Brain-Computer Interface

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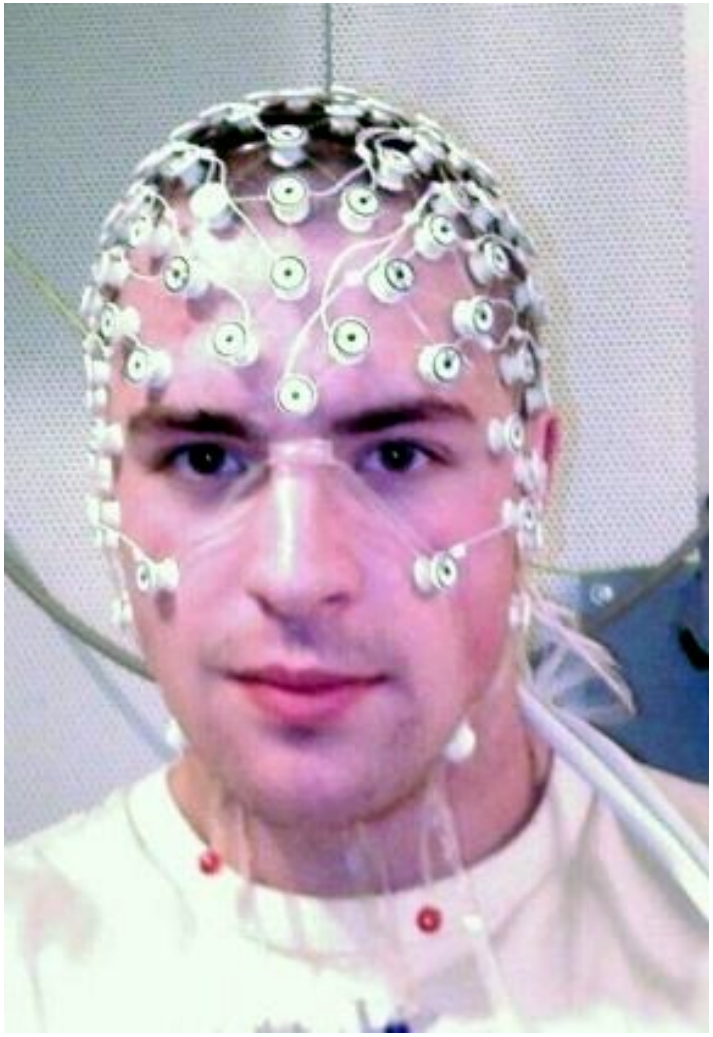
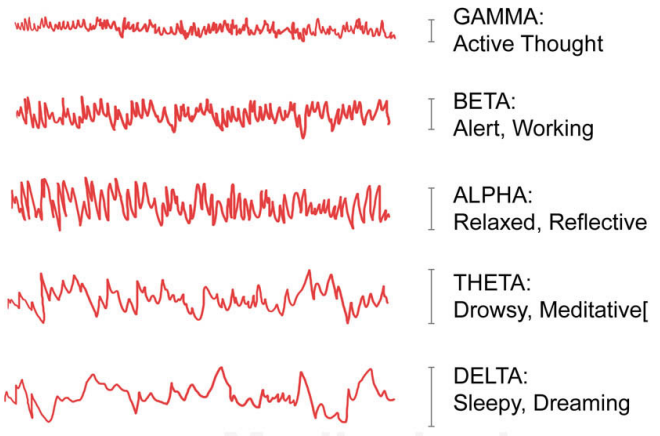
Star Wars

Electroencephalography (EEG)

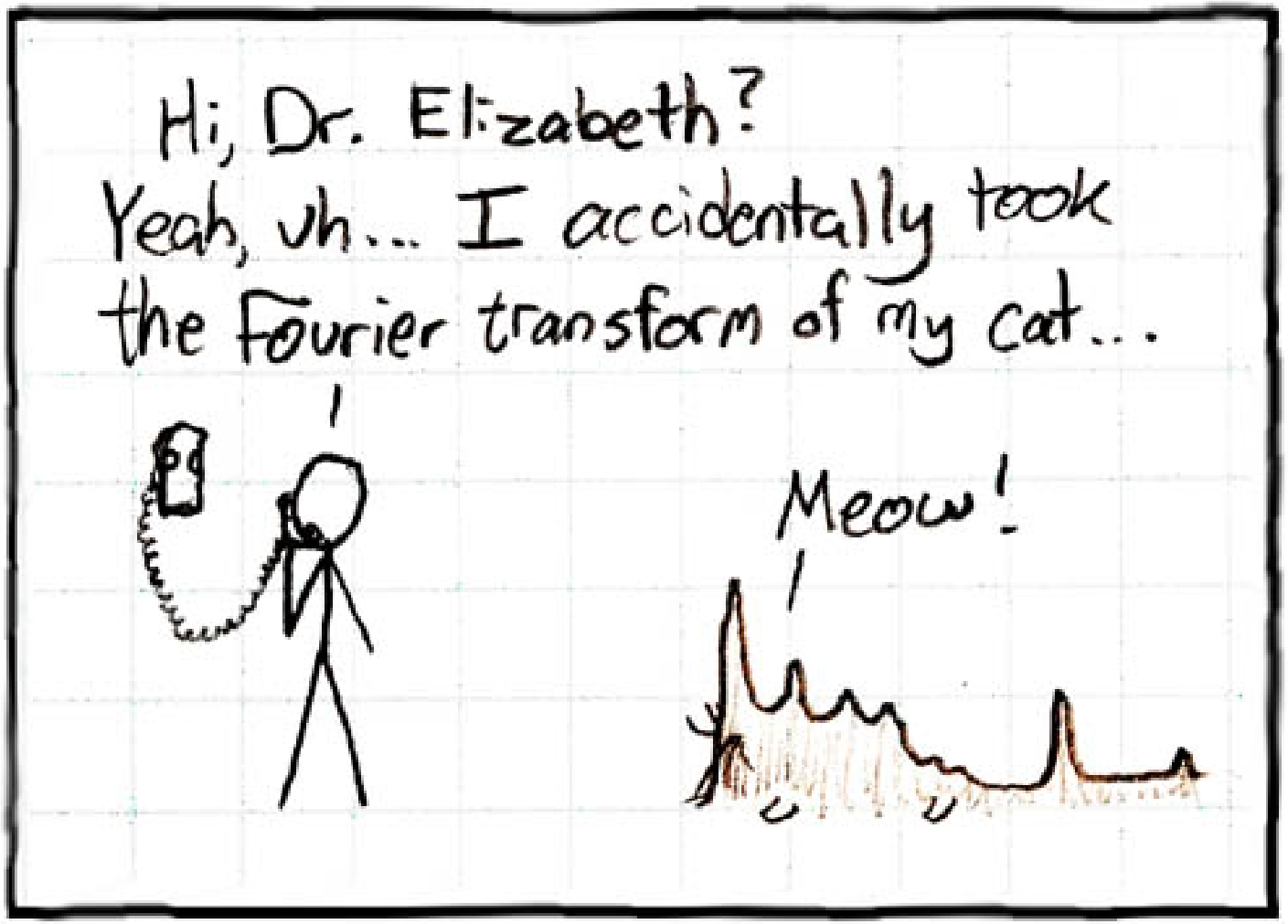


The simplest way to read brain signals is EEG.

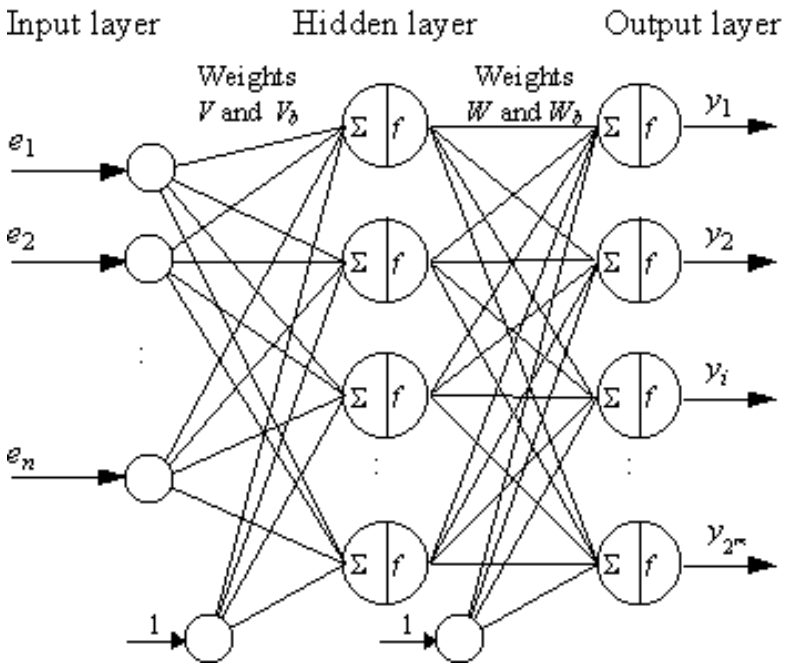


Medicalook.com

Delta	-	up	to	3Hz
Theta	-	3	to	6Hz
Alpha	-	6	to	12Hz
Beta	-	12	to	30Hz
Gamma	-	30	to	60Hz
Lambda	-	60	to	200Hz

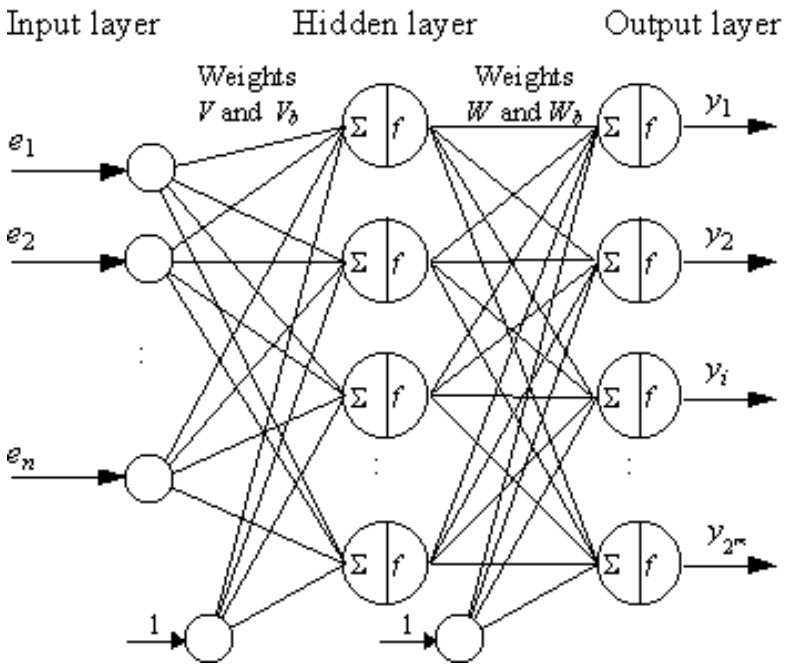

Hi, Dr. Elizabeth?
Yeah, uh... I accidentally took the Fourier transform of my cat...
Meow!

Neural networks



- nonlinear model
- the good network structure is hard to guess

Neural networks



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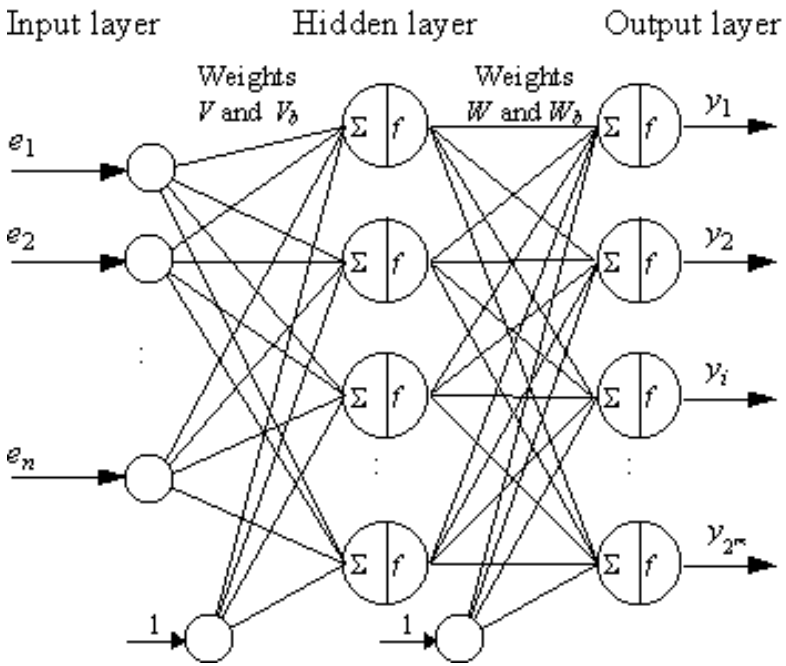
- it is hard to optimize the error function

Neural networks



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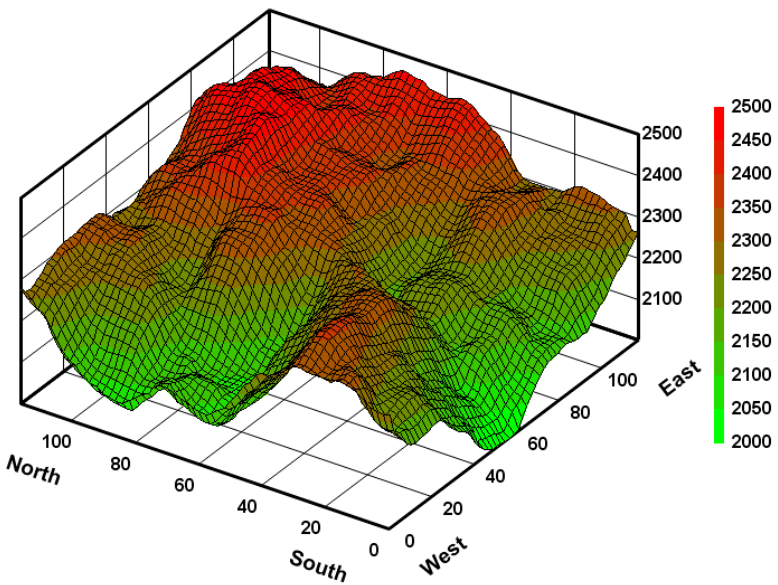
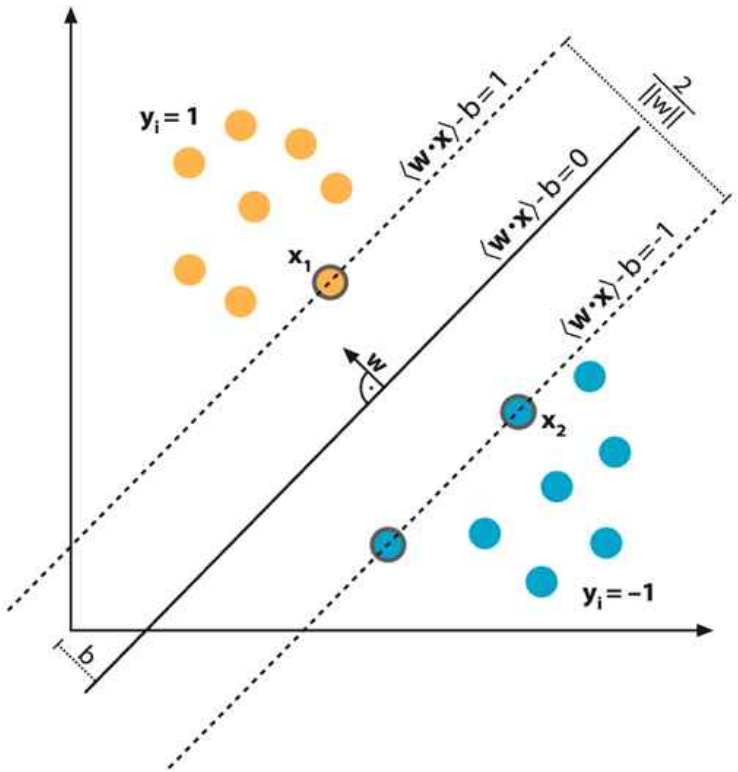


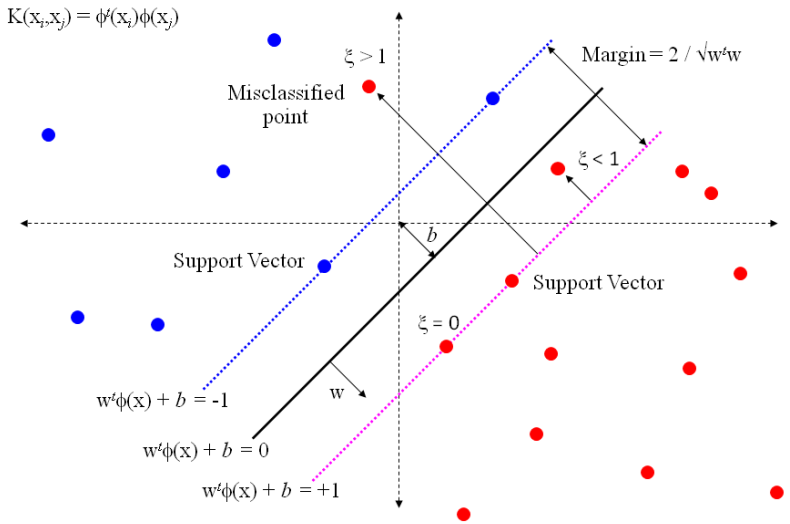
It cannot be guaranteed that an optimization method yields an optimal solution.

Support Vector Machines



Optimization always yields an optimal solution.
In both versions: rigid...

Support Vector Machines



Optimization always yields an optimal solution.
...and soft.

The correct classification probability is very close to 100%.
The downside is the latency.