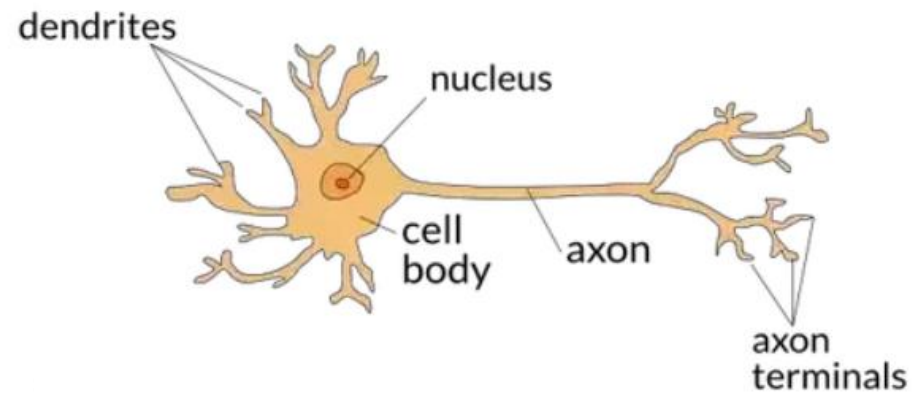


# Last Class

$$V(t) = \begin{cases} V_{rest} & \text{if } V(t) = v_{th} \\ V_{rest} - \tau \frac{dV}{dt} + RI(t) & \text{o.w.} \end{cases}$$



# Last Class



# Plan

Date	Type	Topic	Level of description	Methods
23/03	<b>M + TD</b> written and code	Intro to neuro, neurons, BNN and ANN	Implementational + Computational	Dynamical systems, Neural Networks
30/03	<b>M + TD</b> written	<b>Probabilistic interpretation of visual processing</b>	<b>Computational</b>	<b>Probabilistic/ Bayesian Approaches</b>
06/04	3 M(remote)	Vision and efficient coding	Computational + Algorithmic	Statistics
13/04	3 M (remote)	Receptive Fields, Retina and V1	Computational + Algorithmic	Unsupervised M.L.
27/04	3 TD (remote)	Applications to artificial vision	Computational + Algorithmic	Statistics +Unsupervised M.L.
04/05	<b>M+TD</b> written	Eye movements	Computational + Algorithmic	Reinforcement Learning
11/05	<b>oral</b>	General vision and brain	All	All above



# Summary

1. Bayes Theorem and Bayesian modeling
2. Bayesian Brain
  1. Formulation
  2. Examples
3. Bayesian life long learning
4. Critics to the “ideal observer”