

En introduksjon til kunstig intelligens

Og dets rolle i medisinsk forskning



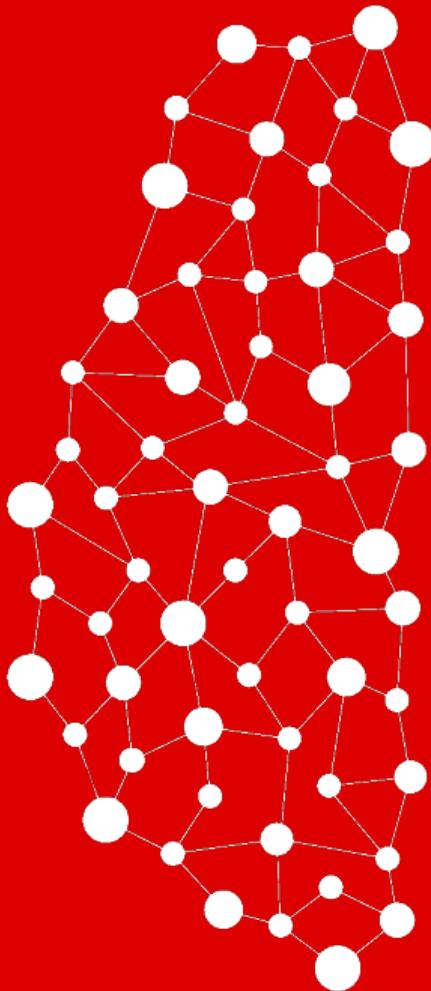
Esten H. Leonardsen

Post-doktor ved Psykologisk institutt,
Universitet i Oslo

Chief Scientific Officer, baba.vision



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Hva er kunstig intelligens?

What is AI?

Artificial Intelligence (AI) is the field of computer science devoted to creating systems that can perform tasks that typically require human intelligence. These tasks include perception (e.g., recognizing images or speech), reasoning (e.g., solving problems, making decisions), learning (e.g., adapting from data and experience), and interaction (e.g., understanding natural language, generating responses, collaborating with humans).

At a high level, AI can be divided into:

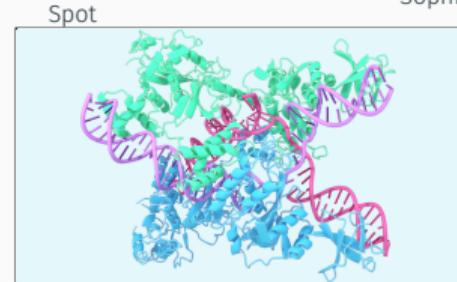
- Symbolic AI (knowledge-based, rule-based, expert systems): Uses explicit rules, logic, and symbolic representations to encode reasoning.
- Machine Learning (data-driven): Learns patterns from data, with subfields like deep learning, reinforcement learning, and probabilistic modeling.

AI is not a single method but a spectrum of approaches for replicating or augmenting cognitive functions in machines.

Would you like me to give you a concise working definition (one sentence) or a taxonomy of types of AI (narrow, general, superintelligence, etc.)?



Sophia



AlphaFold

ChatGPT



Hva er kunstig intelligens?



Kunstig intelligens

Teknologi som løser oppgaver som krever en eller annen form for intelligens

Hva er kunstig intelligens?



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Et fagfelt som produserer teknologi som løser oppgaver som krever en eller annen form for intelligens

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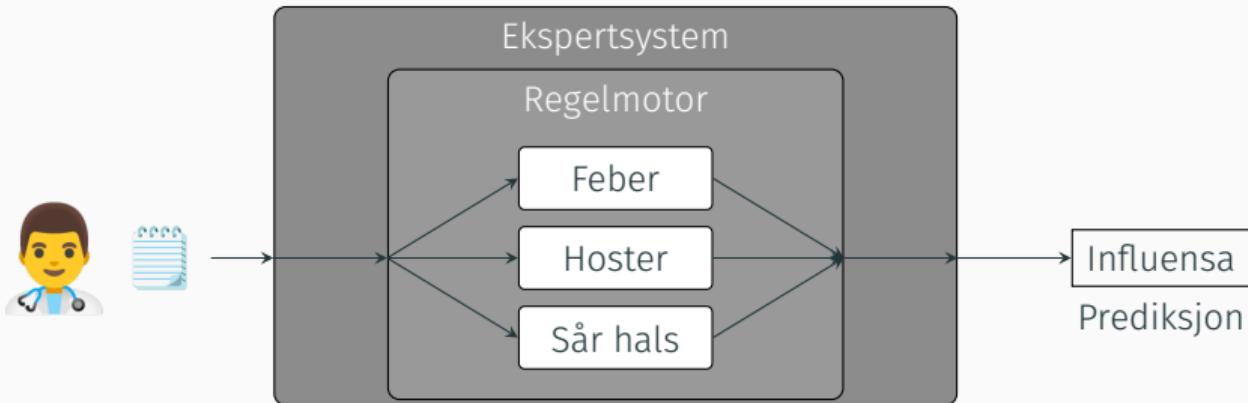
Ekspertsystem



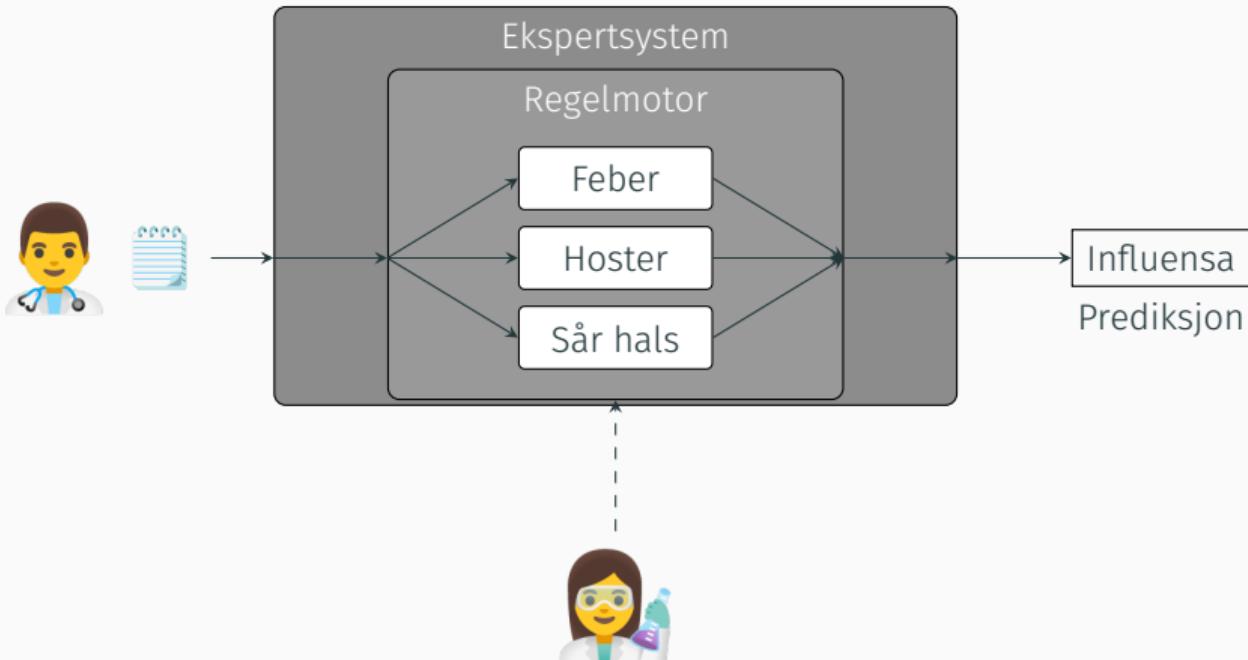
Hva er kunstig intelligens?



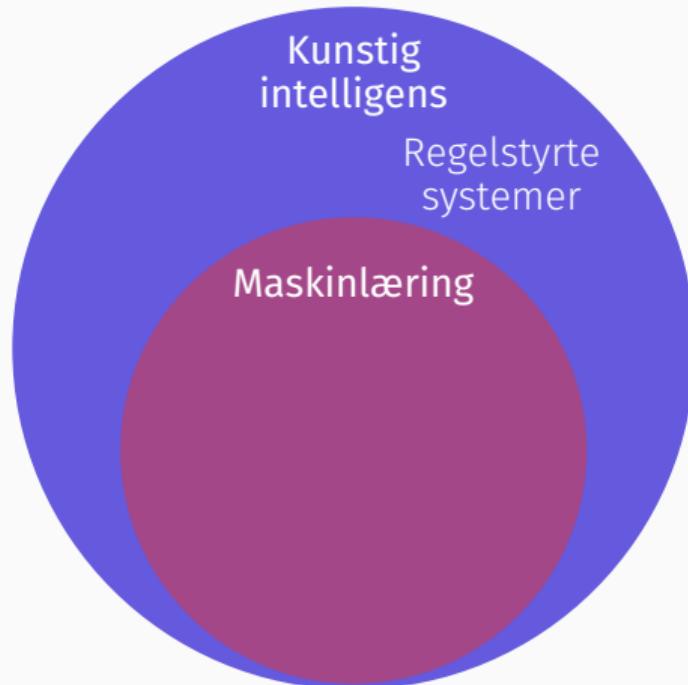
Hva er kunstig intelligens?



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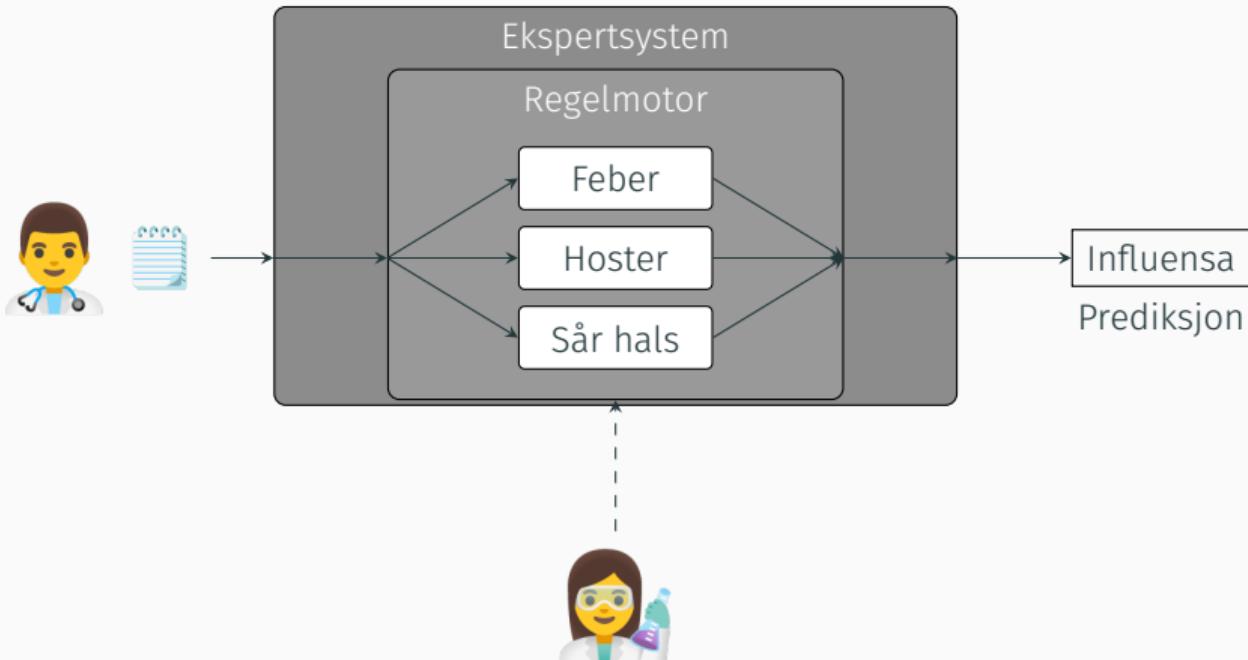
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Kunstig intelligens

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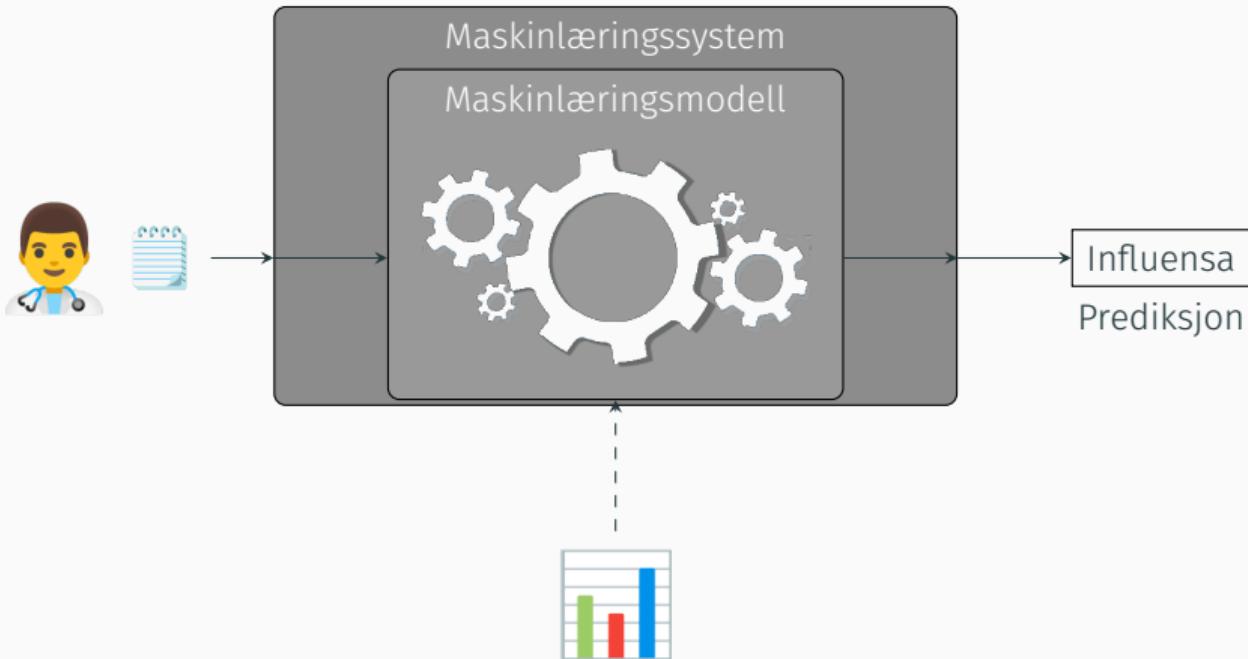
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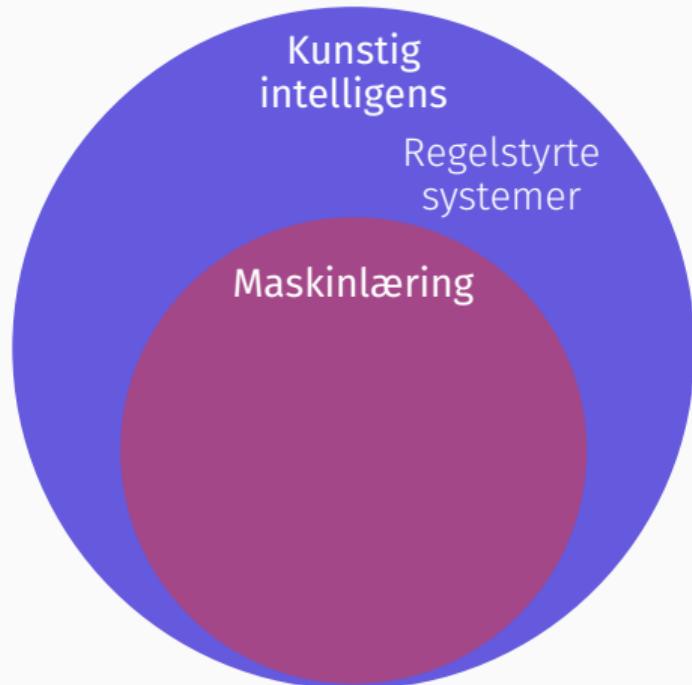
Hva er kunstig intelligens?



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Kunstig intelligens

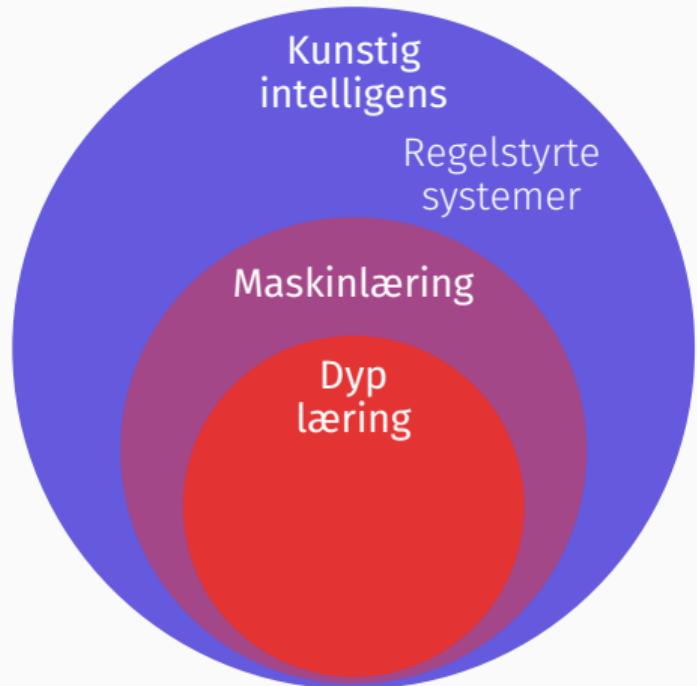
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Maskinlæring

Teknologi som lærer seg å løse problemer ved å finne nyttige mønstre i treningsdata



Hva er kunstig intelligens?



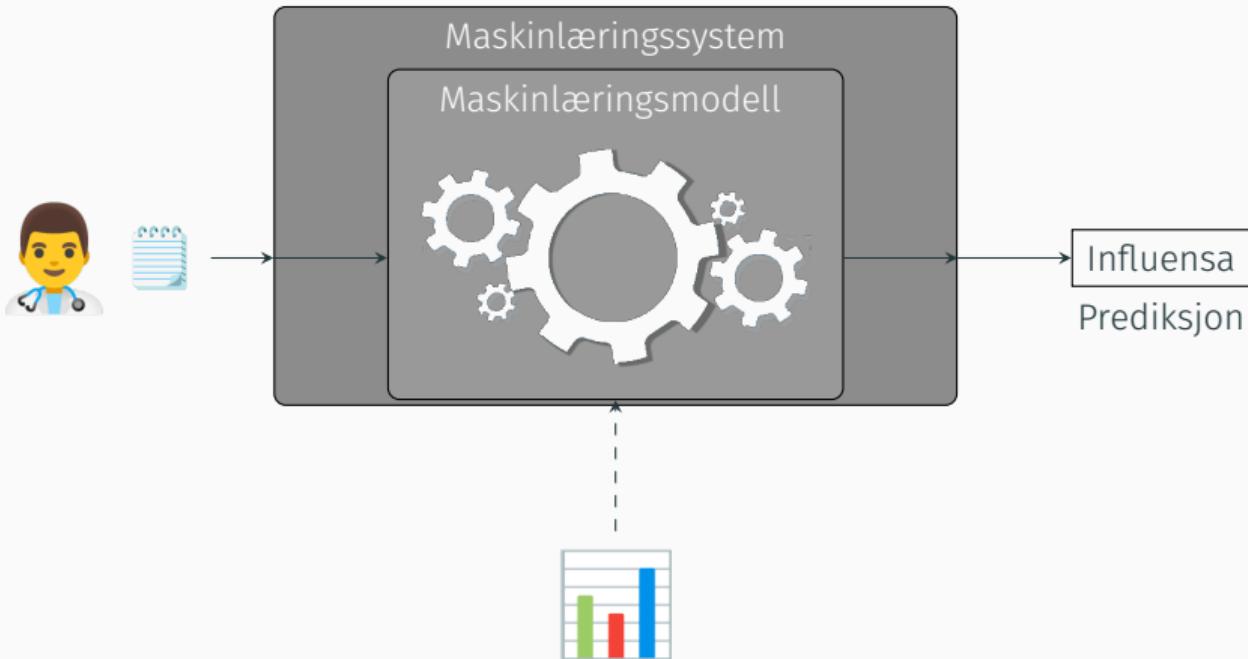
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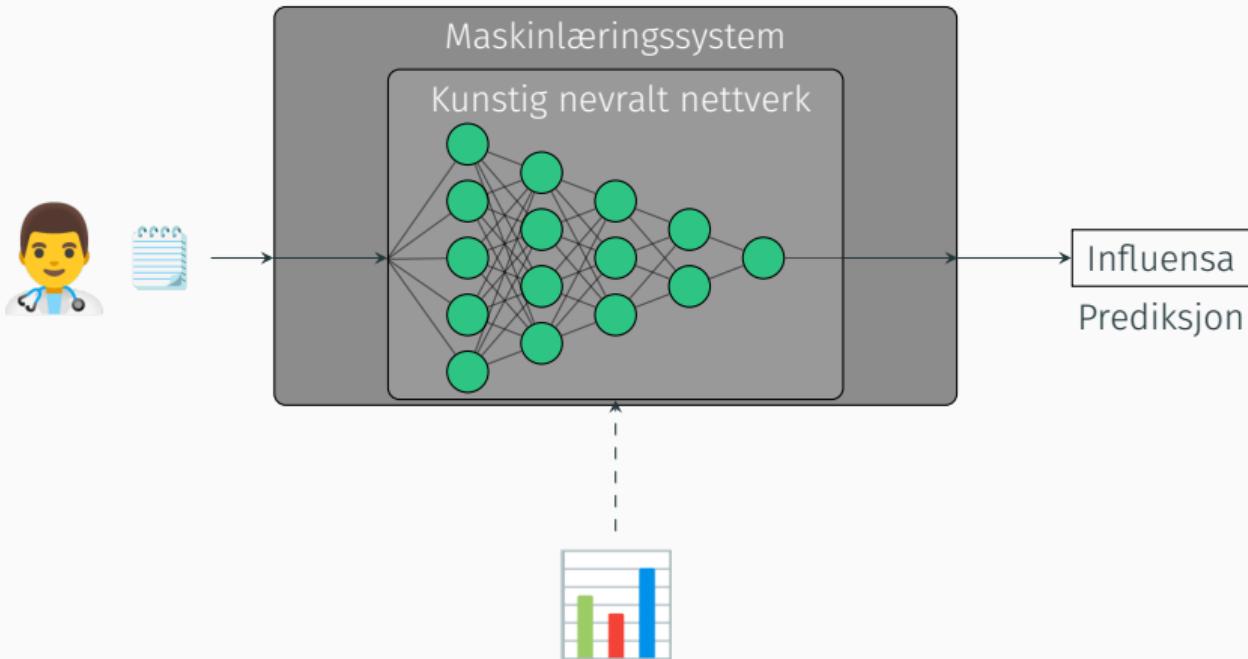
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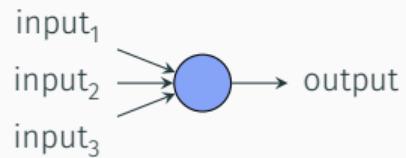
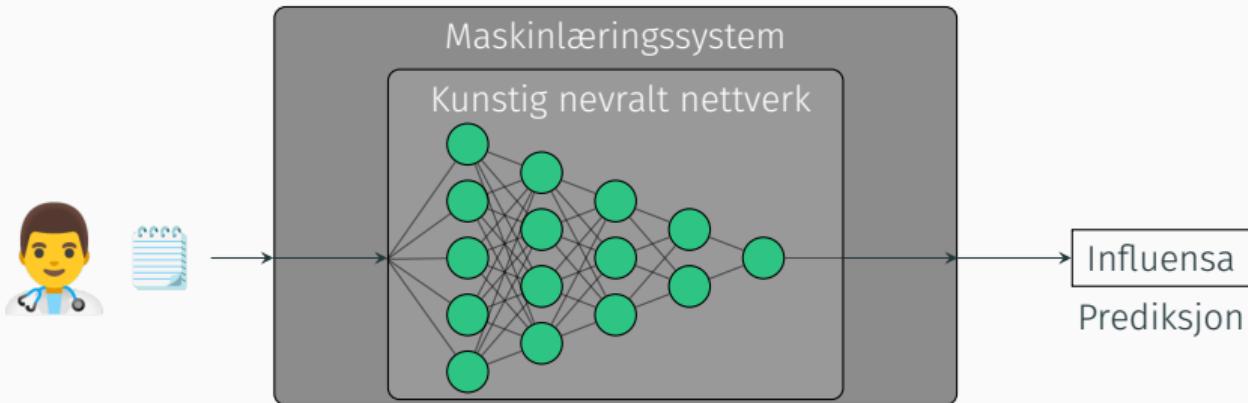
Hva er kunstig intelligens?



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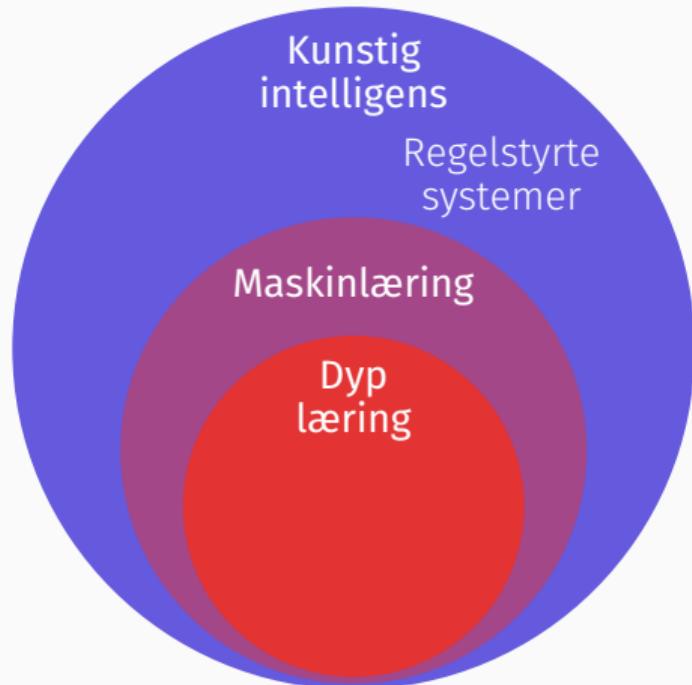
Hva er kunstig intelligens?



Kunstig nevron



Hva er kunstig intelligens?



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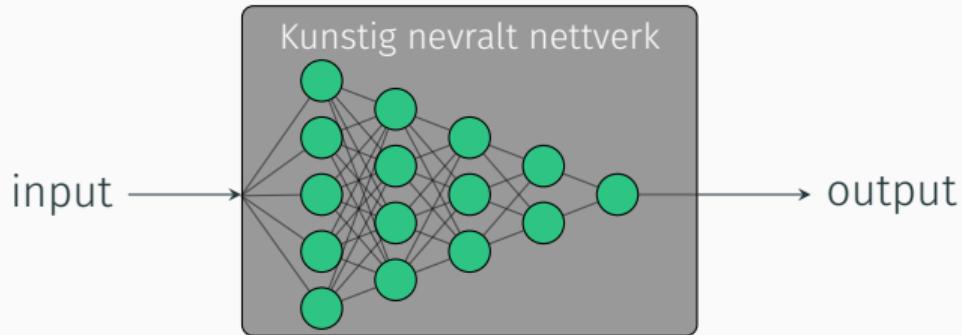
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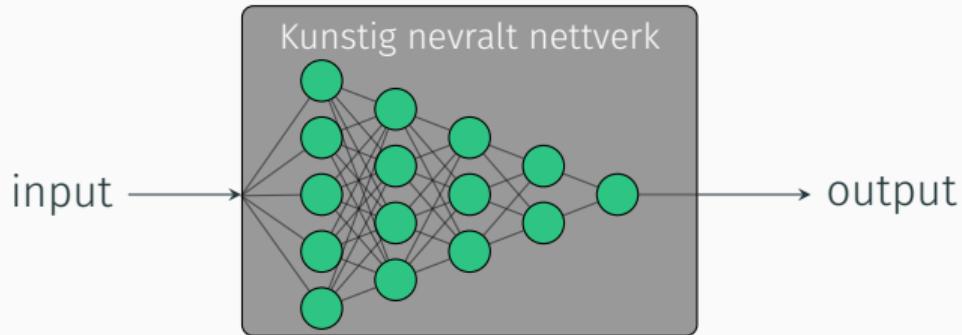
Dyp læring

Teknologi som bruker kunstige nevrale nettverk for å løse maskinlæringsproblemer

Hvorfor bruker vi kunstige nevrale nettverk?



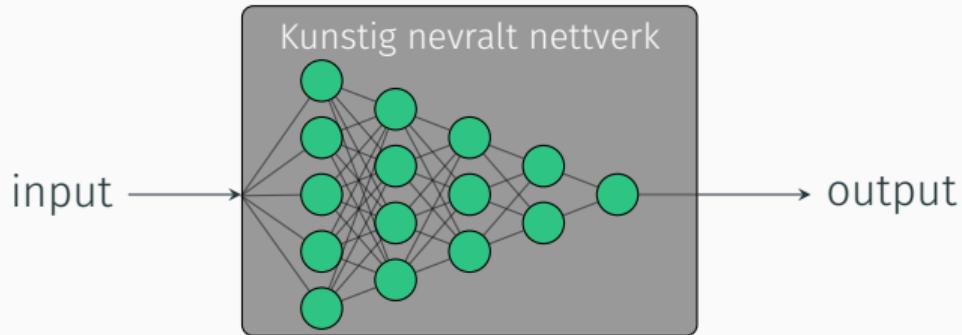
Hvorfor bruker vi kunstige nevrale nettverk?



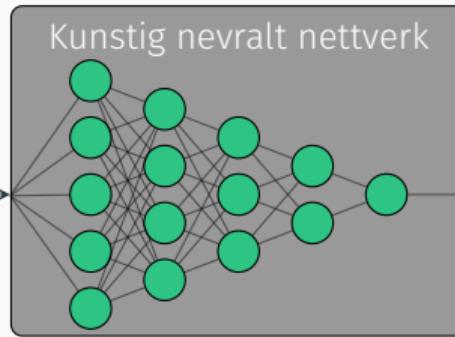
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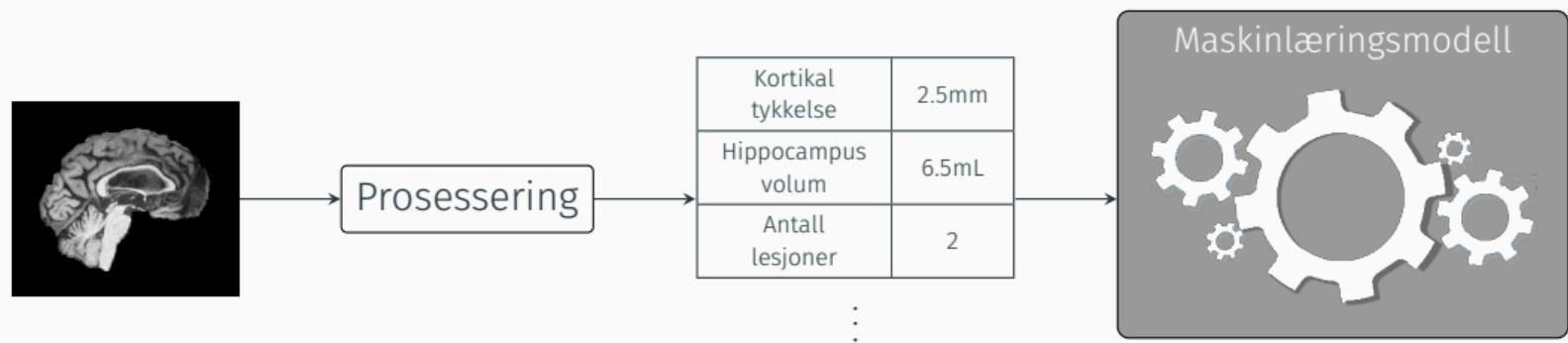


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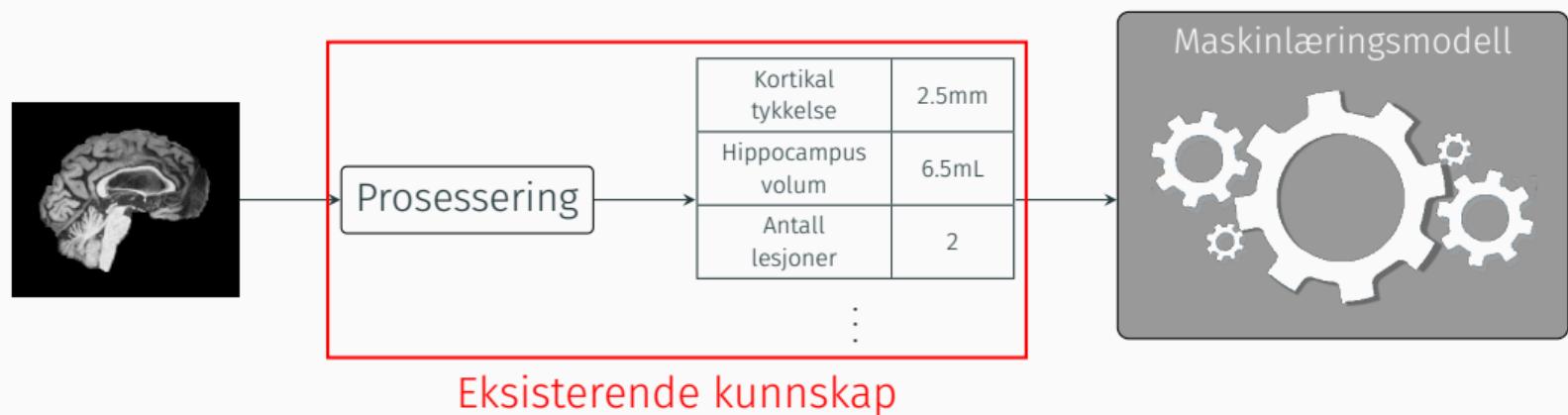


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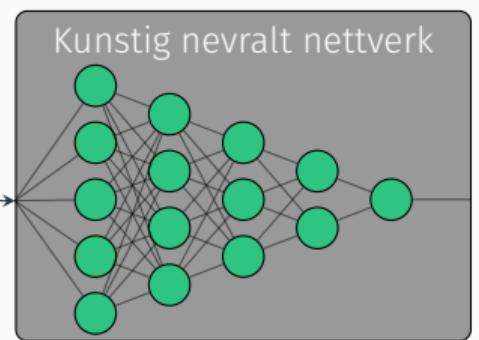
Hva er fordelen med å bruke ustrukturert data i (medisinsk) forskning



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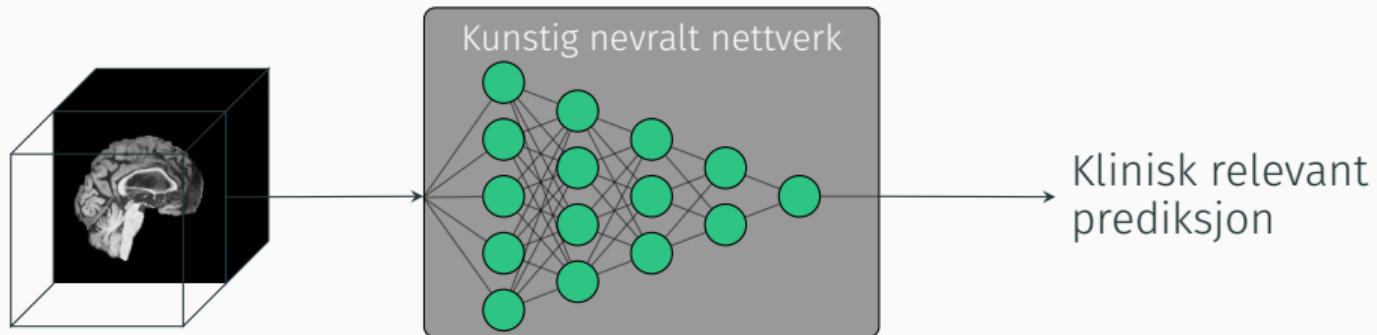


Kunstig intelligens i medisinsk forskning

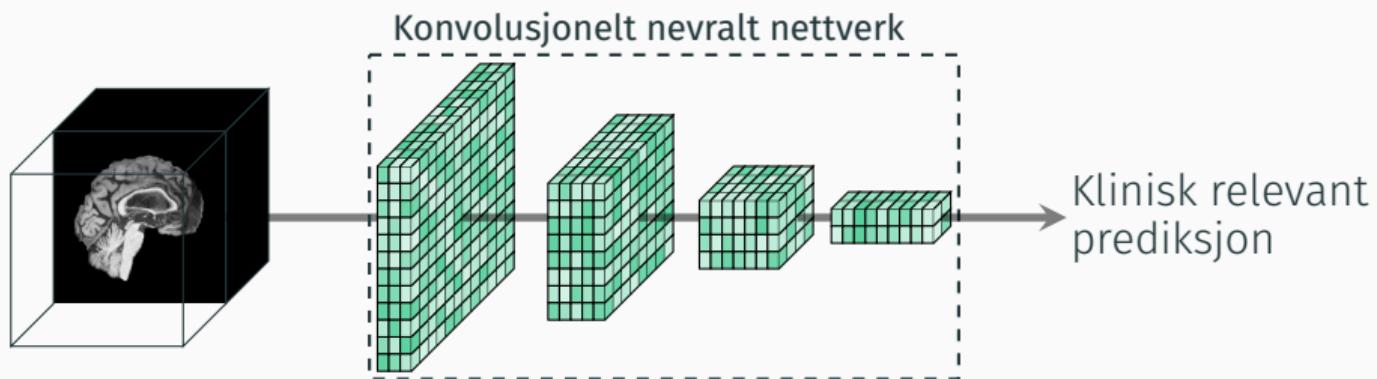


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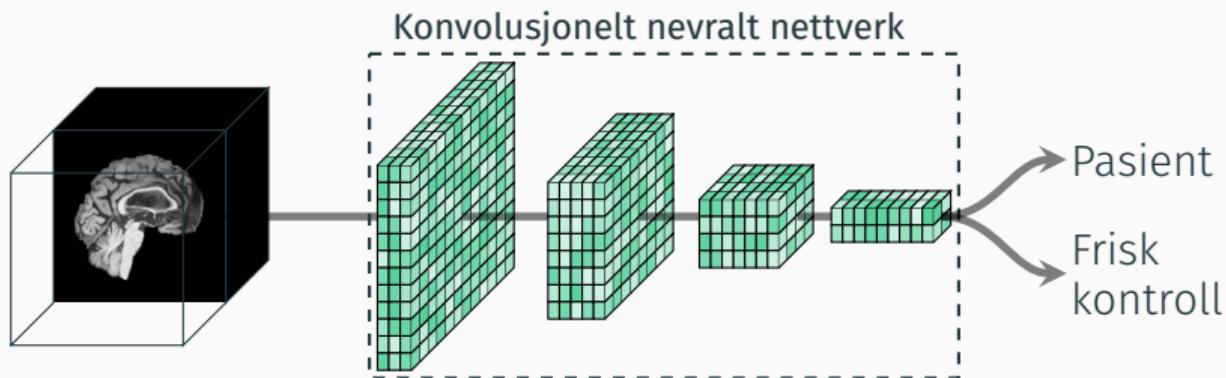
Kunstig intelligens og hjerneavbildningsdata



Kunstig intelligens og hjerneavbildningsdata



Kunstig intelligens og hjerneavbildningsdata



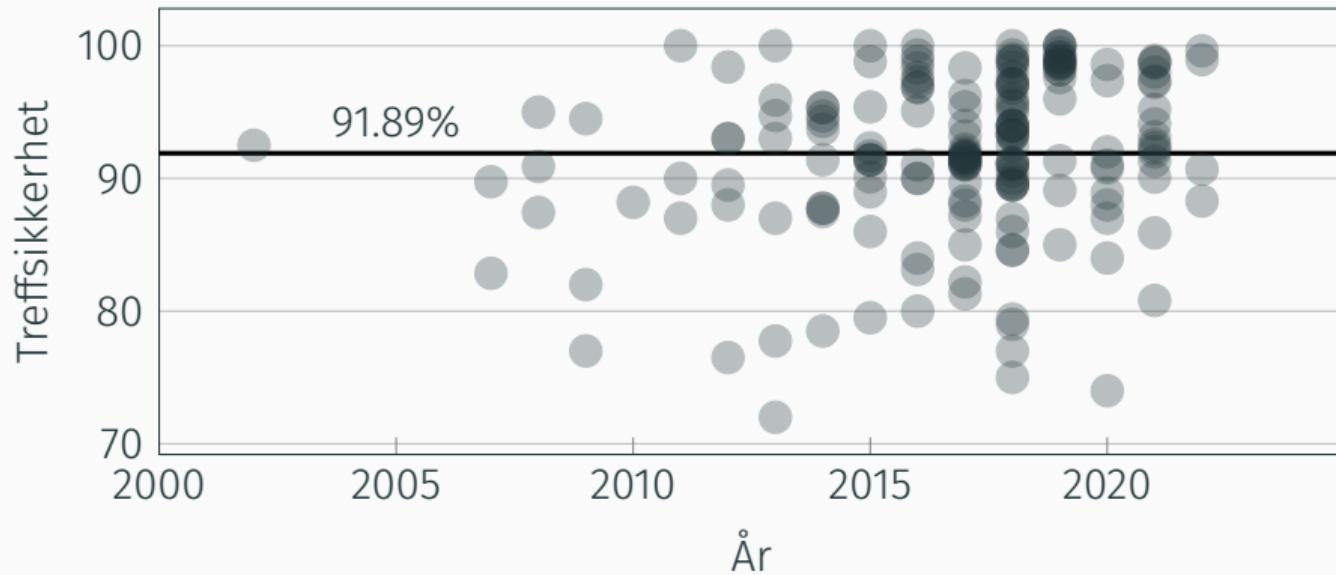
Klassifikasjonsstudier



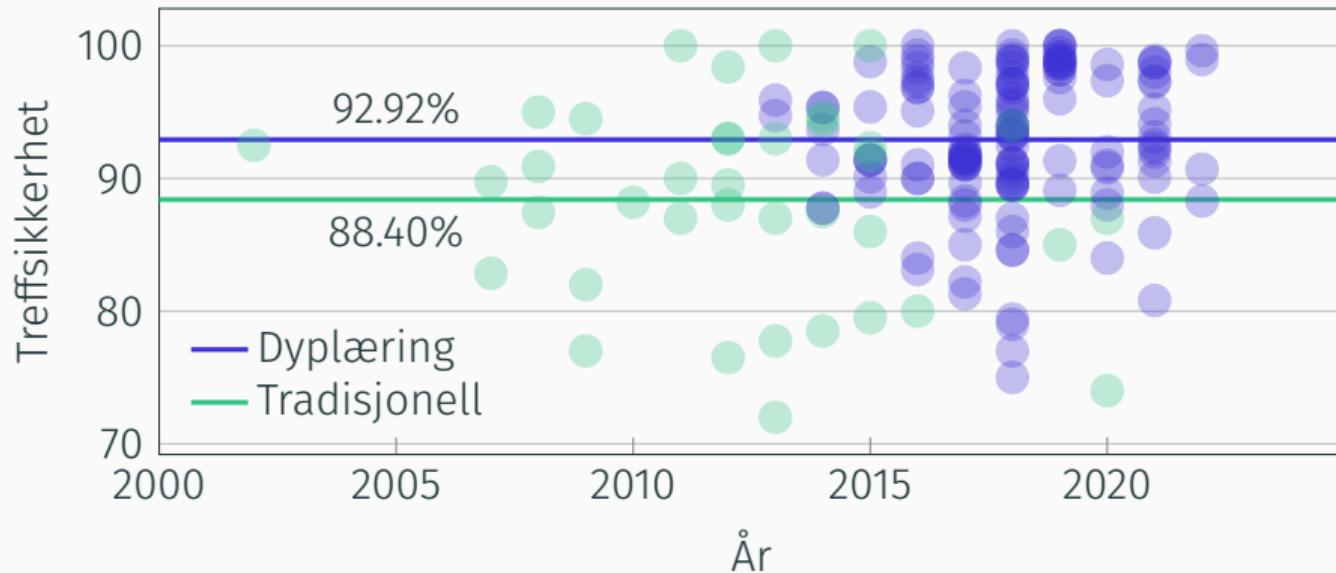
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fra <https://pubmed.ncbi.nlm.nih.gov>

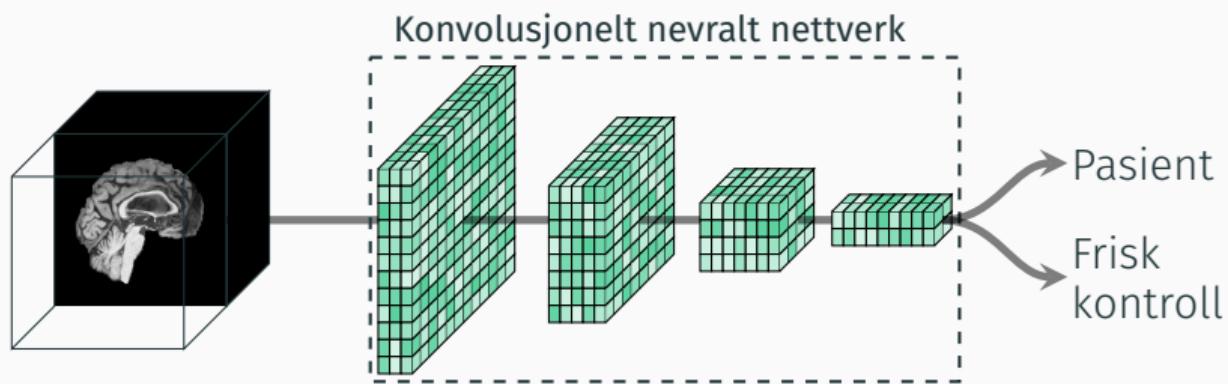


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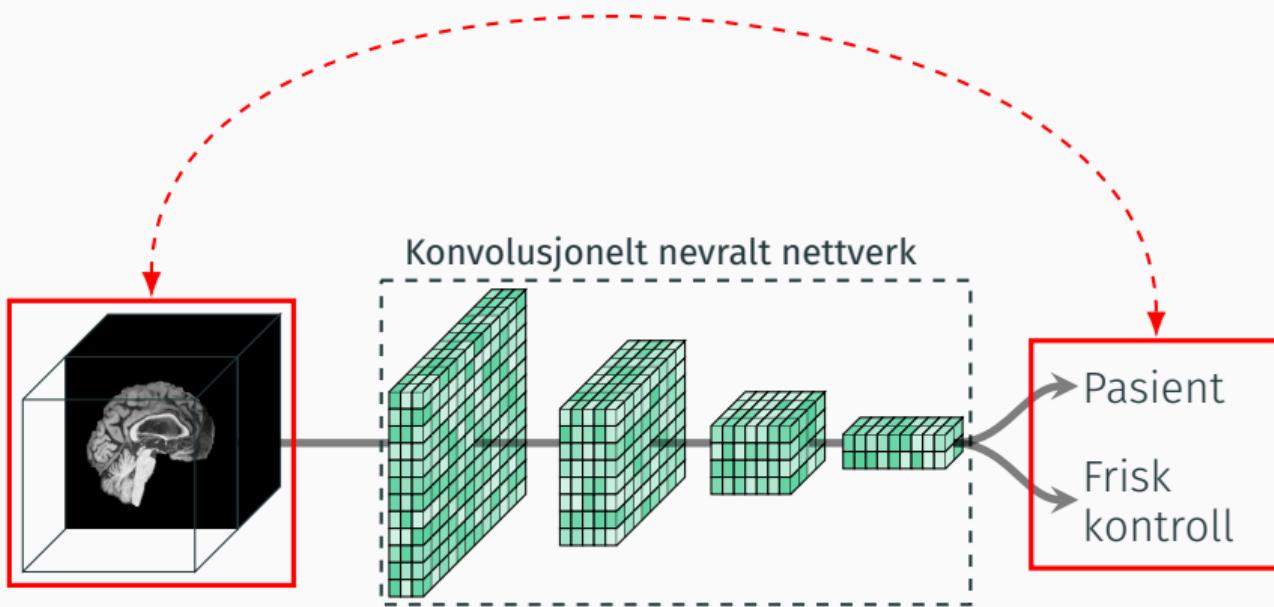


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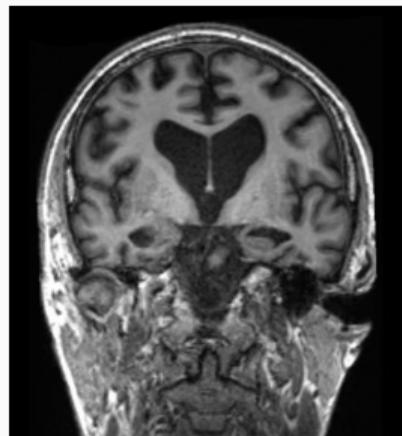




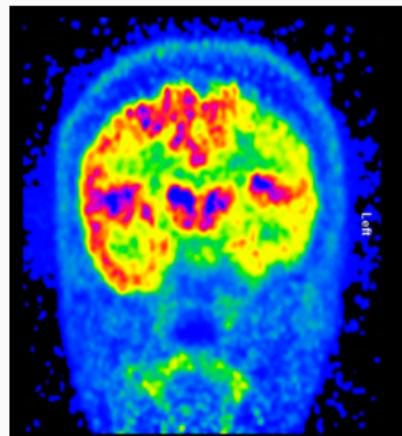
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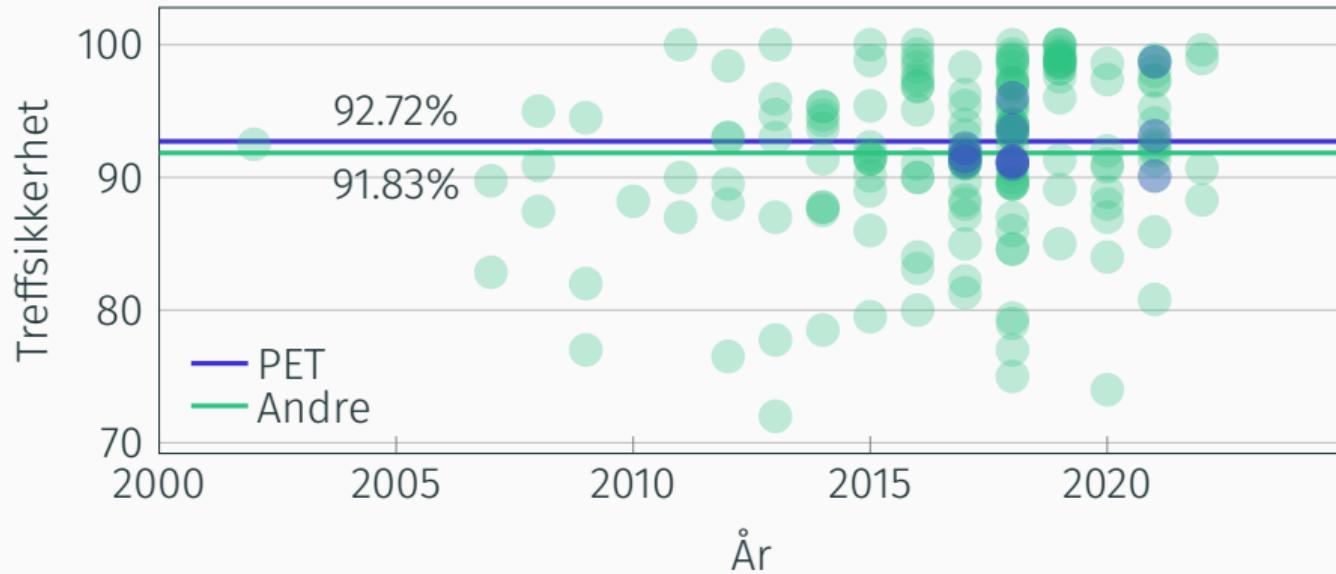
Strukturell MRI



PET



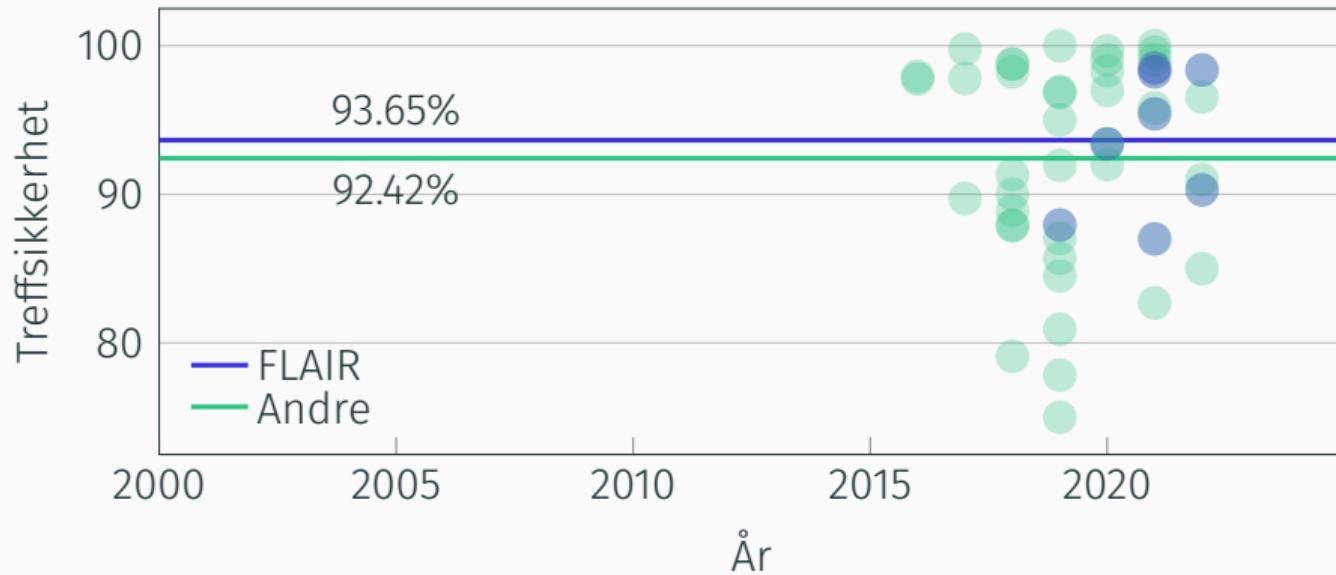
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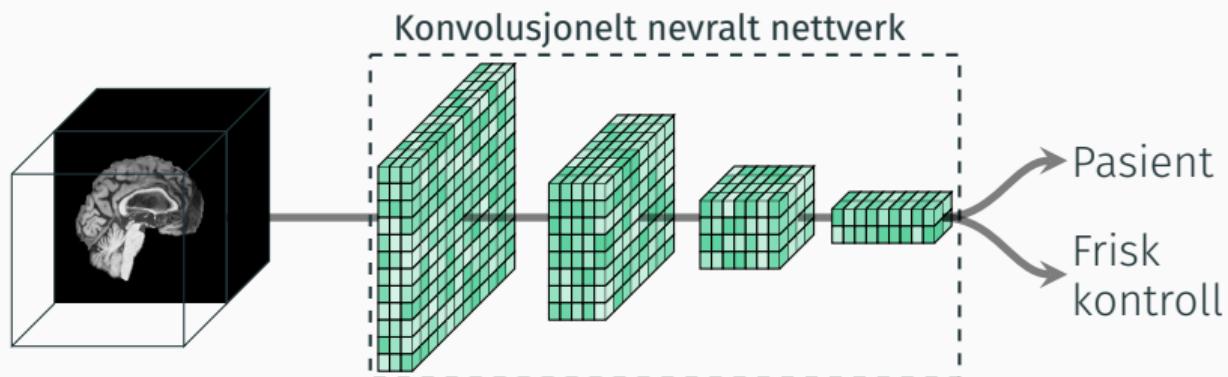
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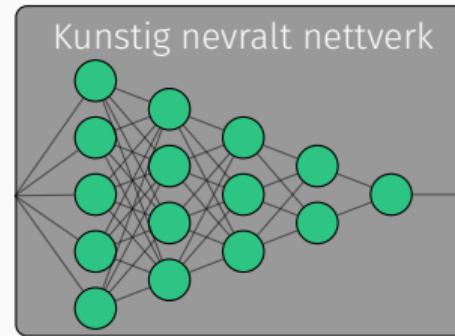
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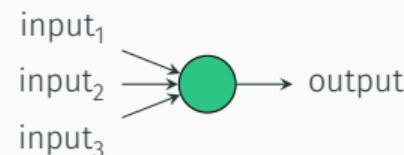
Forklarbarhetsproblemet med kunstig intelligens



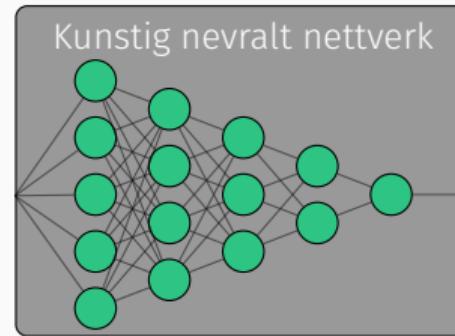
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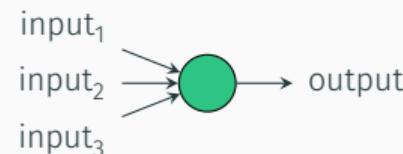
Kunstig nevron



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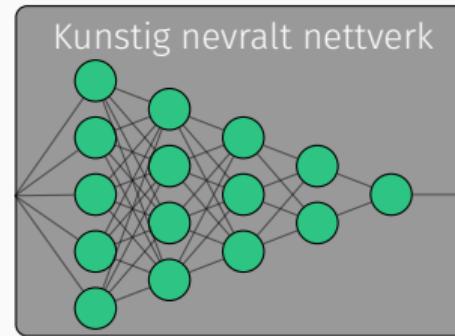
Kunstig nevron



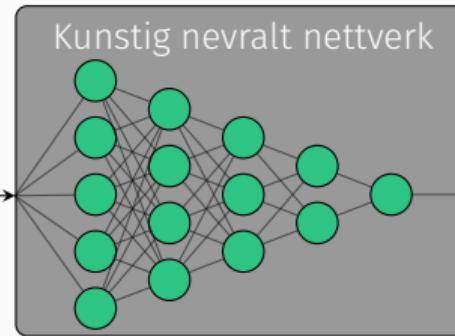
$$\text{output} = \max(0, \text{input}_1 * w_1 + \text{input}_2 * w_2 + \text{input}_3 * w_3)$$



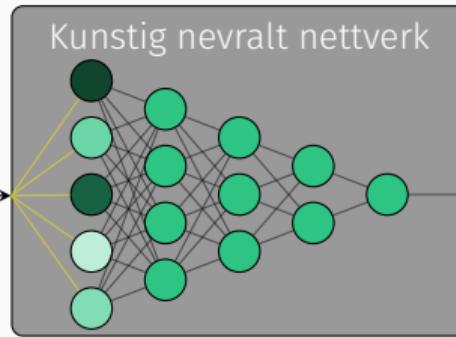
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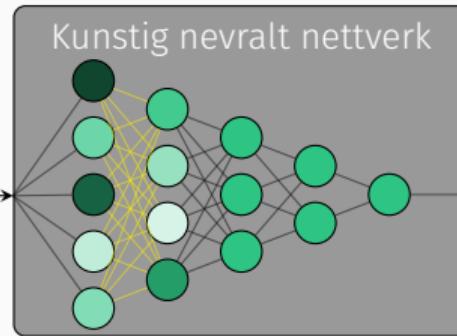
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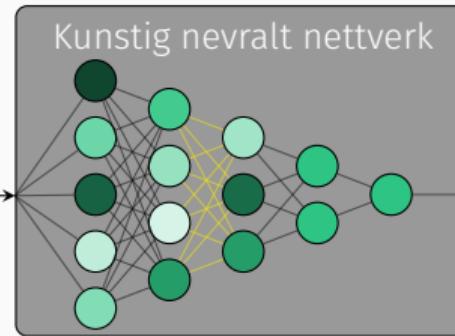
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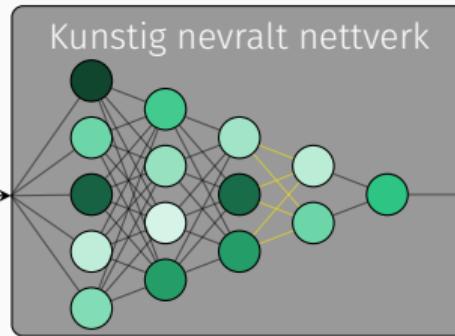
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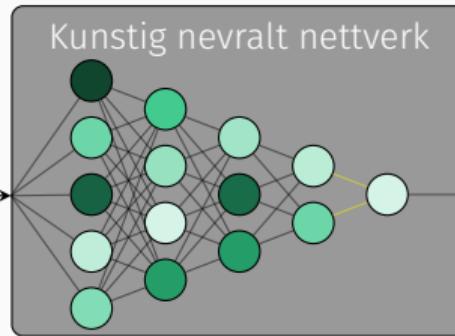
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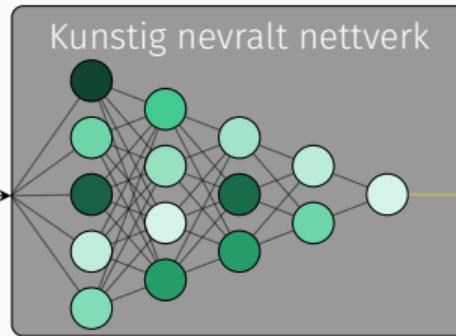
Forklarbarhetsproblemet med kunstig intelligens



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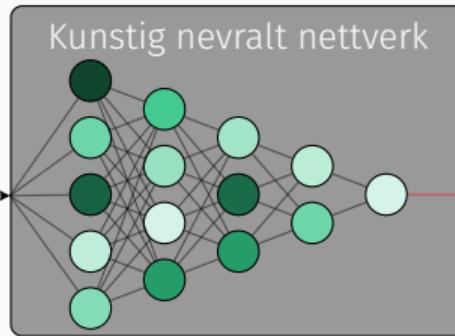
Forklarbarhetsproblemet med kunstig intelligens



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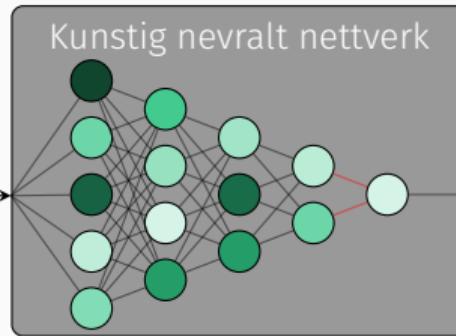
Forklarbarhetsproblemet med kunstig intelligens



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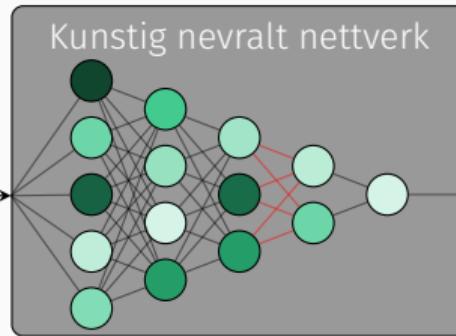
Forklarbarhetsproblemet med kunstig intelligens



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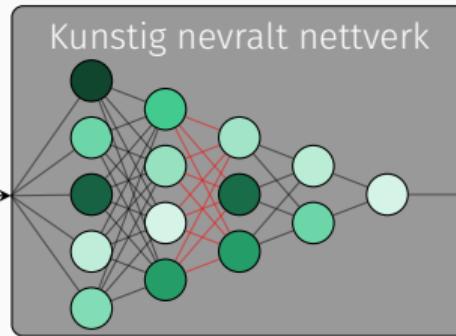
Forklarbarhetsproblemet med kunstig intelligens



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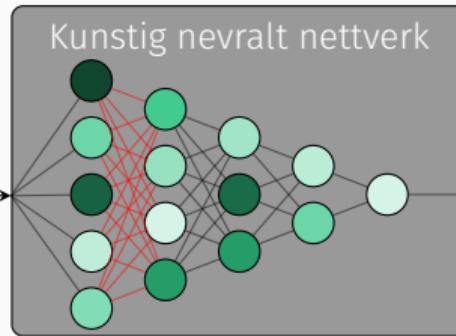
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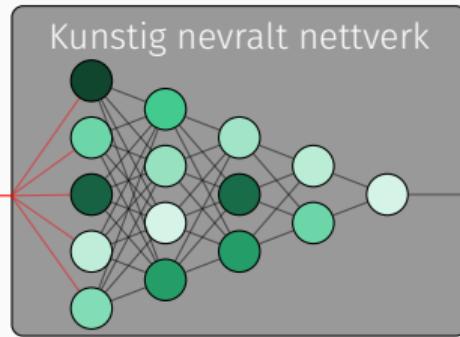
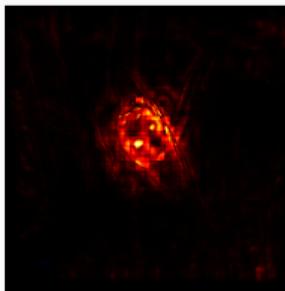
Forklarbarhetsproblemet med kunstig intelligens



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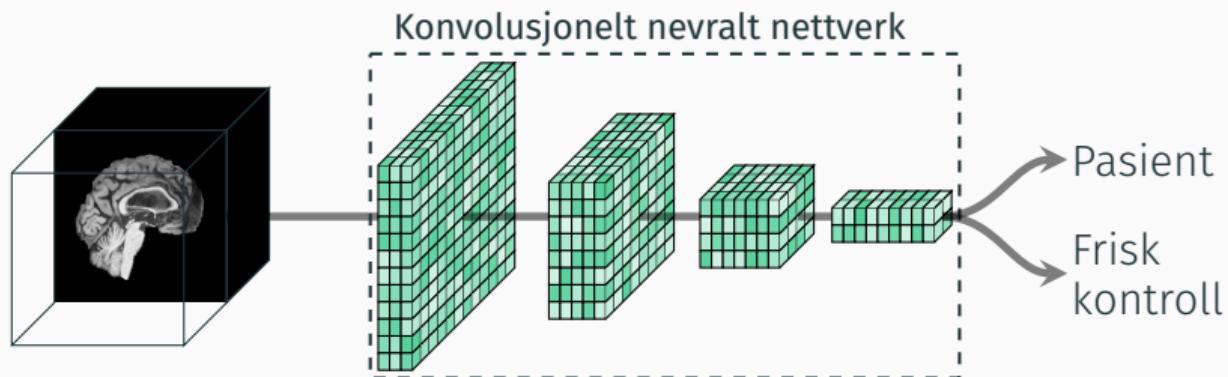
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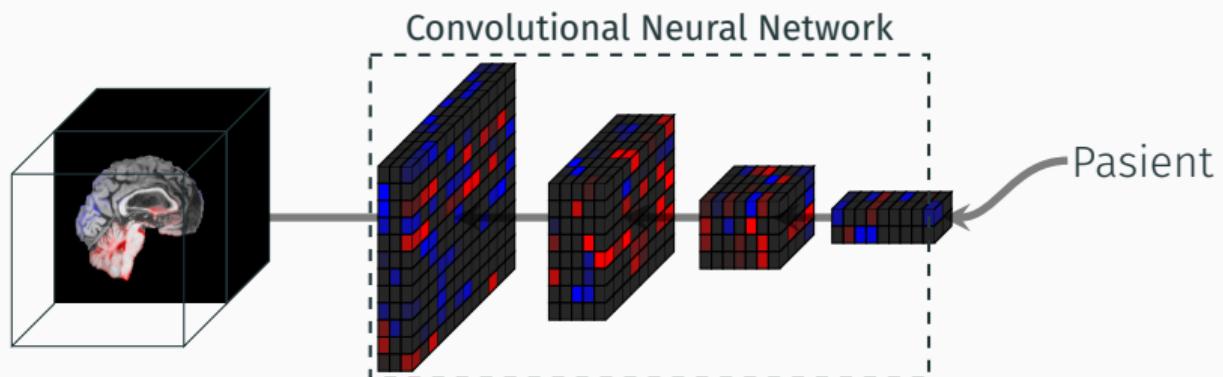
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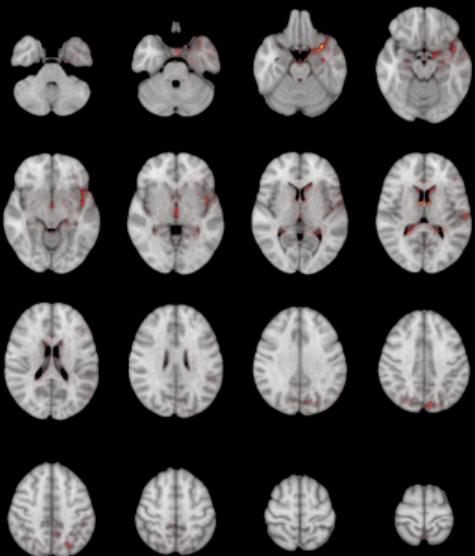
Forklarbarhetsproblemene med kunstig intelligens



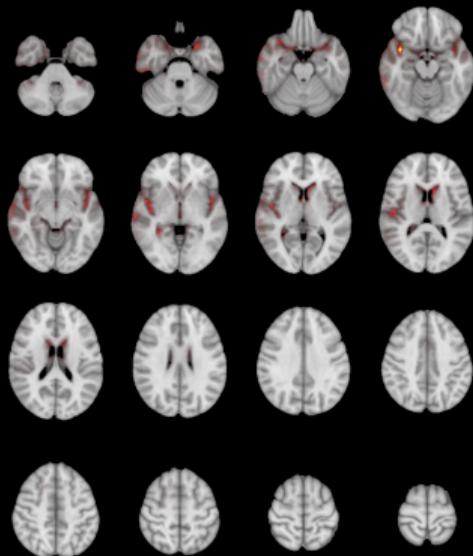
Forklarbar kunstig intelligens og demens



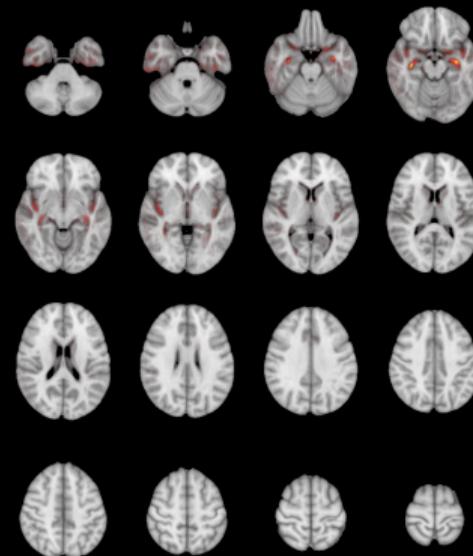
Pasient 1



Pasient 2



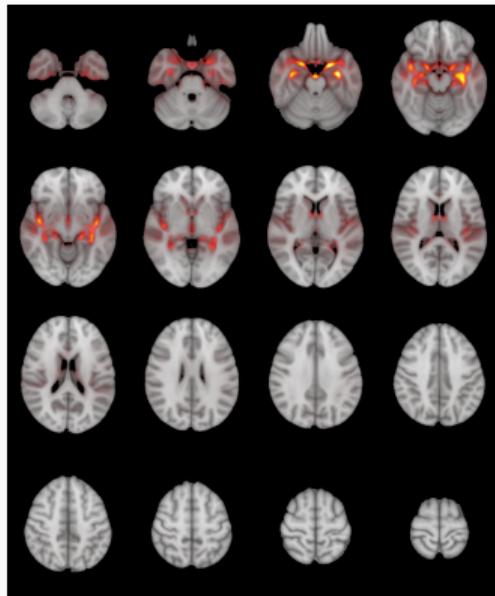
Pasient 3



Forklarbar kunstig intelligens og demens



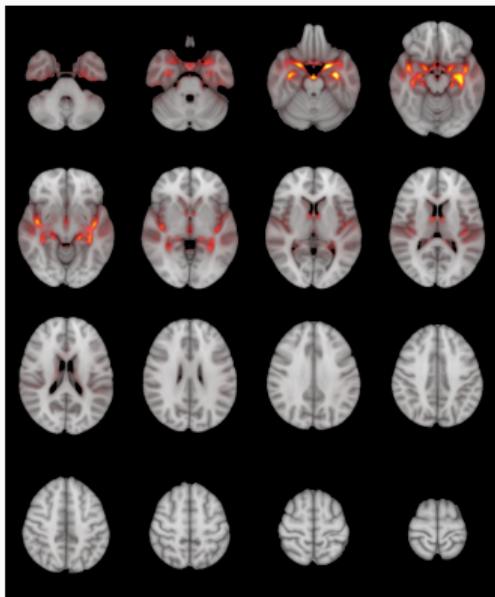
Forklarbar KI



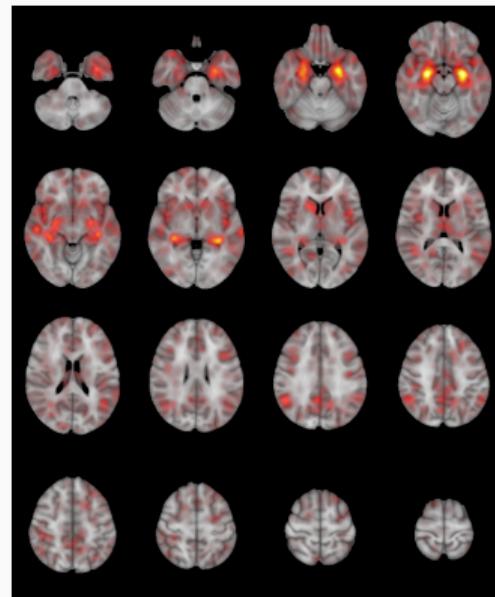
Forklarbar kunstig intelligens og demens



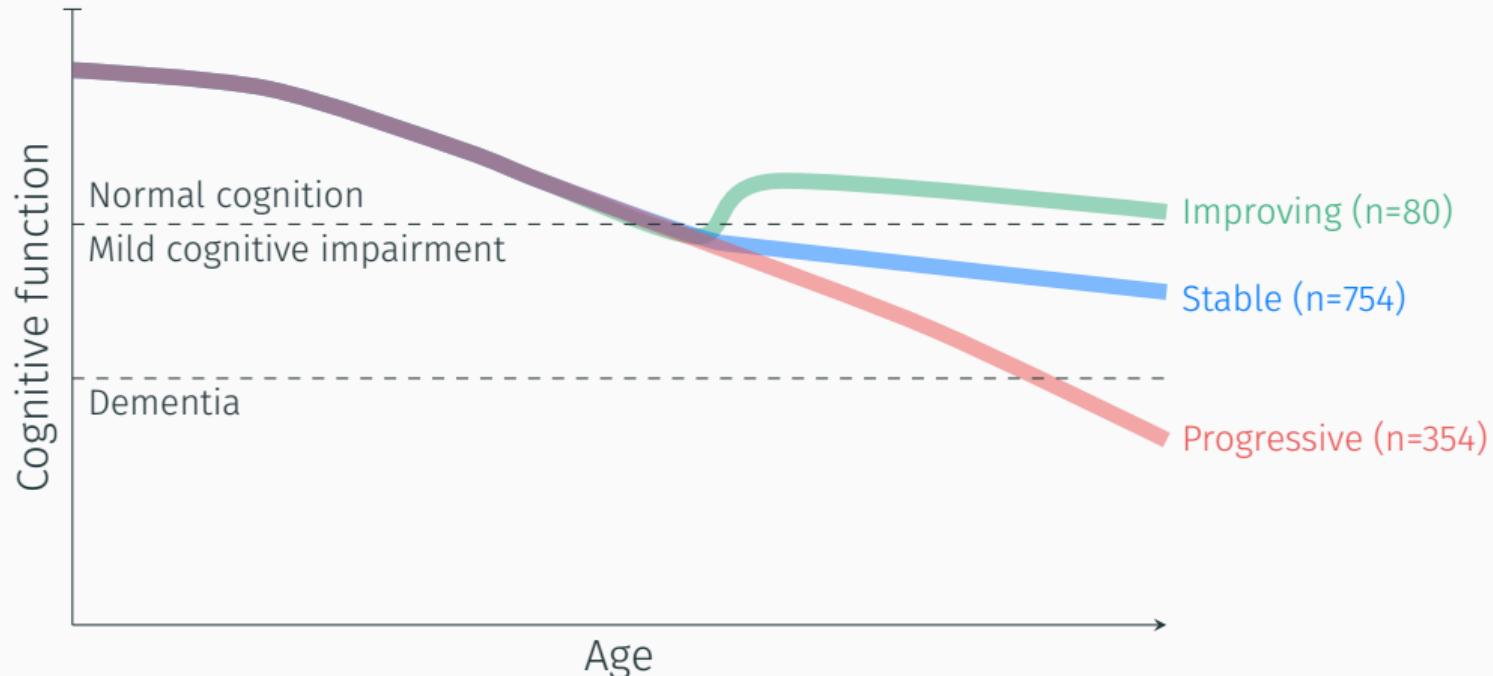
Forklarbar KI



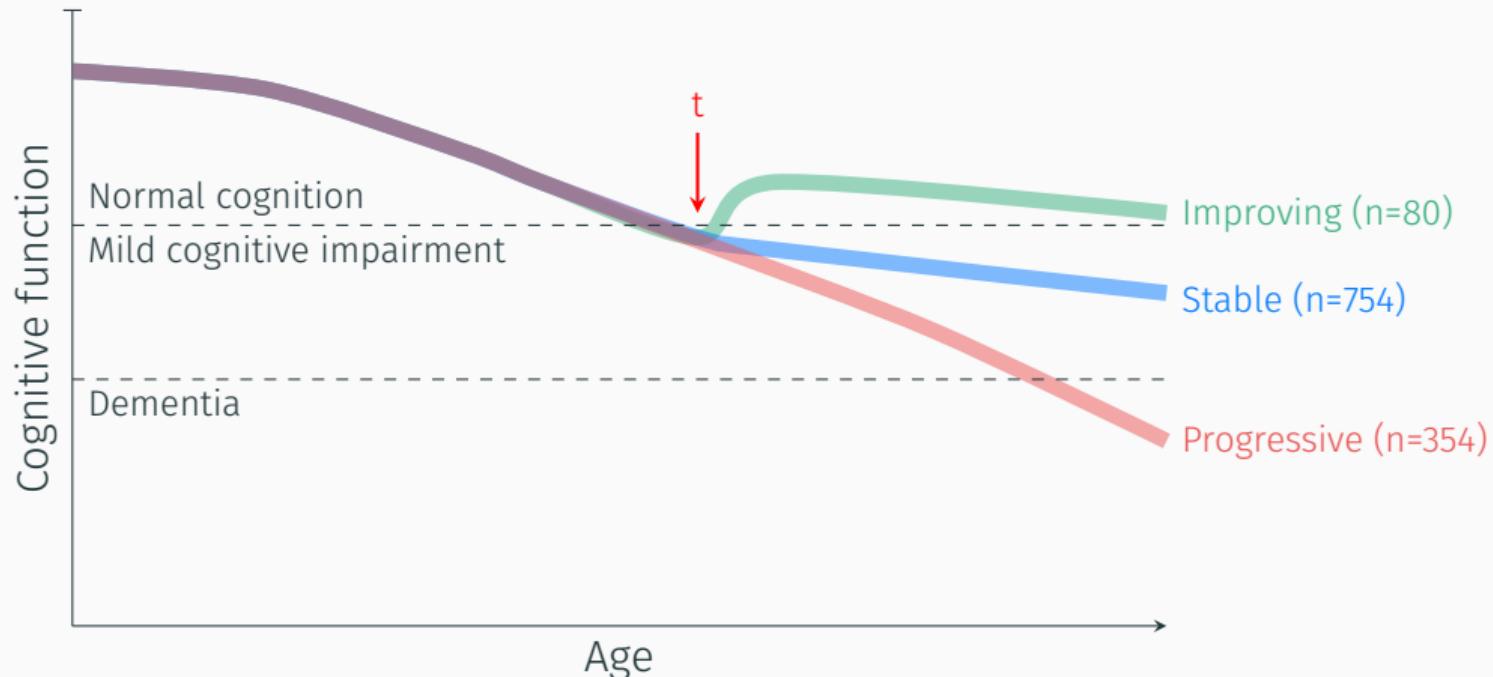
Mennesker



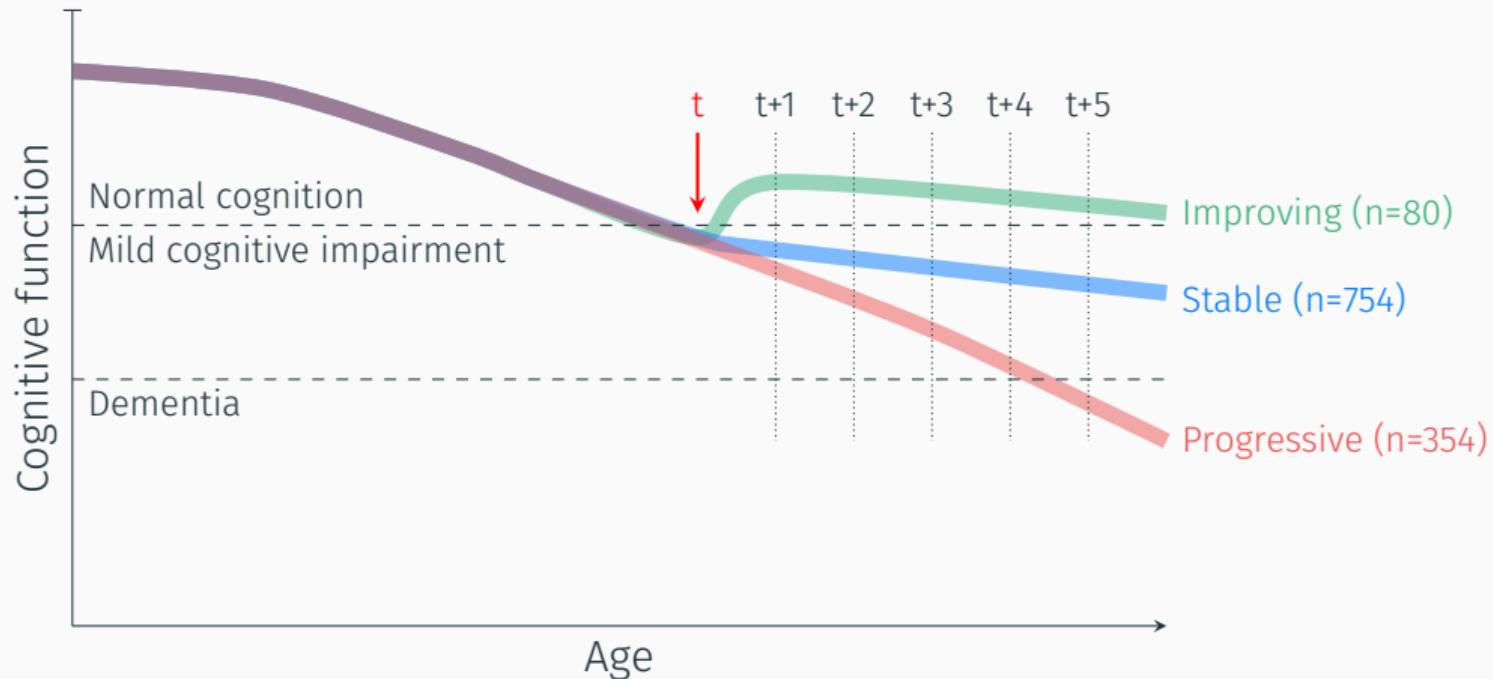
Forklarbar kunstig intelligens og demens



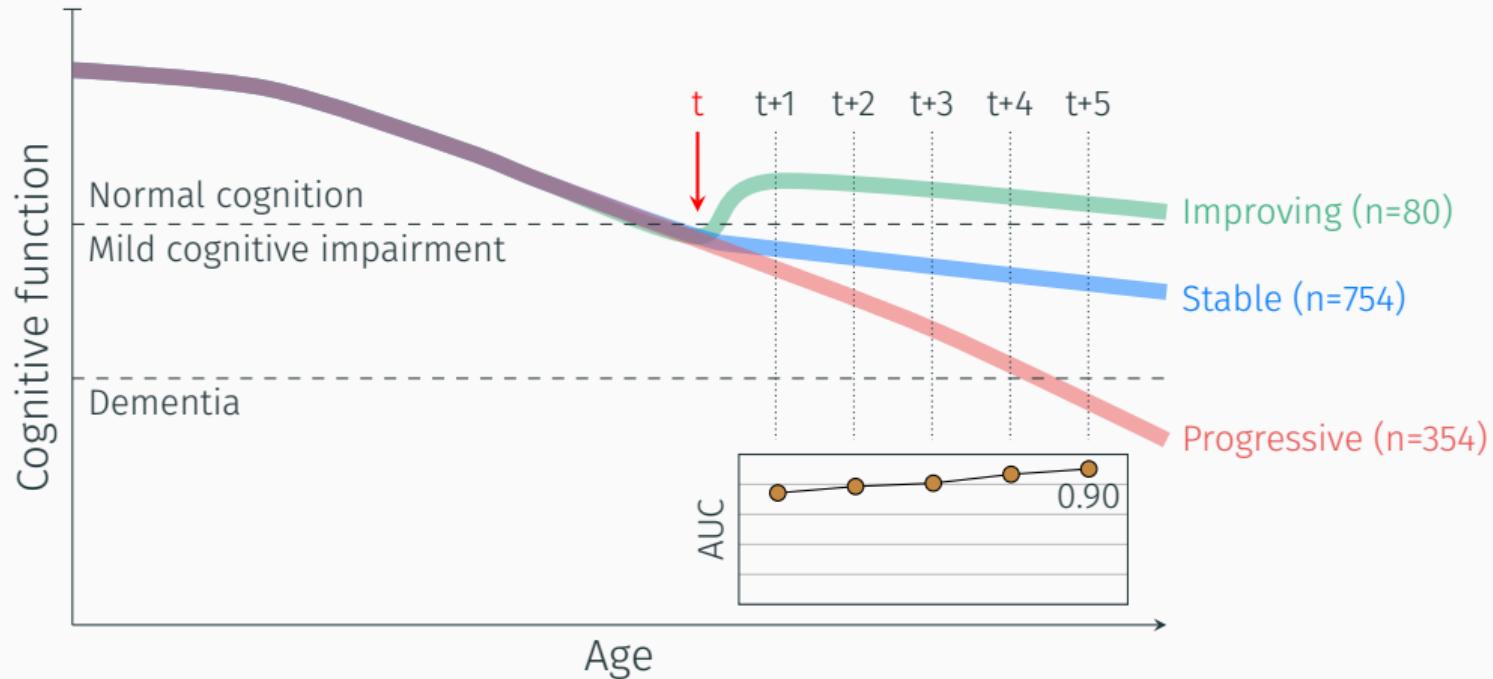
Forklarbar kunstig intelligens og demens



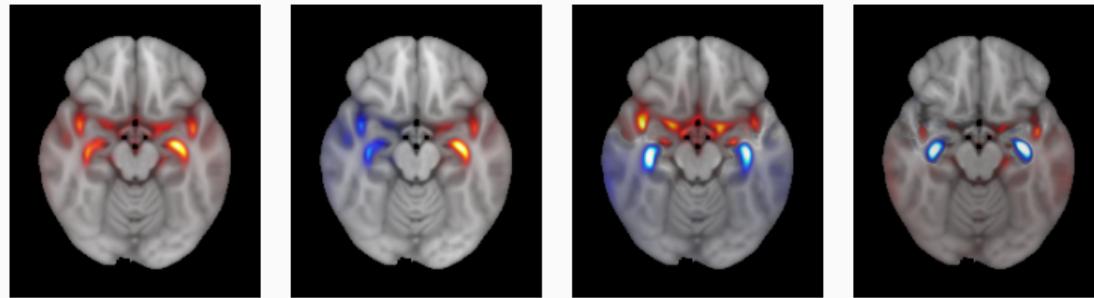
Forklarbar kunstig intelligens og demens



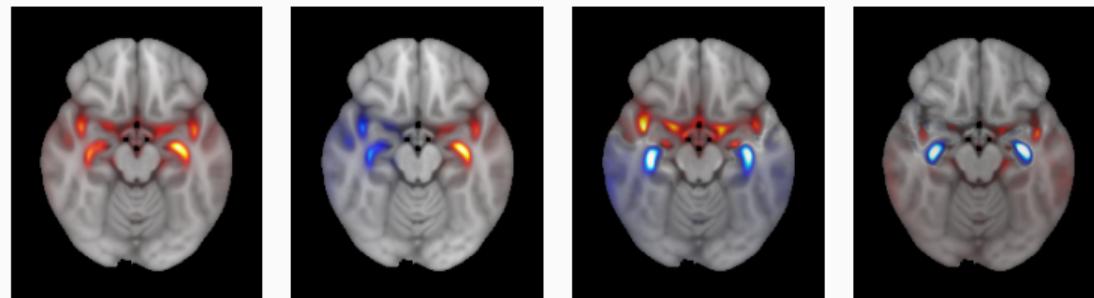
Forklarbar kunstig intelligens og demens



Forklarbar kunstig intelligens og demens



Forklarbar kunstig intelligens og demens



Takk for oppmerksomheten!
estenhl@uios.no



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