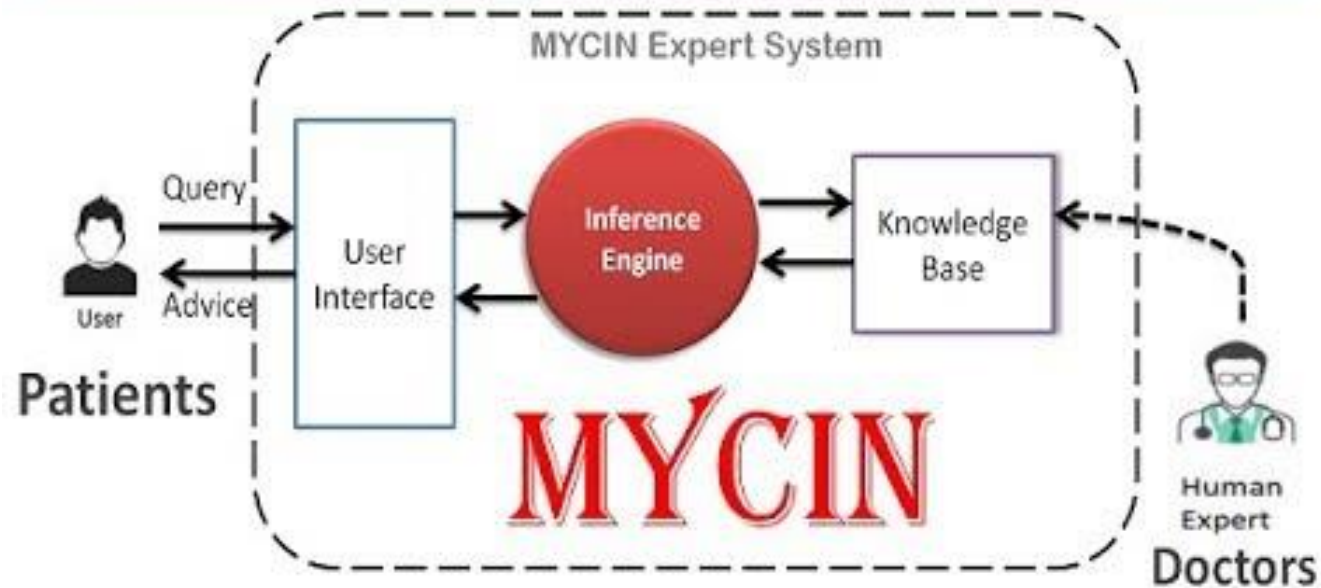


# AI Hype in Fraud Detection (Source Gartner)

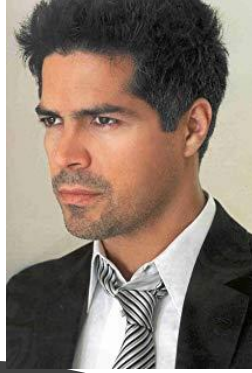
- Social media conversations around “AI in financial services” increased by a compounded rate of 33.2% between 1Q15 to 1Q17
- "AI" and "machine learning" used with little clarity on
  - the specific technologies and models being offered, or
  - the use cases to which they might best be applied.

# ARTIFICIAL INTELLIGENCE





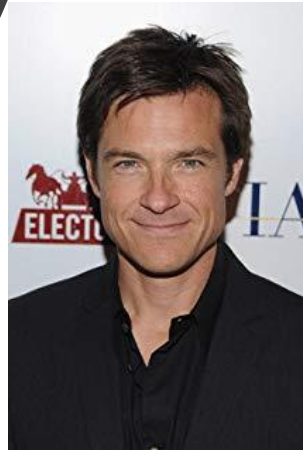
Bruce  
Launderer + skimmer



Del (Cartel exec)



Hanson kid  
Trafficker + Skimmer



Marty  
Launderer



Hansen Sr.  
Trafficker



Liz - fiancé  
Shot first  
Leads to  
confession

# Human Intelligence



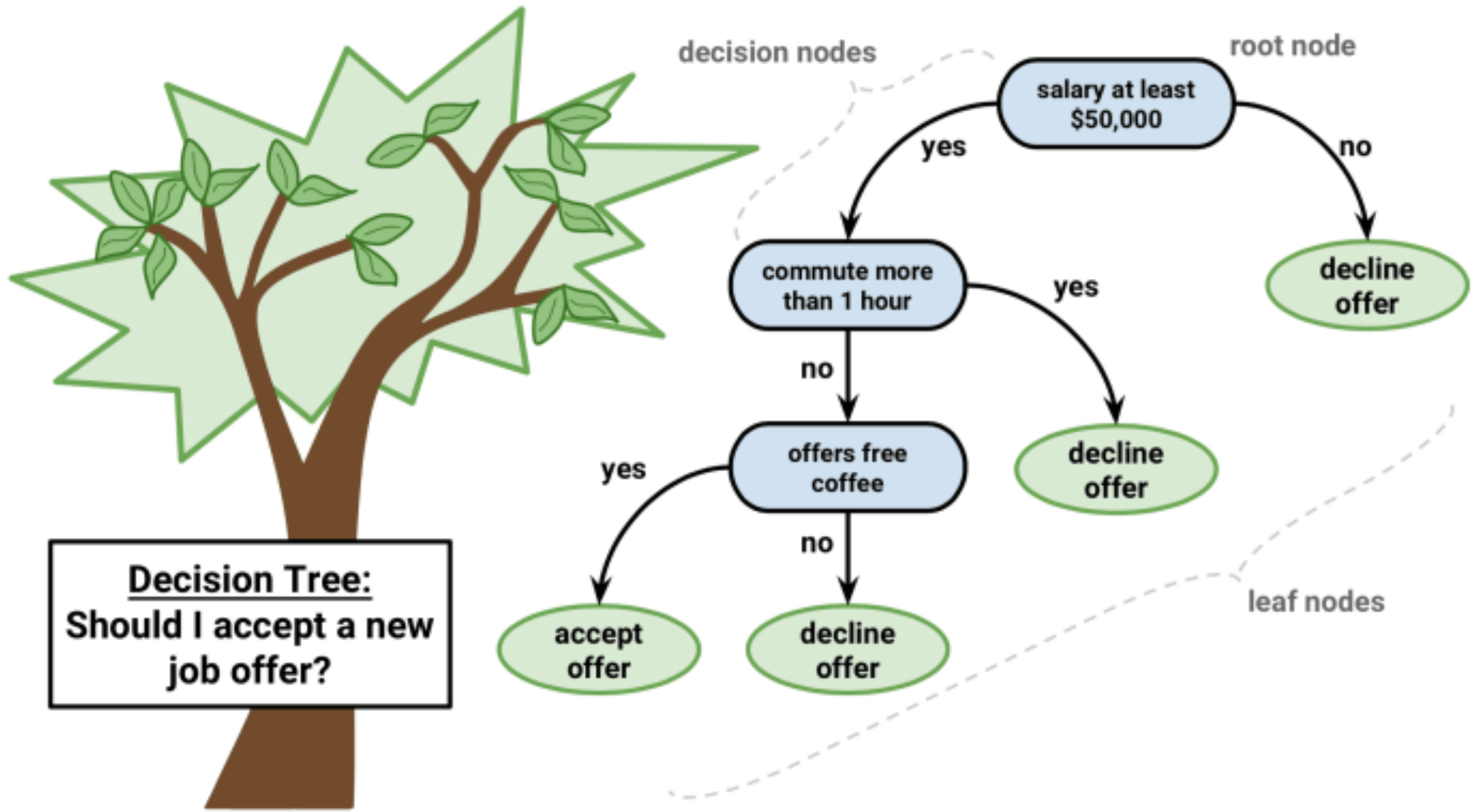
# Nick Bostrom – AI Philosopher, Oxford Univ

- Survey of some of the world's leading A.I. experts
- "By which year do you think there is a 50 percent probability that we will have achieved human-level machine intelligence?"
- human-level - to perform almost any job at least as well as an adult human, not just within some limited domain.
- The median answer was 2040 or 2050
- Could happen much, much later, or sooner, the truth is nobody really knows.

# Nick Bostrom - continued

- AI starts out at zero intelligence
- Many, many years of really hard work - mouse-level intelligence
  - Navigate cluttered environments as well as a mouse
- Many, many more years – Chimpanzee
- Even more years - village idiot
- Few moments later, we are beyond Einstein
- The train doesn't stop at Humanville Station
- It's likely to swoosh right by.

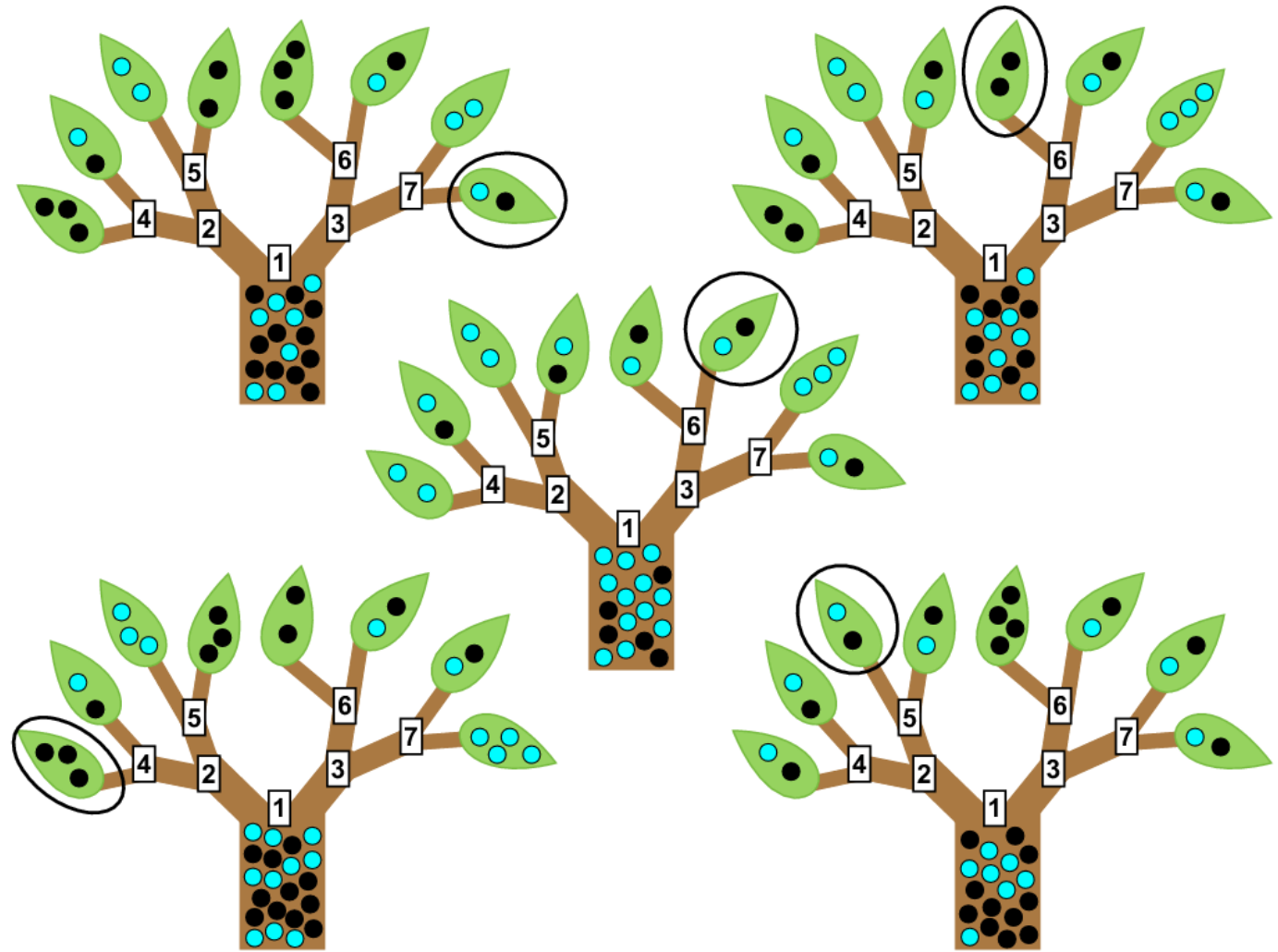
step	type	amount	nameOrig	oldbalanceOrig	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud	isFlaggedFraud
1	PAYMENT	9839.64	C1231006815	170136.0	160296.36	M1979787155	0.0	0.0	0	0
1	PAYMENT	1864.28	C1666544295	21249.0	19384.72	M2044282225	0.0	0.0	0	0
1	TRANSFER	181.0	C1305486145	181.0	0.0	C553264065	0.0	0.0	1	0
1	CASH_OUT	181.0	C840083671	181.0	0.0	C38997010	21182.0	0.0	1	0
1	PAYMENT	11668.14	C2048537720	41554.0	29885.86	M1230701703	0.0	0.0	0	0
1	PAYMENT	7817.71	C90045638	53860.0	46042.29	M573487274	0.0	0.0	0	0
1	PAYMENT	7107.77	C154988899	183195.0	176087.23	M408069119	0.0	0.0	0	0
1	PAYMENT	7861.64	C1912850431	176087.23	168225.59	M633326333	0.0	0.0	0	0
1	PAYMENT	4024.36	C1265012928	2671.0	0.0	M1176932104	0.0	0.0	0	0
1	DEBIT	5337.77	C712410124	41720.0	36382.23	C195600860	41898.0	40348.79	0	0
1	DEBIT	9644.94	C1900366749	4465.0	0.0	C997608398	10845.0	157982.12	0	0
1	PAYMENT	3099.97	C249177573	20771.0	17671.03	M2096539129	0.0	0.0	0	0
1	PAYMENT	2560.74	C1648232591	5070.0	2509.26	M972865270	0.0	0.0	0	0
1	PAYMENT	11633.76	C1716932897	10127.0	0.0	M801569151	0.0	0.0	0	0
1	PAYMENT	4098.78	C1026483832	503264.0	499165.22	M1635378213	0.0	0.0	0	0
1	CASH_OUT	229133.94	C905080434	15325.0	0.0	C476402209	5083.0	51513.44	0	0
1	PAYMENT	1563.82	C761750706	450.0	0.0	M1731217984	0.0	0.0	0	0
1	PAYMENT	1157.86	C1237762639	21156.0	19998.14	M1877062907	0.0	0.0	0	0
1	PAYMENT	671.64	C2033524545	15123.0	14451.36	M473053293	0.0	0.0	0	0
1	TRANSFER	215310.3	C1670993182	705.0	0.0	C1100439041	22425.0	0.0	0	0
1	PAYMENT	1373.43	C20804602	13854.0	12480.57	M1344519051	0.0	0.0	0	0
1	DEBIT	9302.79	C1566511282	11299.0	1996.21	C1973538135	29832.0	16896.7	0	0
1	DEBIT	1065.41	C1959239586	1817.0	751.59	C515132998	10330.0	0.0	0	0
1	PAYMENT	3876.41	C504336483	67852.0	63975.59	M1404932042	0.0	0.0	0	0
1	TRANSFER	311685.89	C1984094095	10835.0	0.0	C932583850	6267.0	2719172.89	0	0



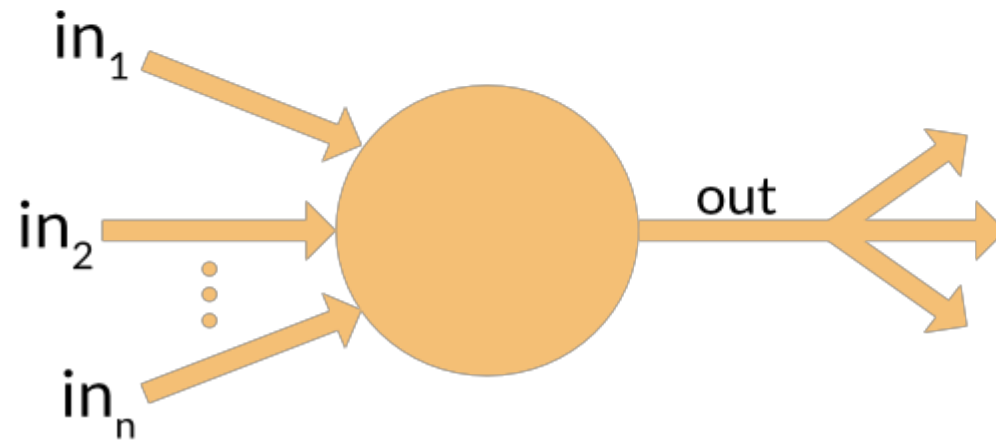
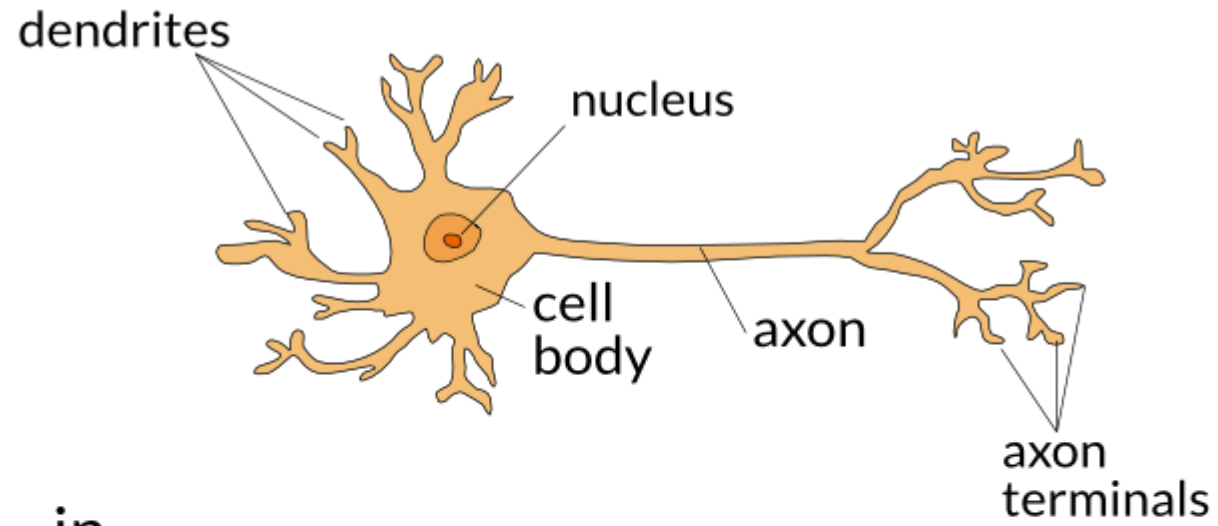
<https://towardsdatascience.com/decision-tree-hugging-b8851f853486>



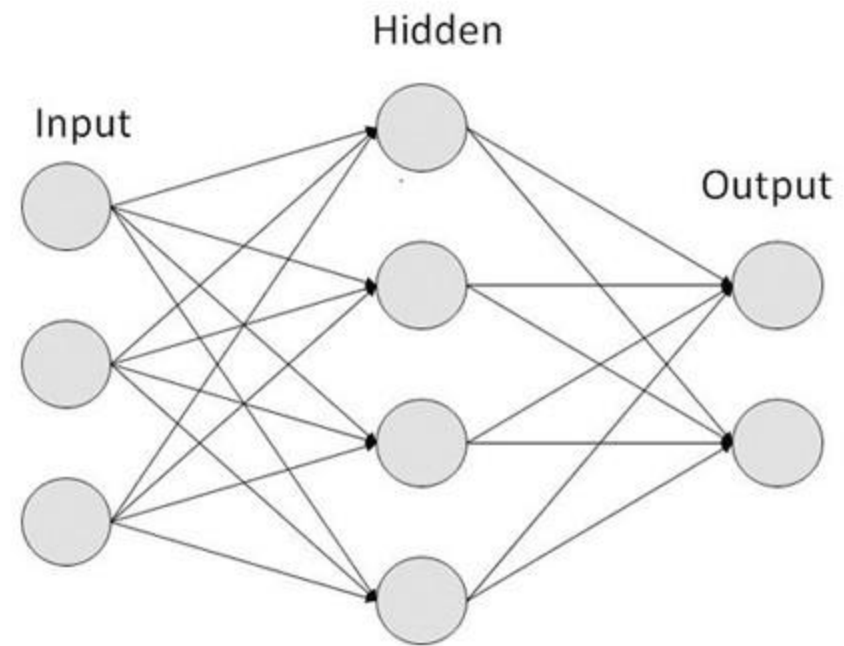
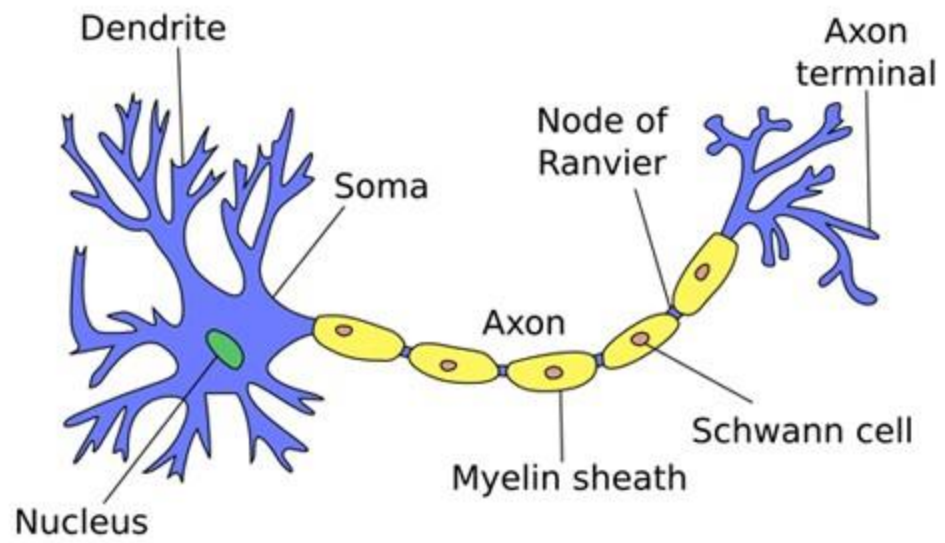
# Random forest



<https://www.deeplearn.me/1885.html>



<https://appliedgo.net/perceptron/>



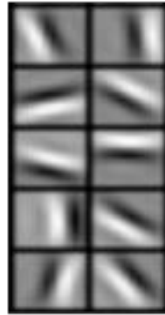
<https://medium.com/@ismailghallou/build-your-perceptron-neural-net-from-scratch-e12b7be9d1ef>

**Question:** Does this new image contain a face?

**Input: raw pixel data**



**Edges**



**Basic shapes**

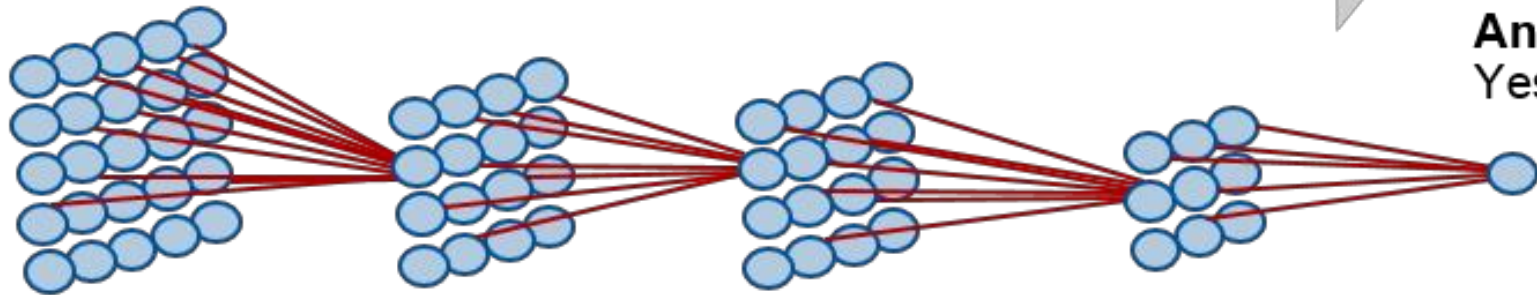


**Complex shapes**



**Output:**  
learned  
conclusion

The direction of computation progress from left to right  
(increasingly higher levels of abstractions)



Deep learning: unlike pattern matching, the trained model learned to "figure out" new patterns necessary to arrive at its conclusion.



<https://data-flair.training/blogs/r-clustering-tutorial/>

