

En introduksjon til kunstig intelligens

Og dets rolle i medisinsk forskning



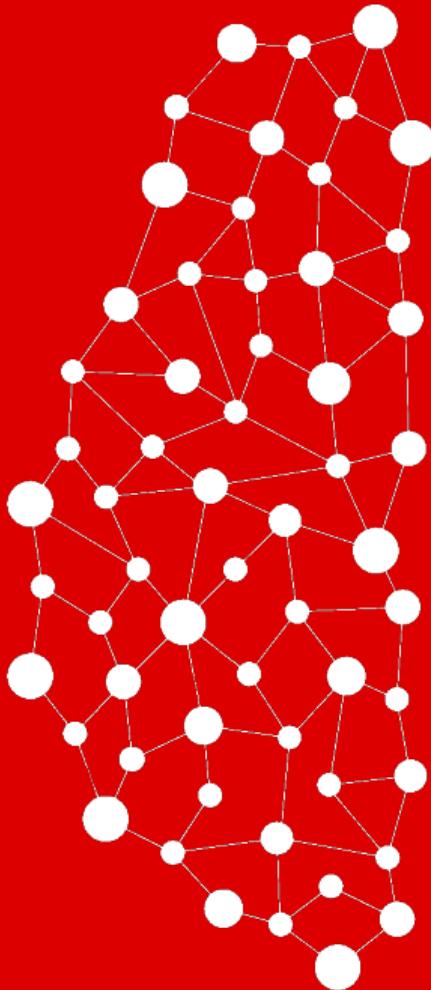
Esten H. Leonardsen

Post-doktor ved Psykologisk institutt,
Universitet i Oslo

Chief Scientific Officer, baba.vision



UNIVERSITETET
I OSLO



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.)?



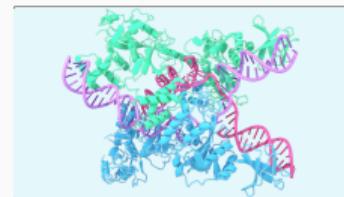
ChatGPT



Spot



Sophia

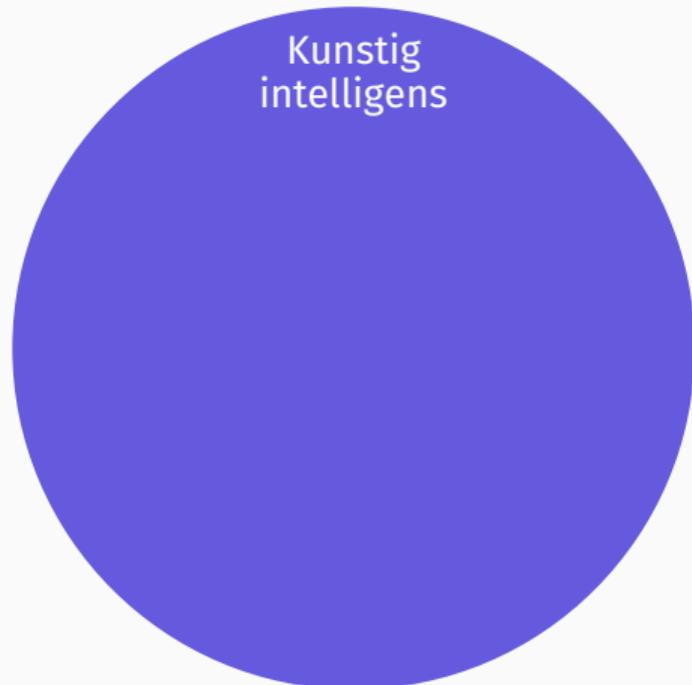


AlphaFold



AlphaZero

Hva er kunstig intelligens?



Kunstig intelligens

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

Hva er kunstig intelligens?



Kunstig intelligens

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

Hva er kunstig intelligens?



Kunstig intelligens

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

Hva er kunstig intelligens?

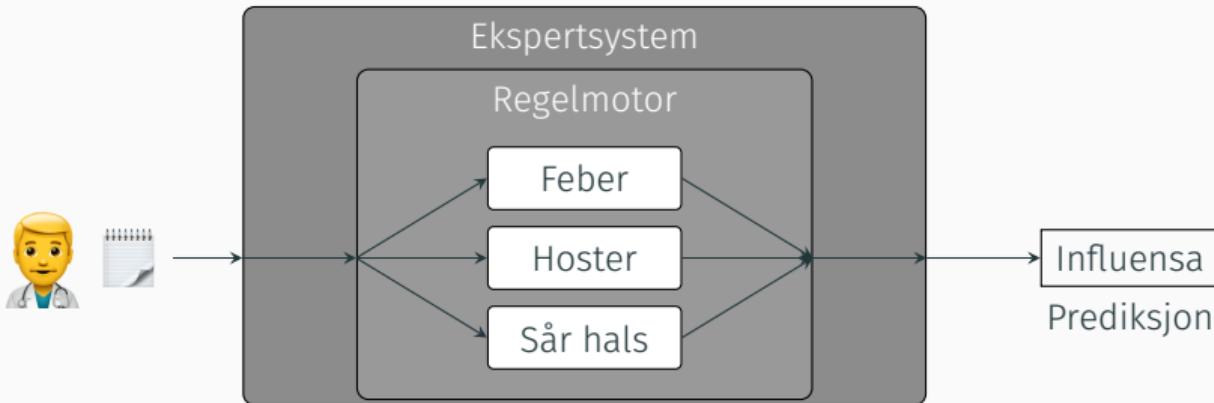
Ekspertsystem



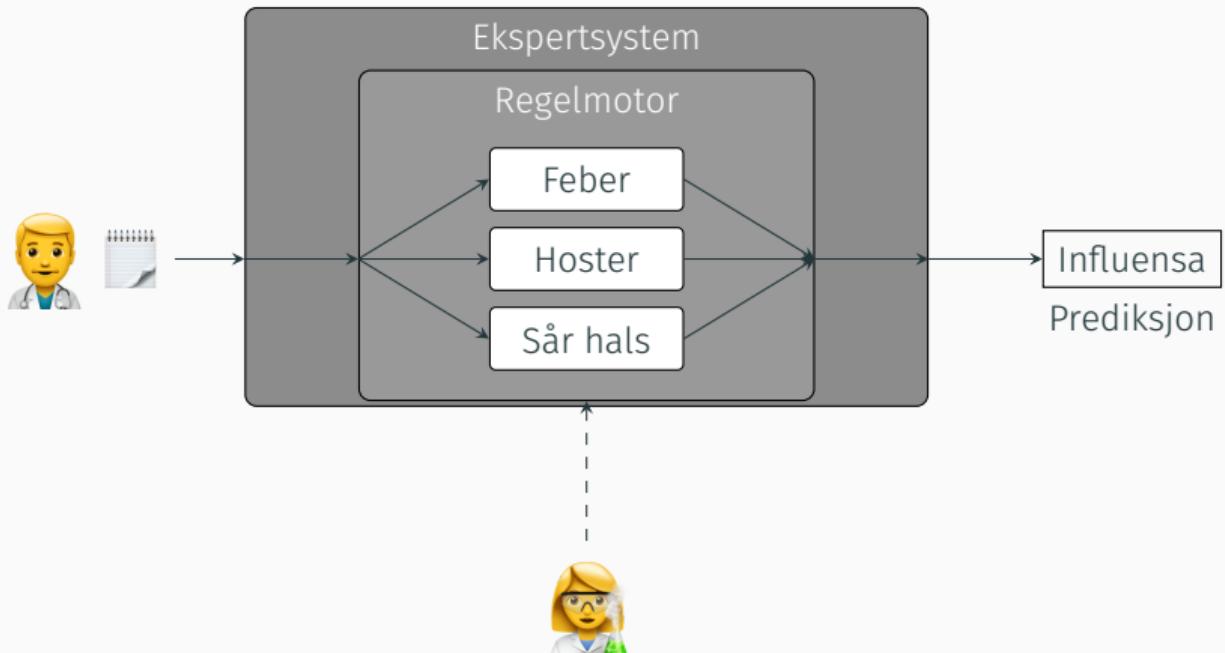
Hva er kunstig intelligens?



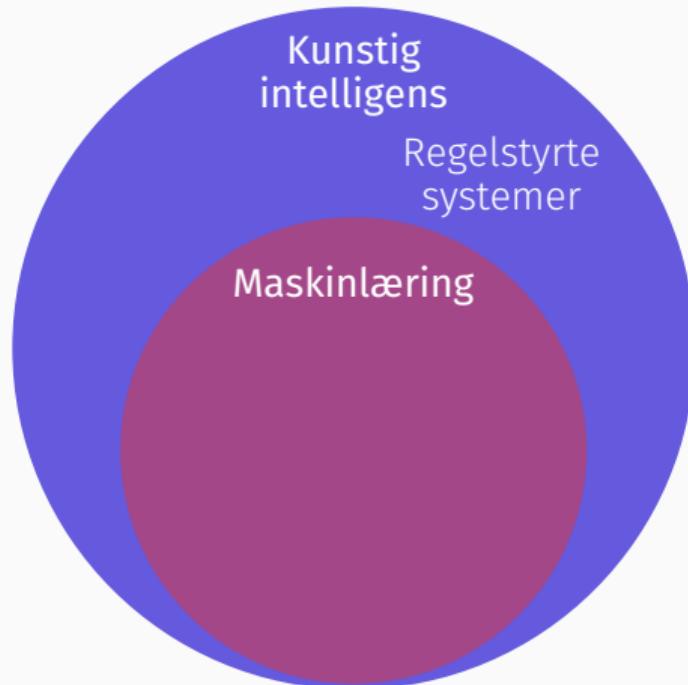
Hva er kunstig intelligens?



Hva er kunstig intelligens?



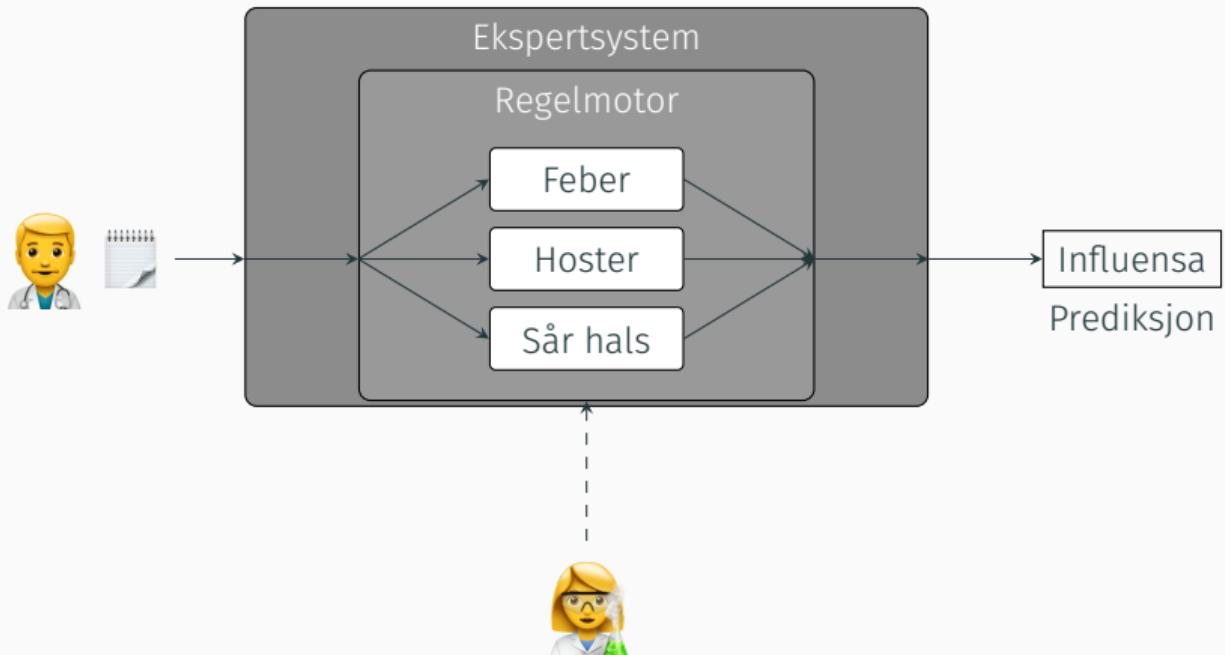
Hva er kunstig intelligens?



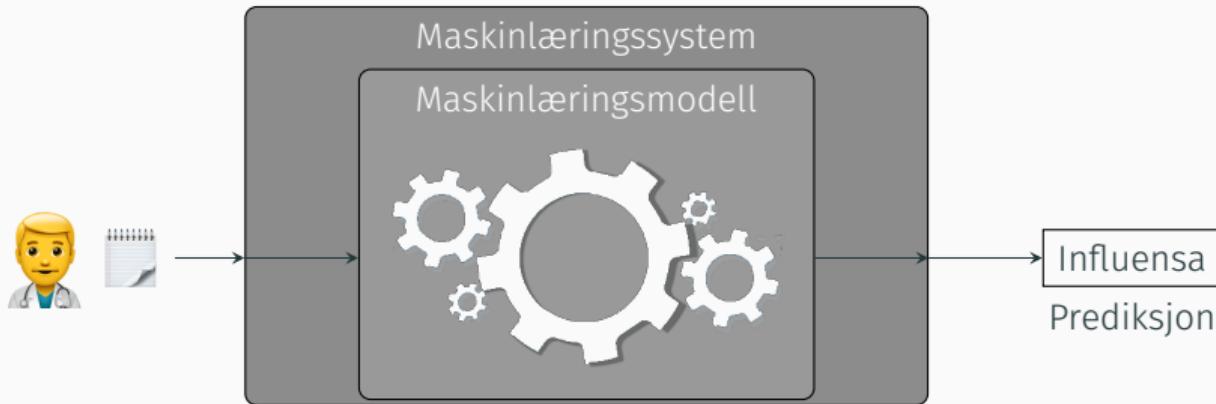
Kunstig intelligens

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

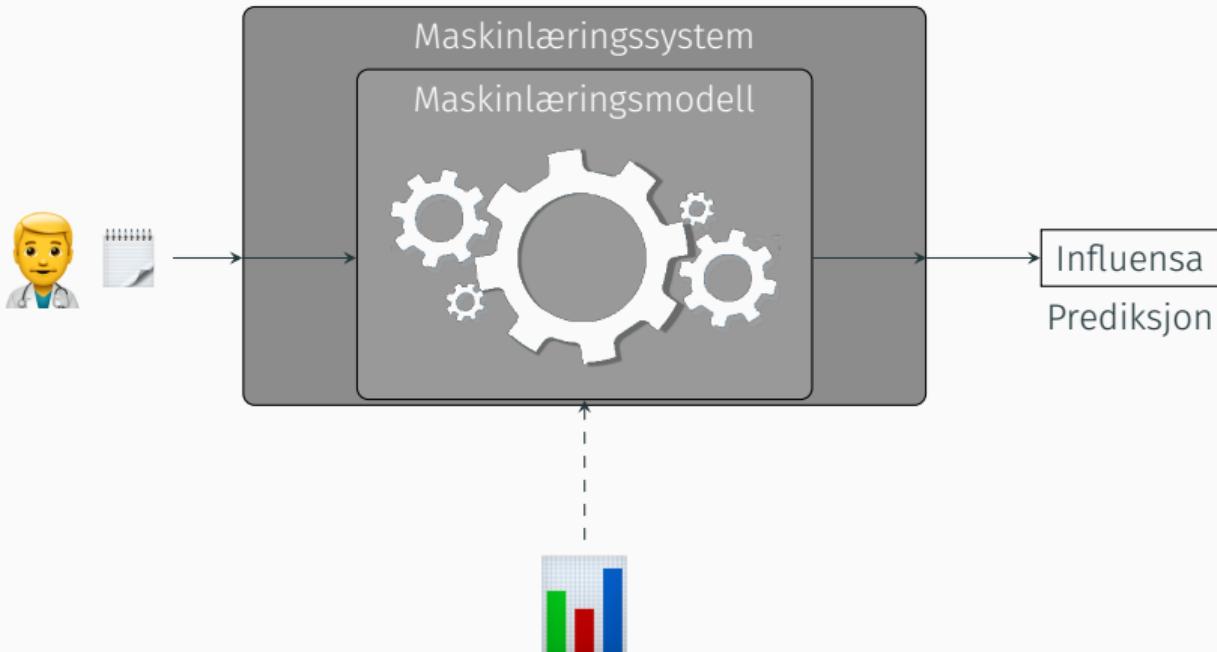
Hva er kunstig intelligens?



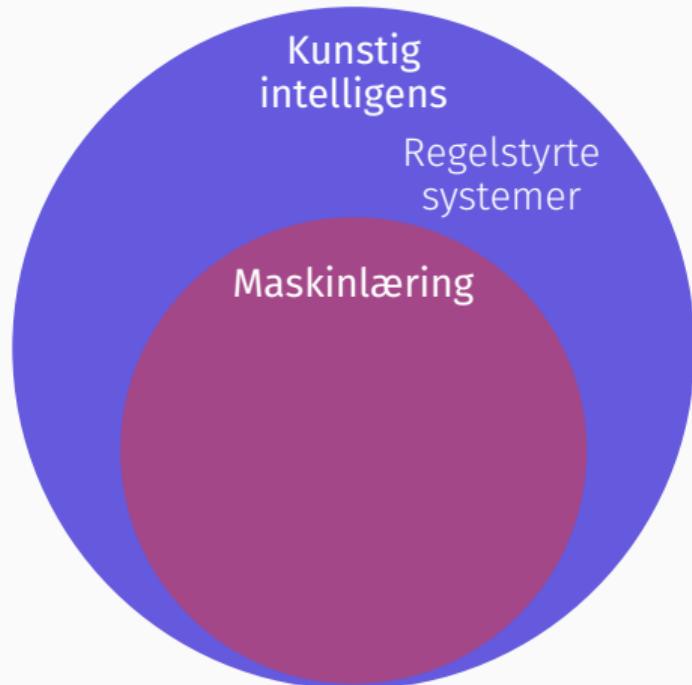
Hva er kunstig intelligens?



Hva er kunstig intelligens?



Hva er kunstig intelligens?



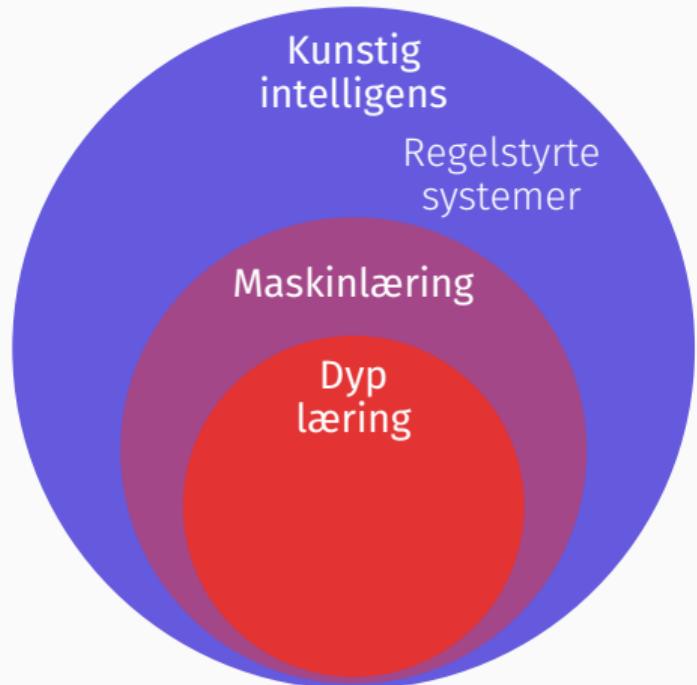
Kunstig intelligens

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

Maskinlæring

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

Hva er kunstig intelligens?



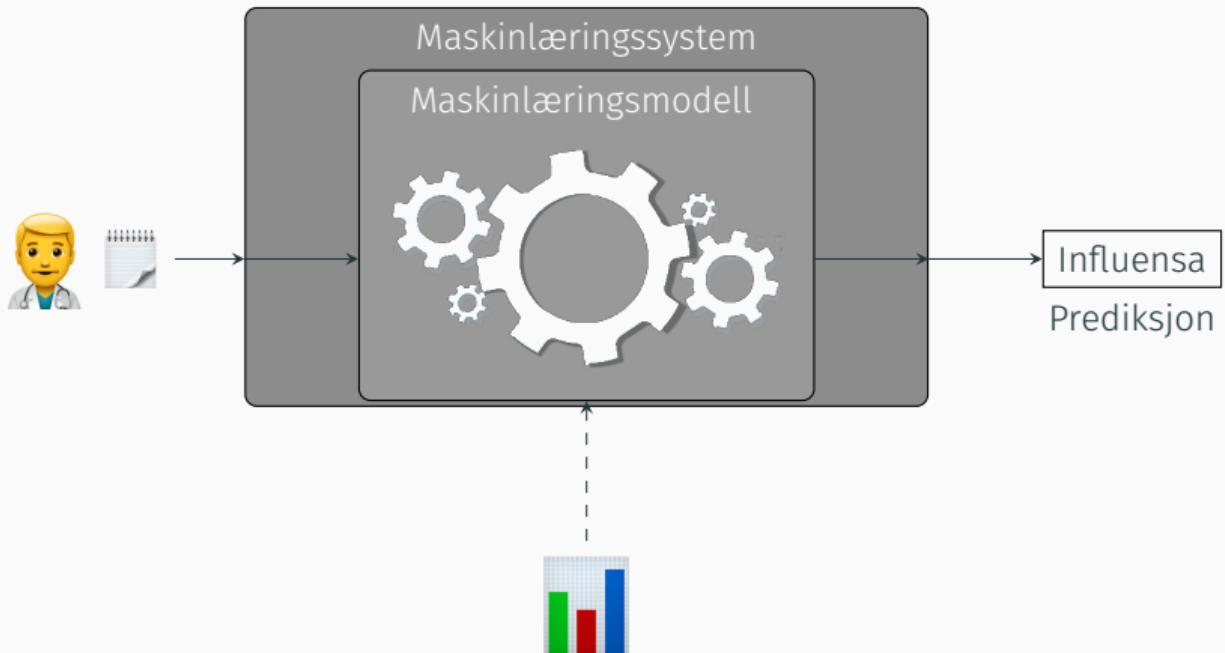
Kunstig intelligens

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

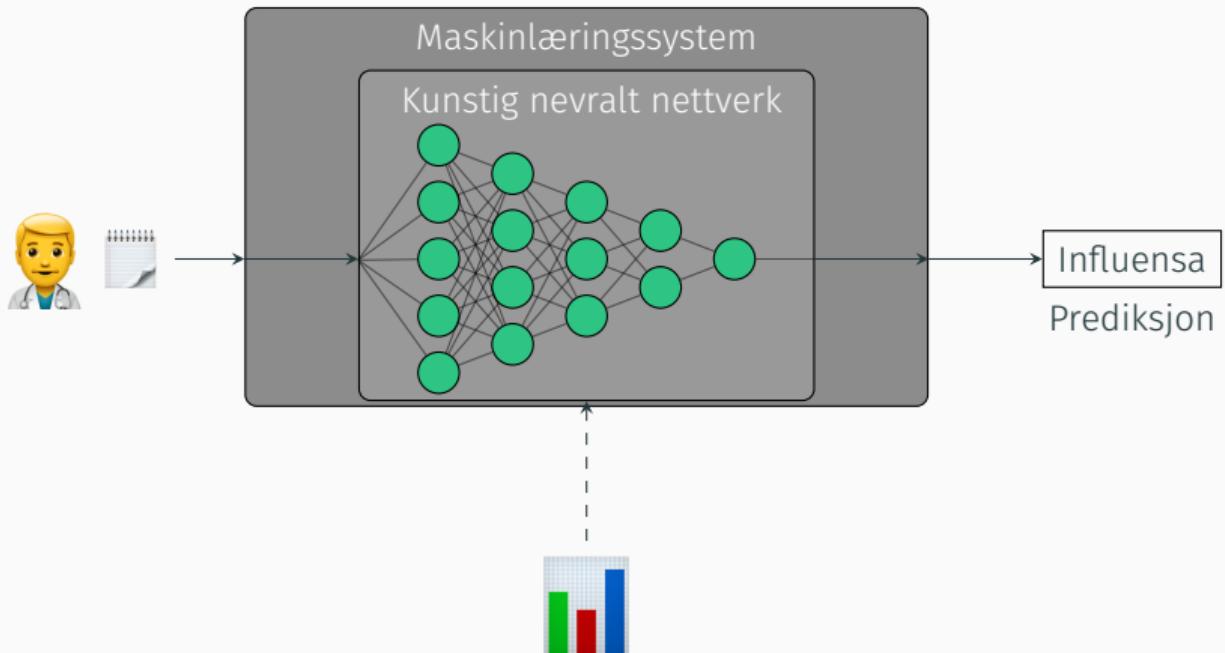
Maskinlæring

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

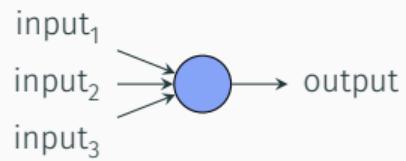
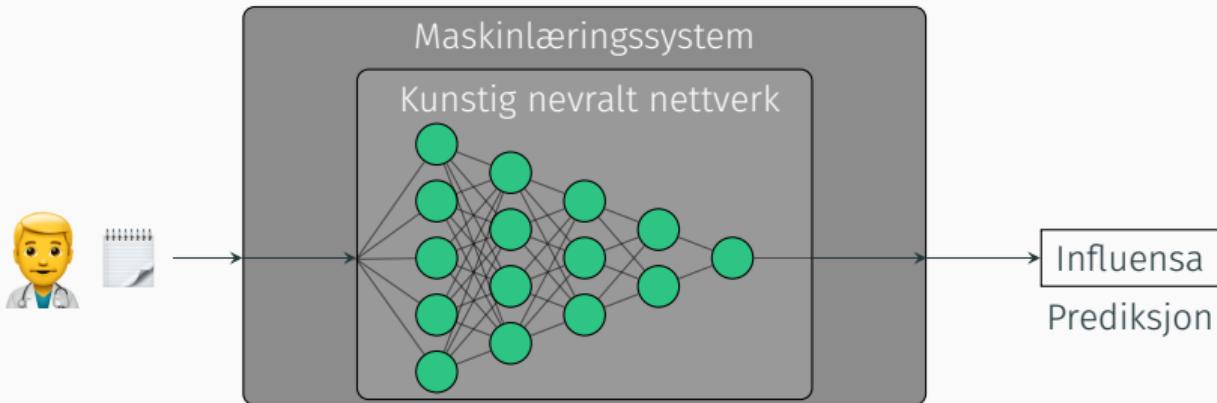
Hva er kunstig intelligens?



Hva er kunstig intelligens?



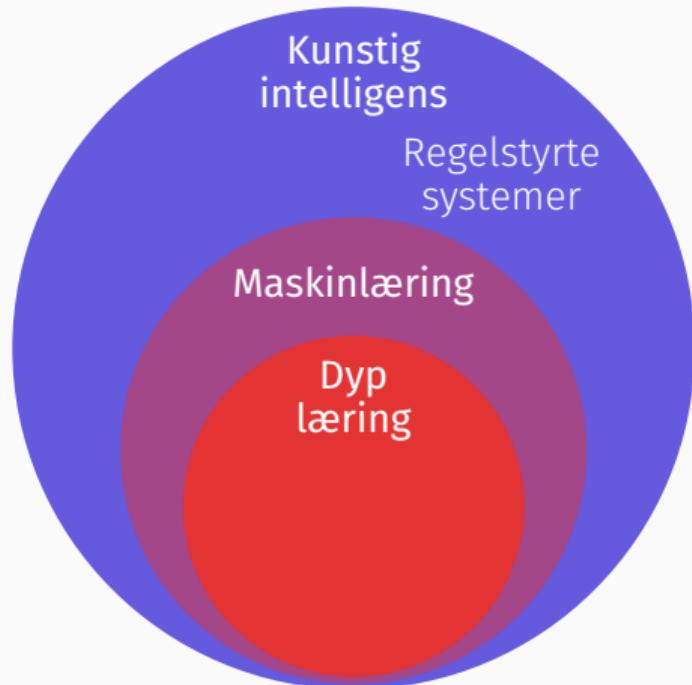
Hva er kunstig intelligens?



Kunstig nevron



Hva er kunstig intelligens?



Kunstig intelligens

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

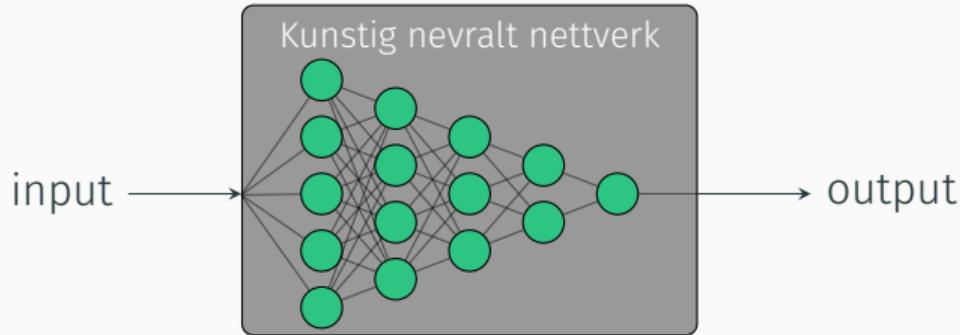
Maskinlæring

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

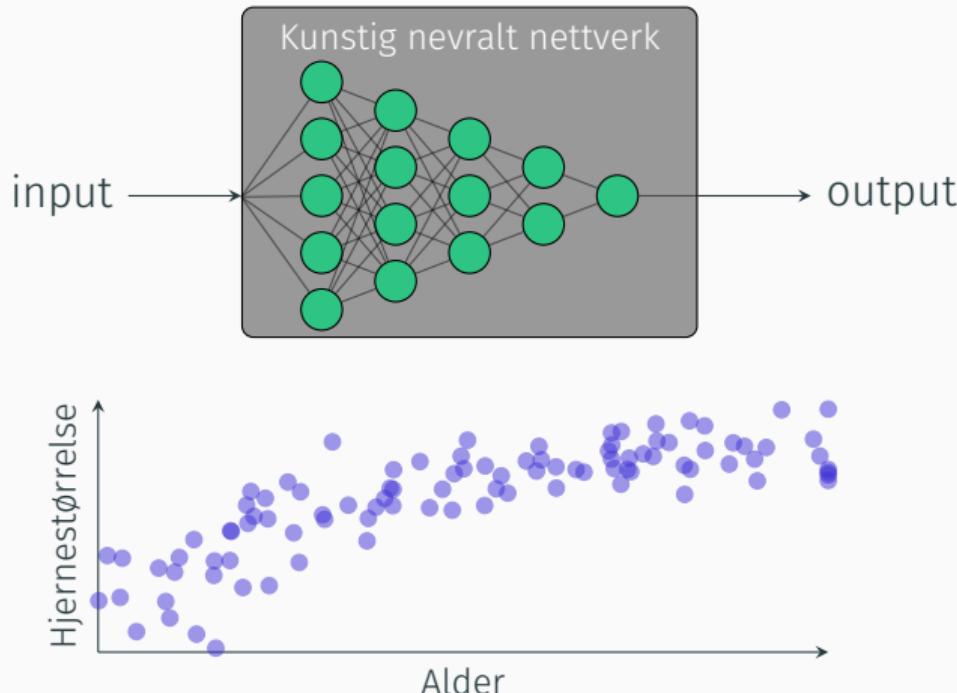
Dyp læring

Teknologi som bruker kunstige nevrale nettverk for å løse maskinlæringsproblemer

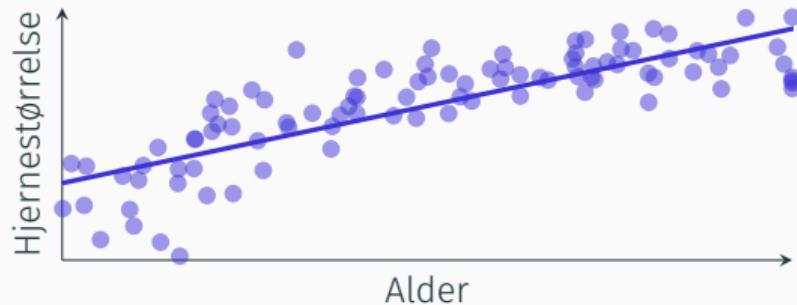
Hvorfor bruker vi kunstige nevrale nettverk?



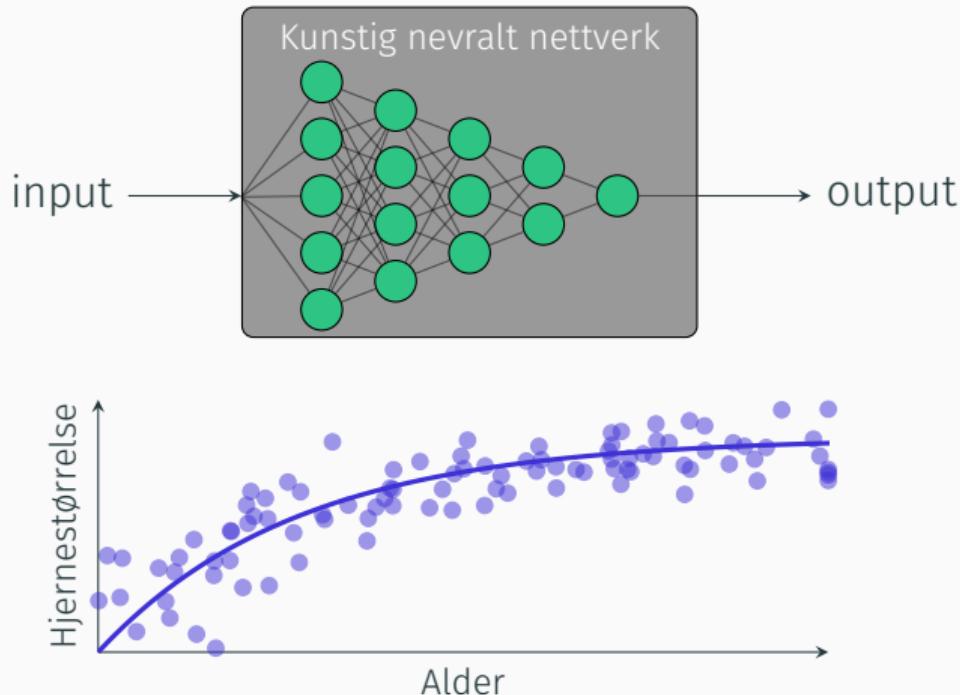
Hvorfor bruker vi kunstige nevrale nettverk?



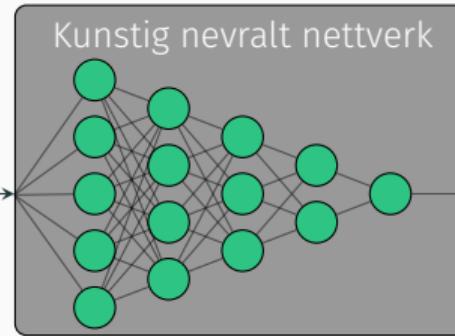
Hvorfor bruker vi kunstige nevrale nettverk?



Hvorfor bruker vi kunstige nevrale nettverk?



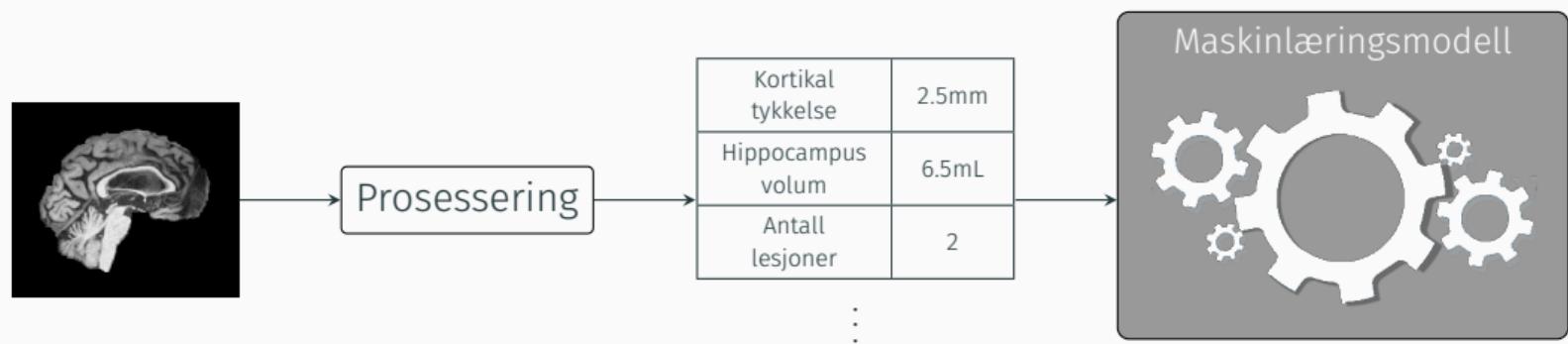
Hvorfor bruker vi kunstige nevrale nettverk?



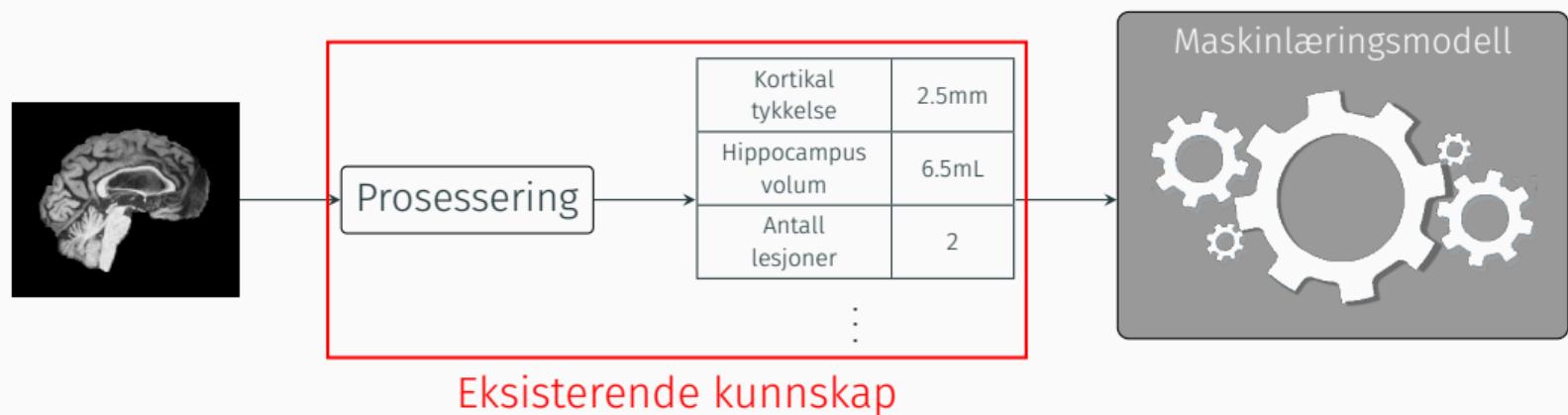
marihøne



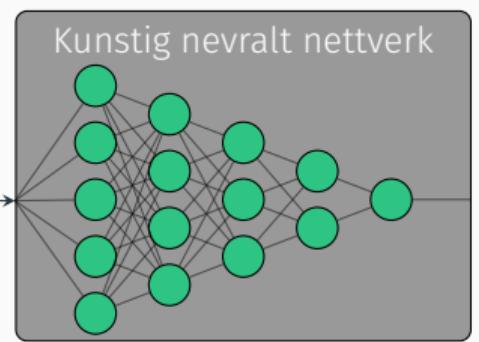
Hva er fordelen med å bruke ustrukturert data i (medisinsk) forskning



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



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

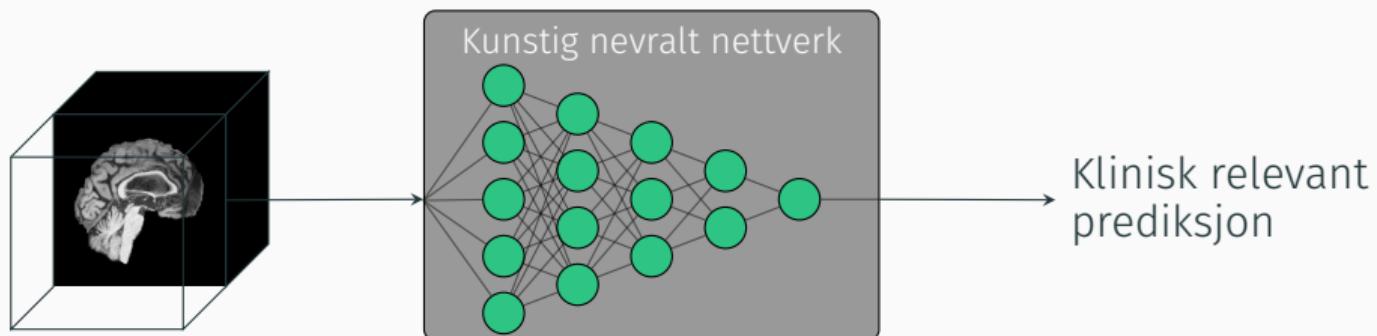


Kunstig intelligens i medisinsk forskning

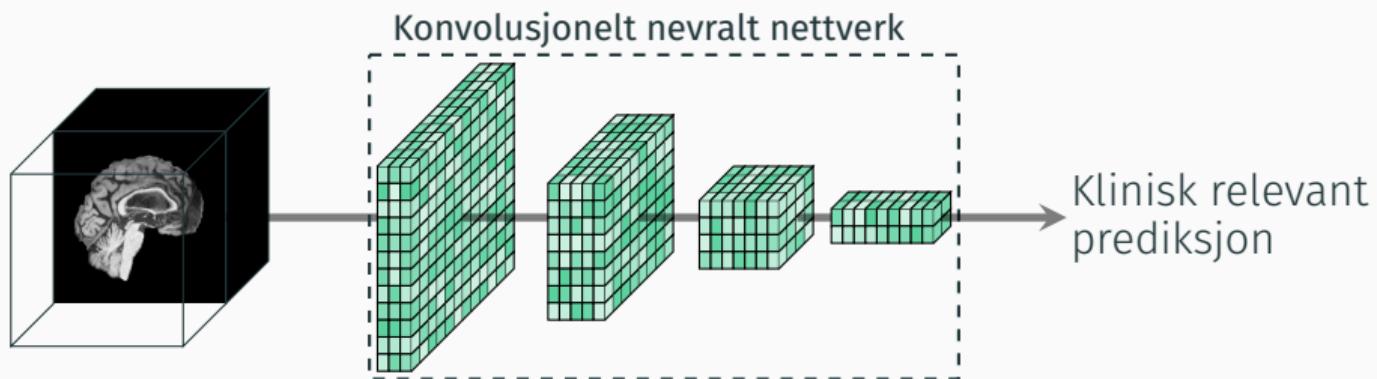


UNIVERSITETET
I OSLO

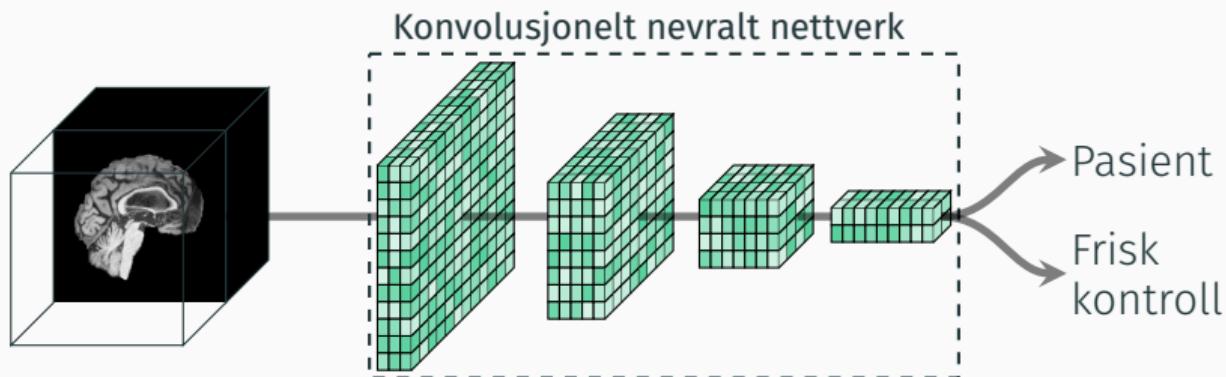
Kunstig intelligens og hjerneavbildningsdata



Kunstig intelligens og hjerneavbildningsdata



Kunstig intelligens og hjerneavbildningsdata



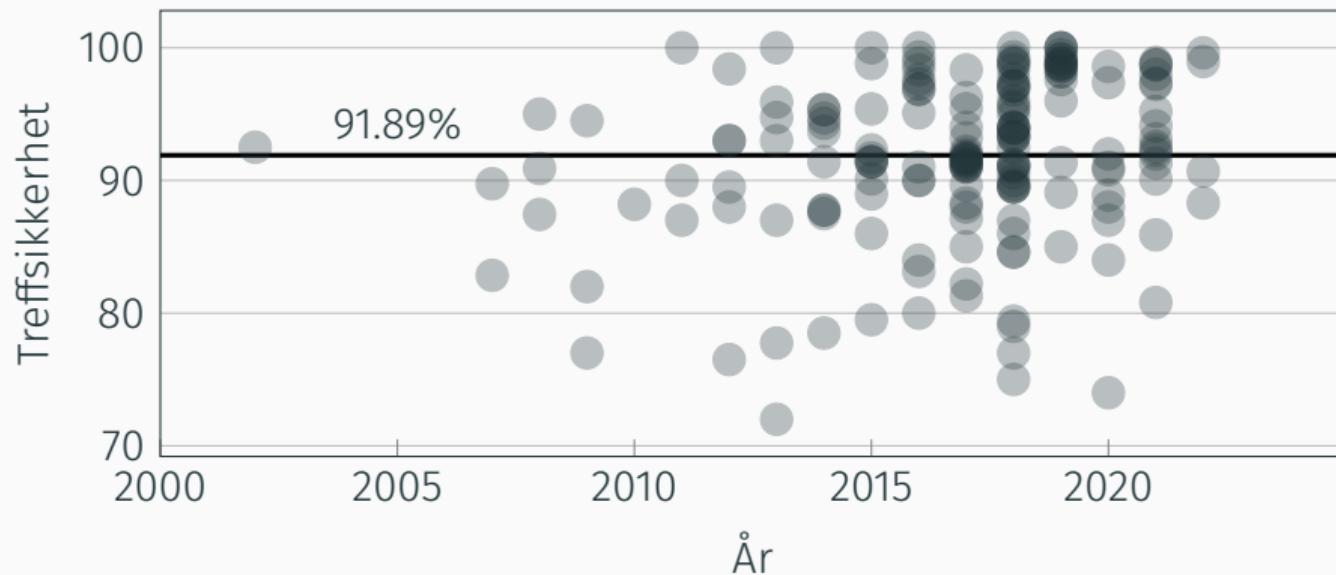
Klassifikasjonsstudier



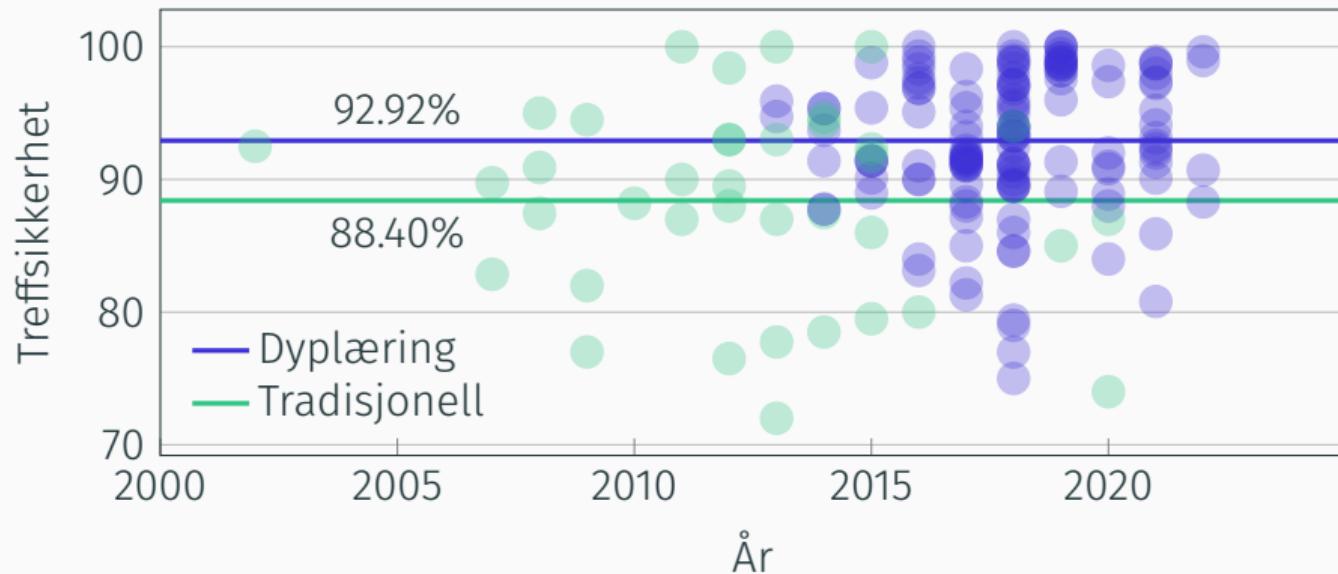
Artikler som inneholder "(dementia classification) AND (machine learning OR deep learning OR artificial intelligence)"
fra <https://pubmed.ncbi.nlm.nih.gov>



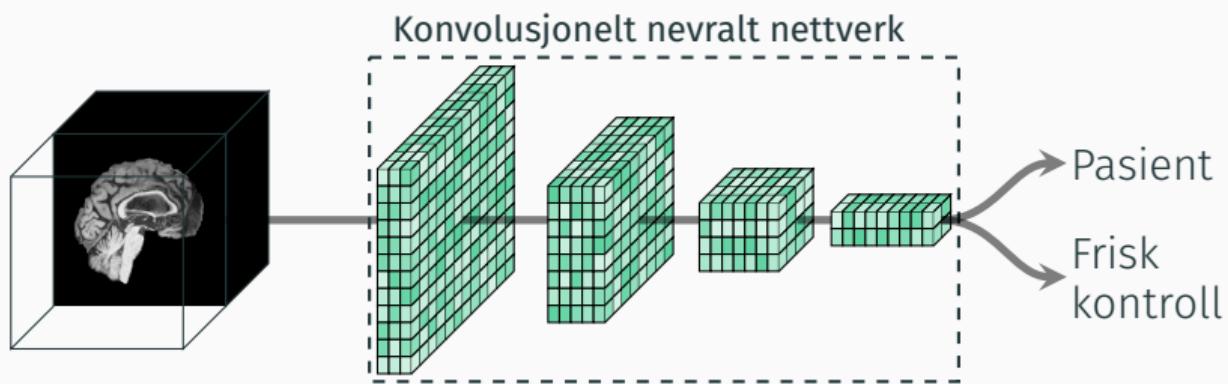
Klassifikasjonsstudier



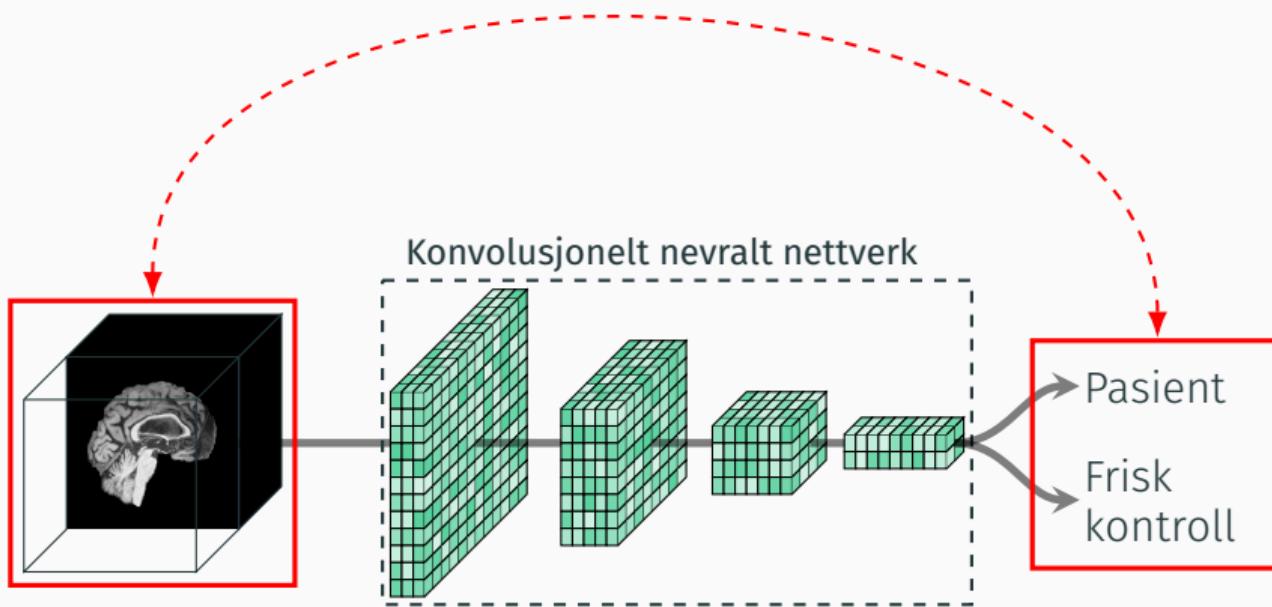
Klassifikasjonsstudier



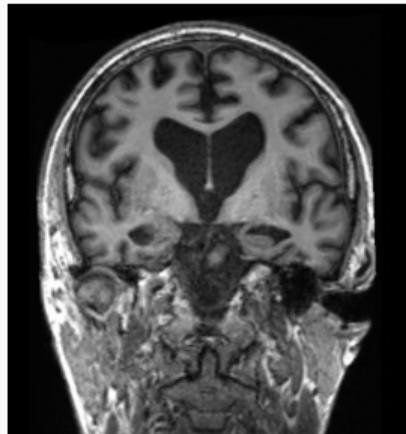
Klassifikasjonsstudier



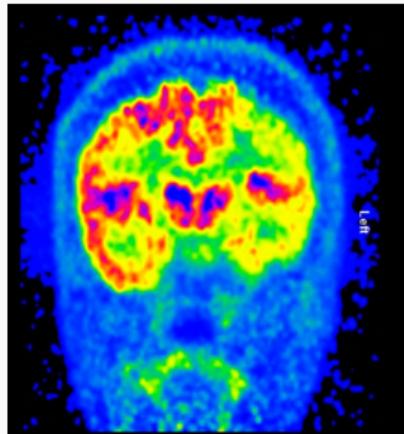
Klassifikasjonsstudier



Klassifikasjonsstudier



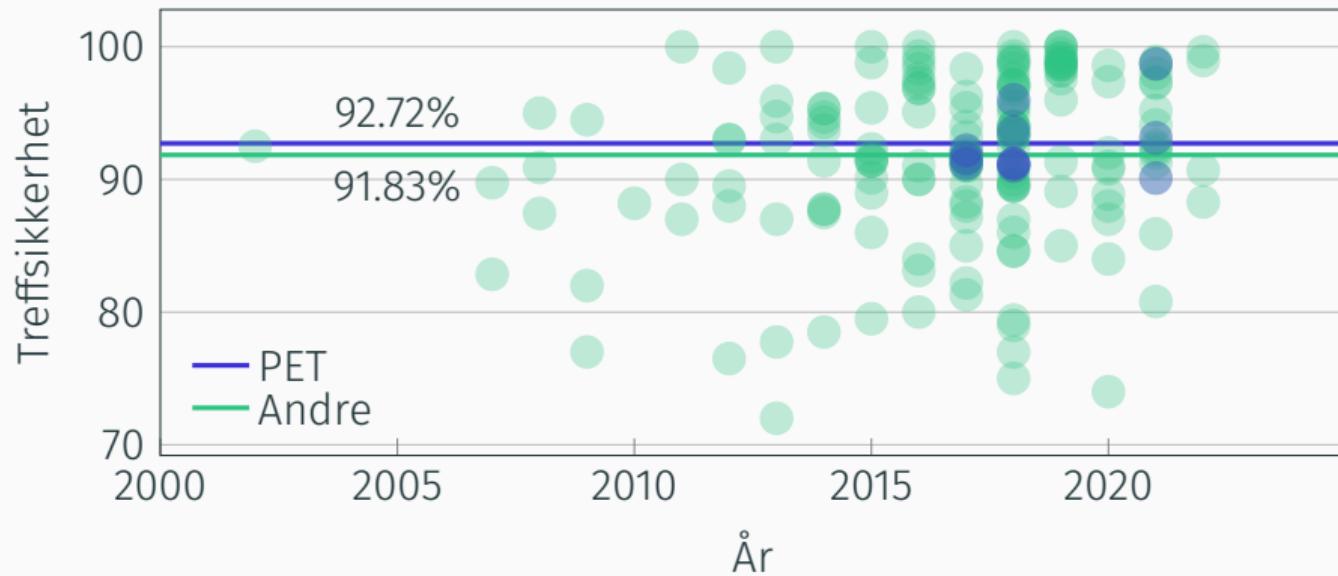
Strukturell MRI



PET



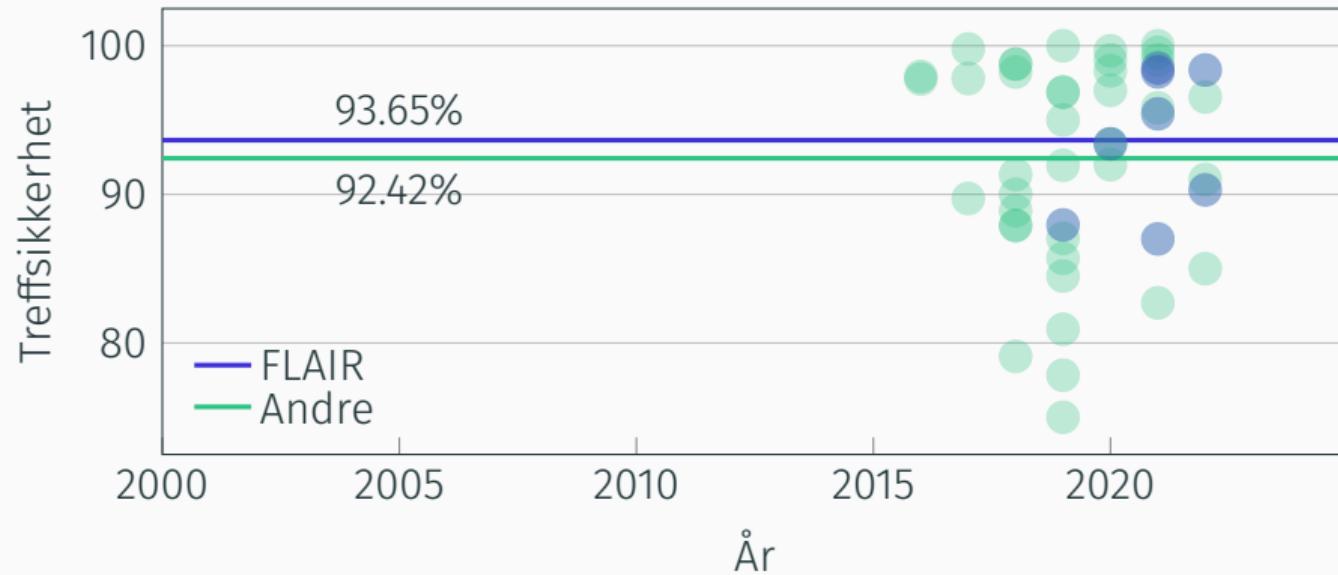
Klassifikasjonsstudier



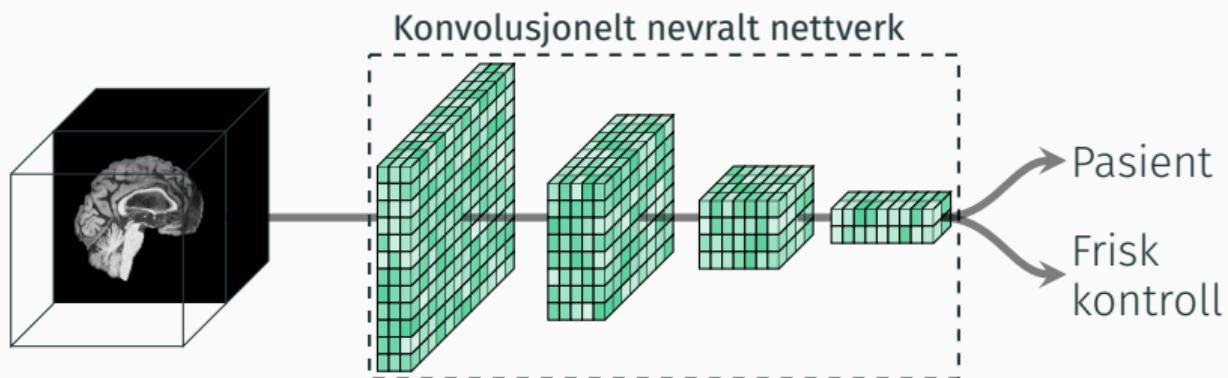
Klassifikasjonsstudier



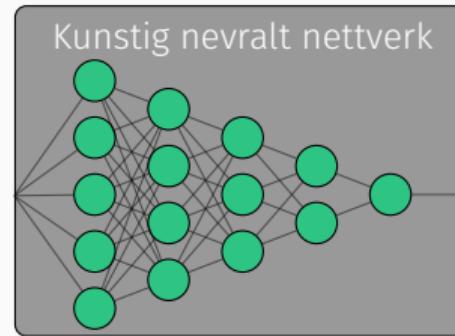
Klassifikasjonsstudier



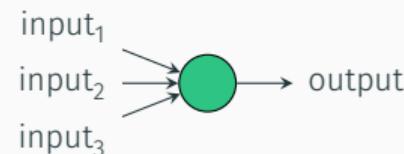
Forklarbarhetsproblem med kunstig intelligens



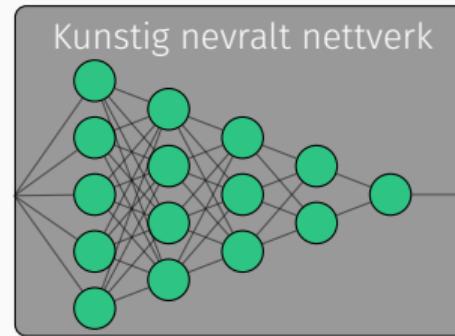
Forklarbarhetsproblemet med kunstig intelligens



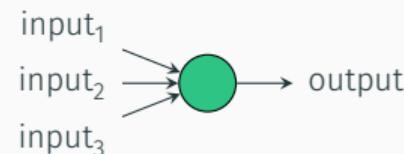
Kunstig nevron



Forklarbarhetsproblemet med kunstig intelligens



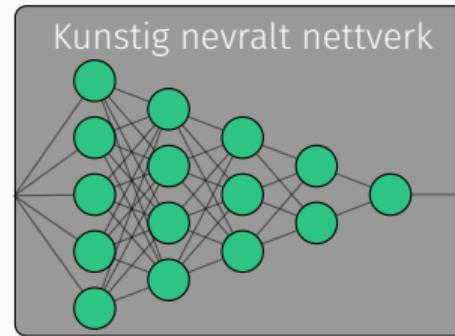
Kunstig nevron



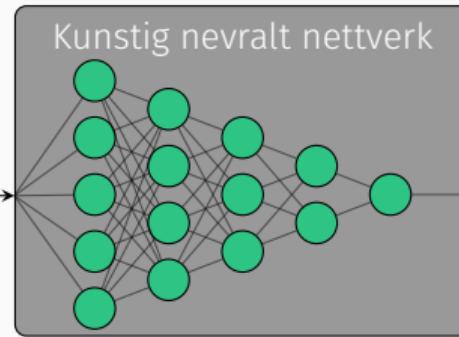
$$\text{output} = \max(0, \text{input}_1 * w_1 + \text{input}_2 * w_2 + \text{input}_3 * w_3)$$



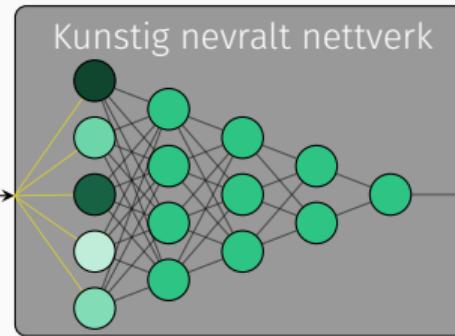
Forklarbarhetsproblemet med kunstig intelligens



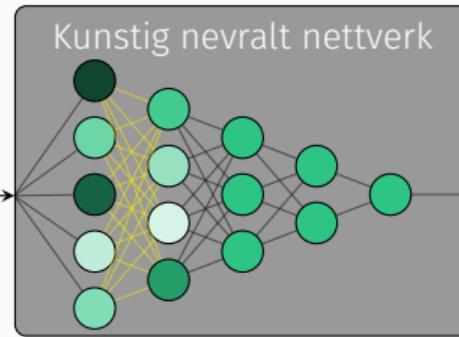
Forklarbarhetsproblemet med kunstig intelligens



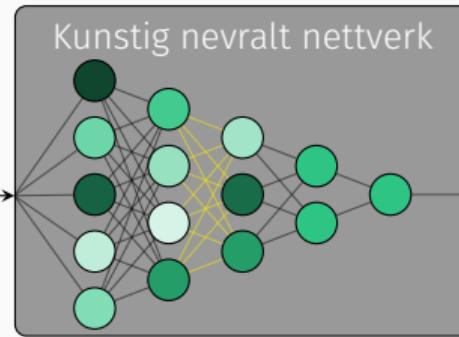
Forklarbarhetsproblemet med kunstig intelligens



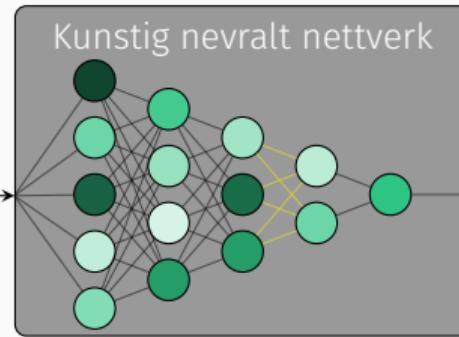
Forklarbarhetsproblemet med kunstig intelligens



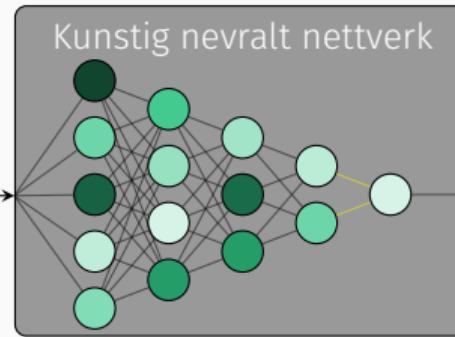
Forklarbarhetsproblemet med kunstig intelligens



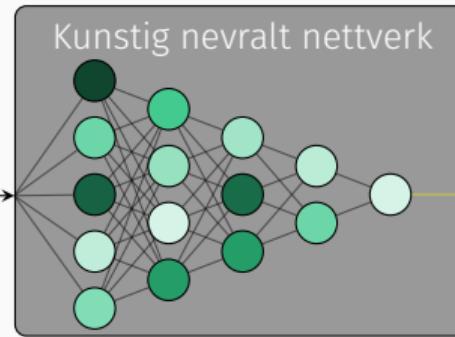
Forklarbarhetsproblemet med kunstig intelligens



Forklarbarhetsproblemet med kunstig intelligens

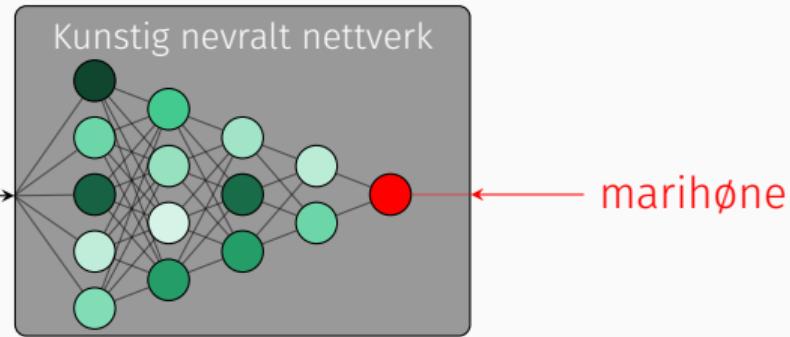


Forklarbarhetsproblemet med kunstig intelligens

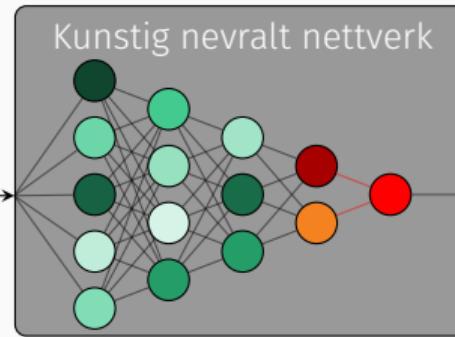


marihøne

Forklarbarhetsproblemet med kunstig intelligens

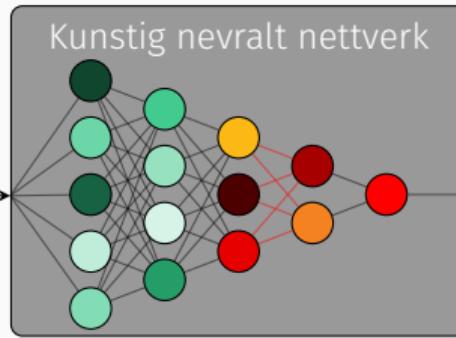


Forklarbarhetsproblemet med kunstig intelligens



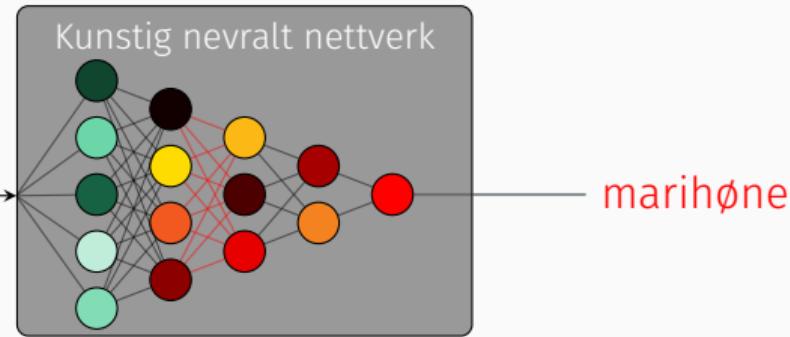
marihøne

Forklarbarhetsproblemet med kunstig intelligens

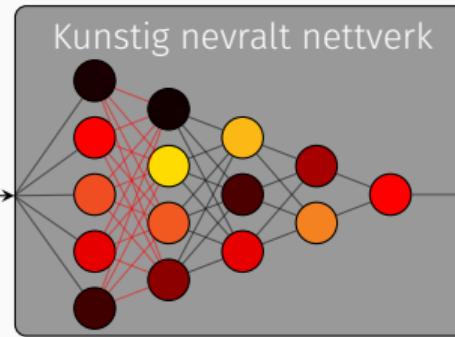


marihøne

Forklarbarhetsproblemet med künstlicher Intelligenz

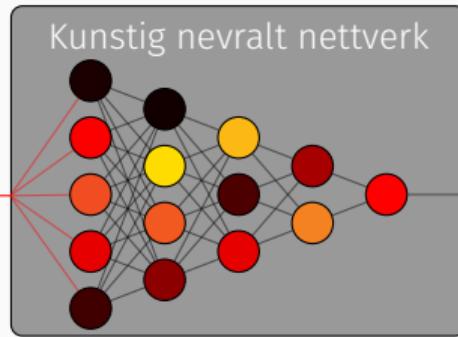
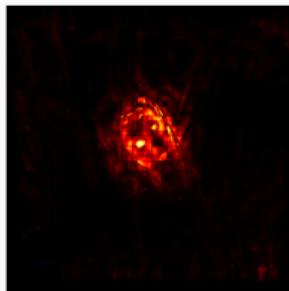


Forklarbarhetsproblemet med kunstig intelligens



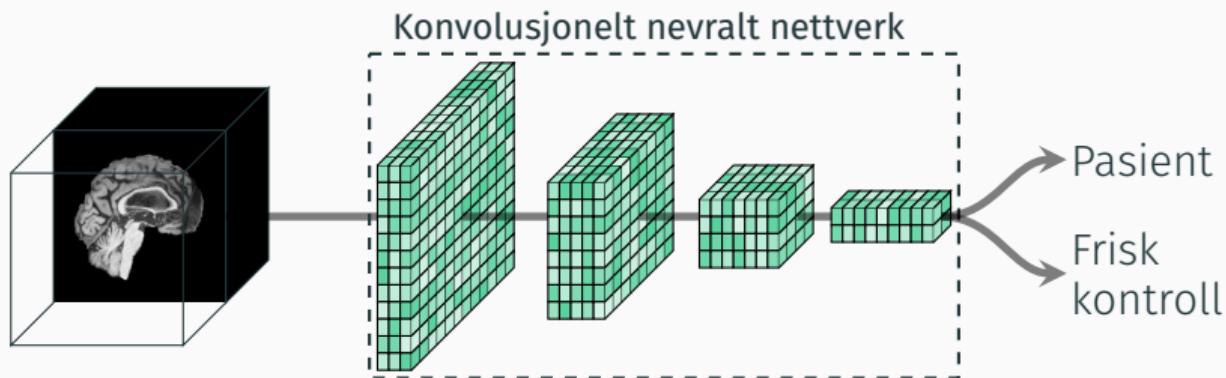
marihøne

Forklarbarhetsproblemet med kunstig intelligens

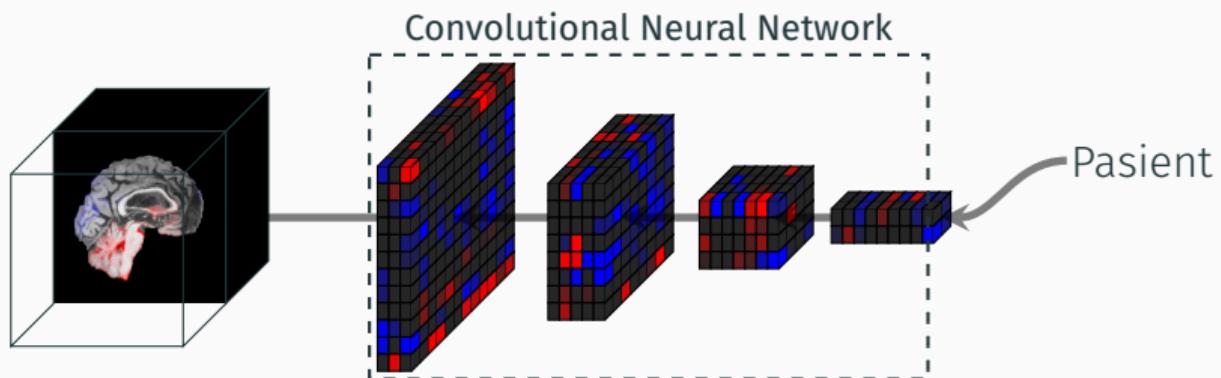


marihøne

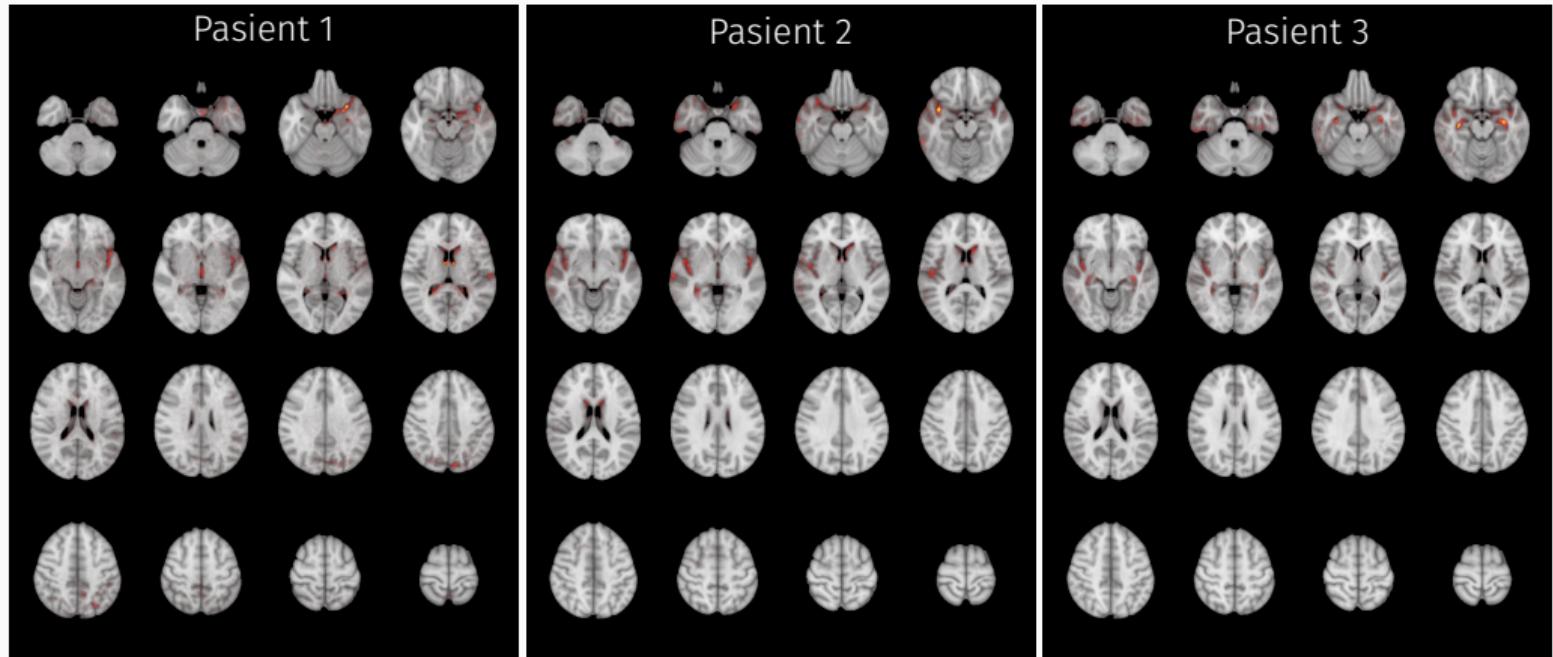
Forklarbarhetsproblemet med kunstig intelligens



Forklarbarhetsproblemene med kunstig intelligens

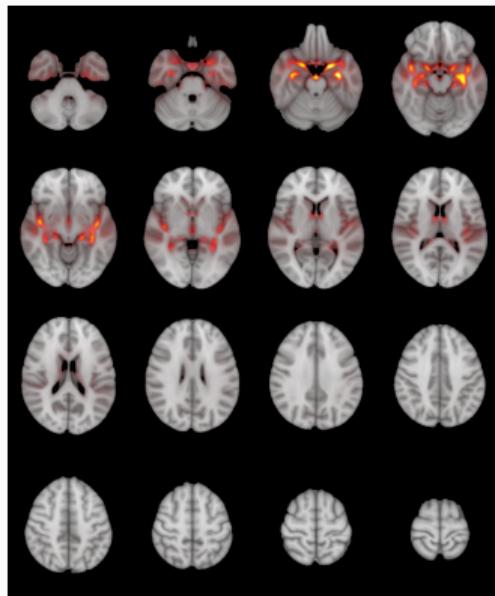


Forklarbar kunstig intelligens og demens



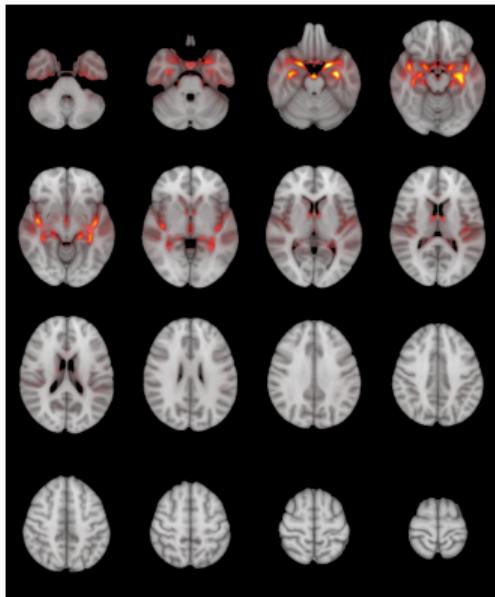
Forklarbar kunstig intelligens og demens

Forklarbar KI

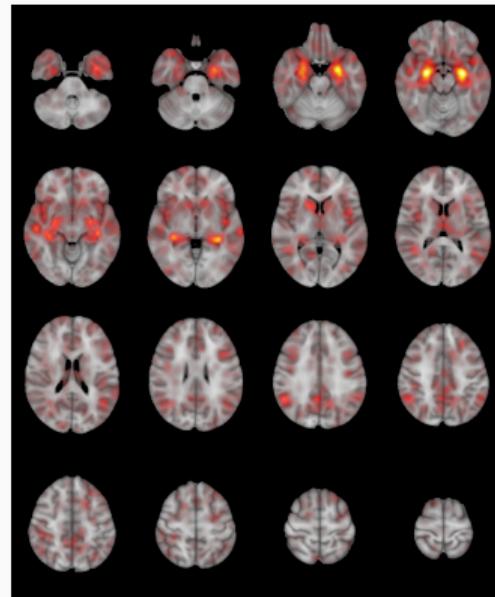


Forklarbar kunstig intelligens og demens

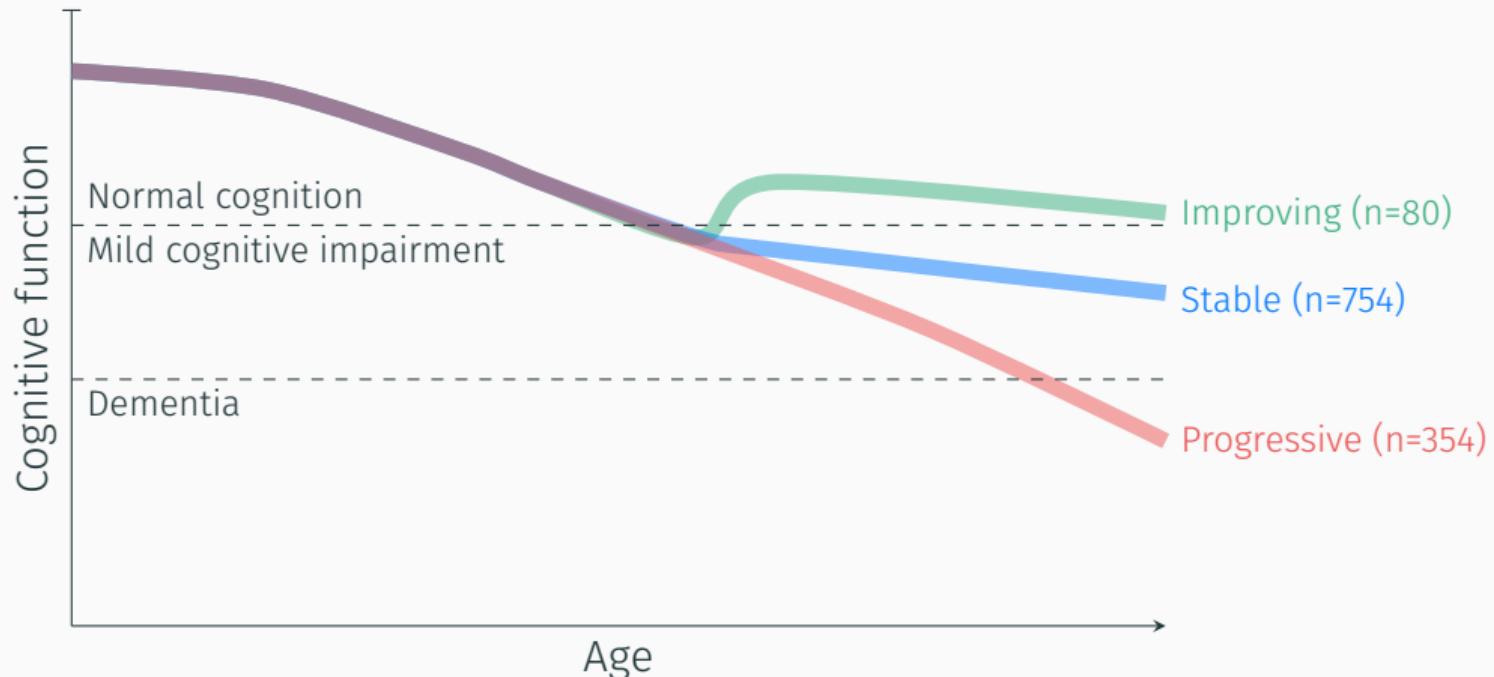
Forklarbar KI



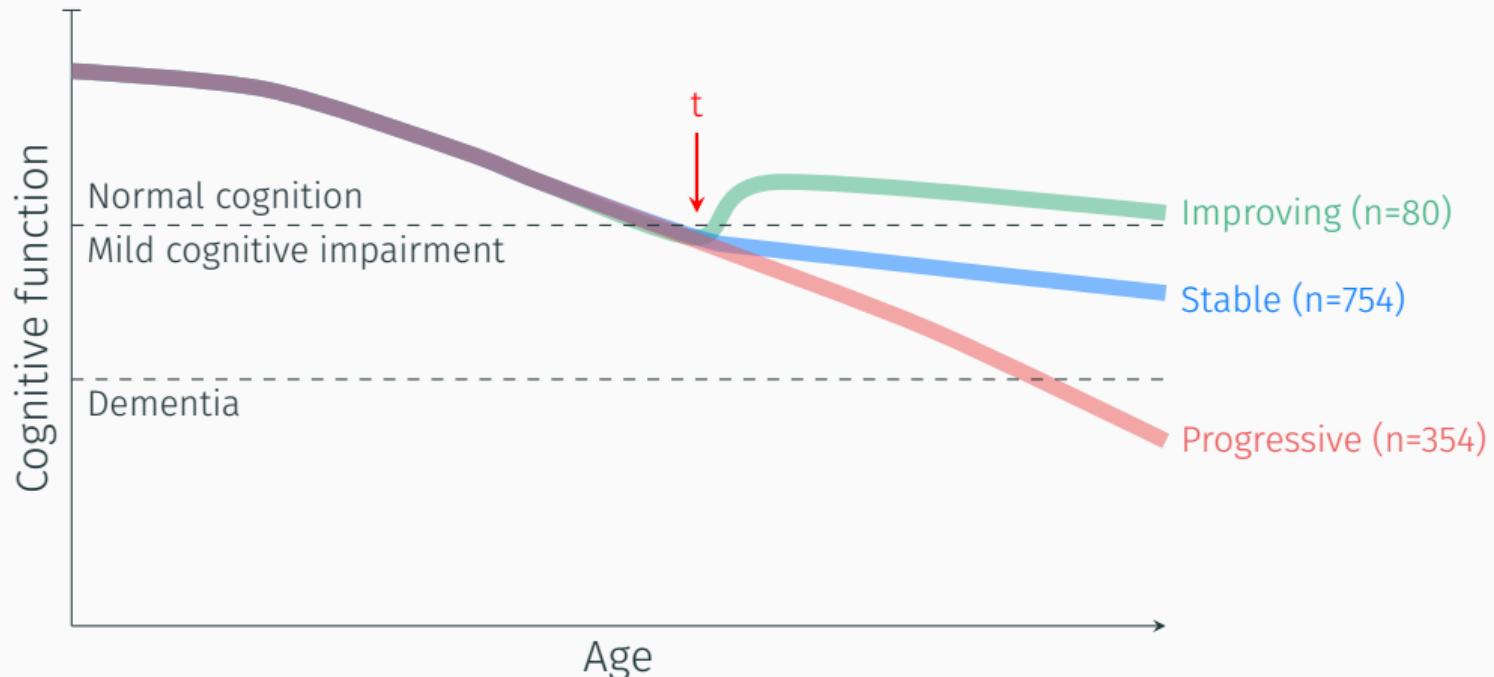
Mennesker



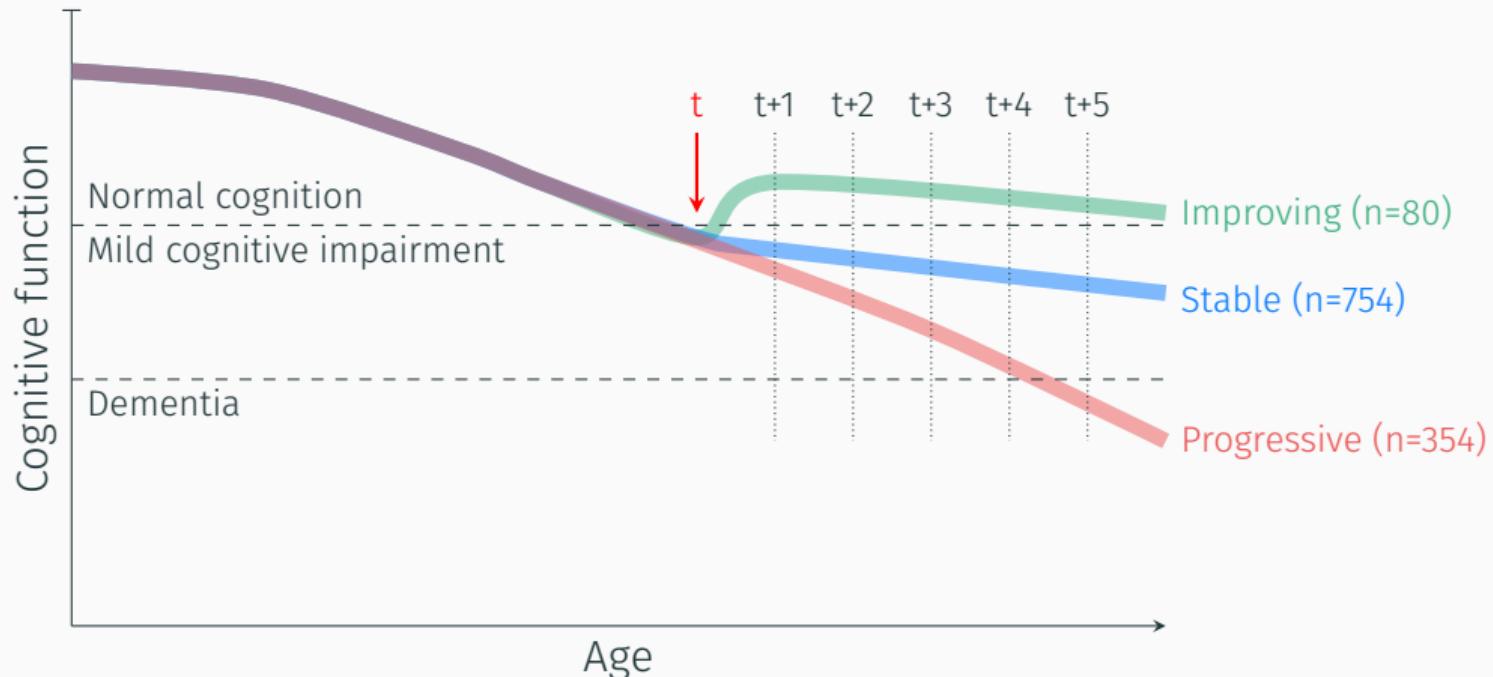
Forklarbar kunstig intelligens og demens



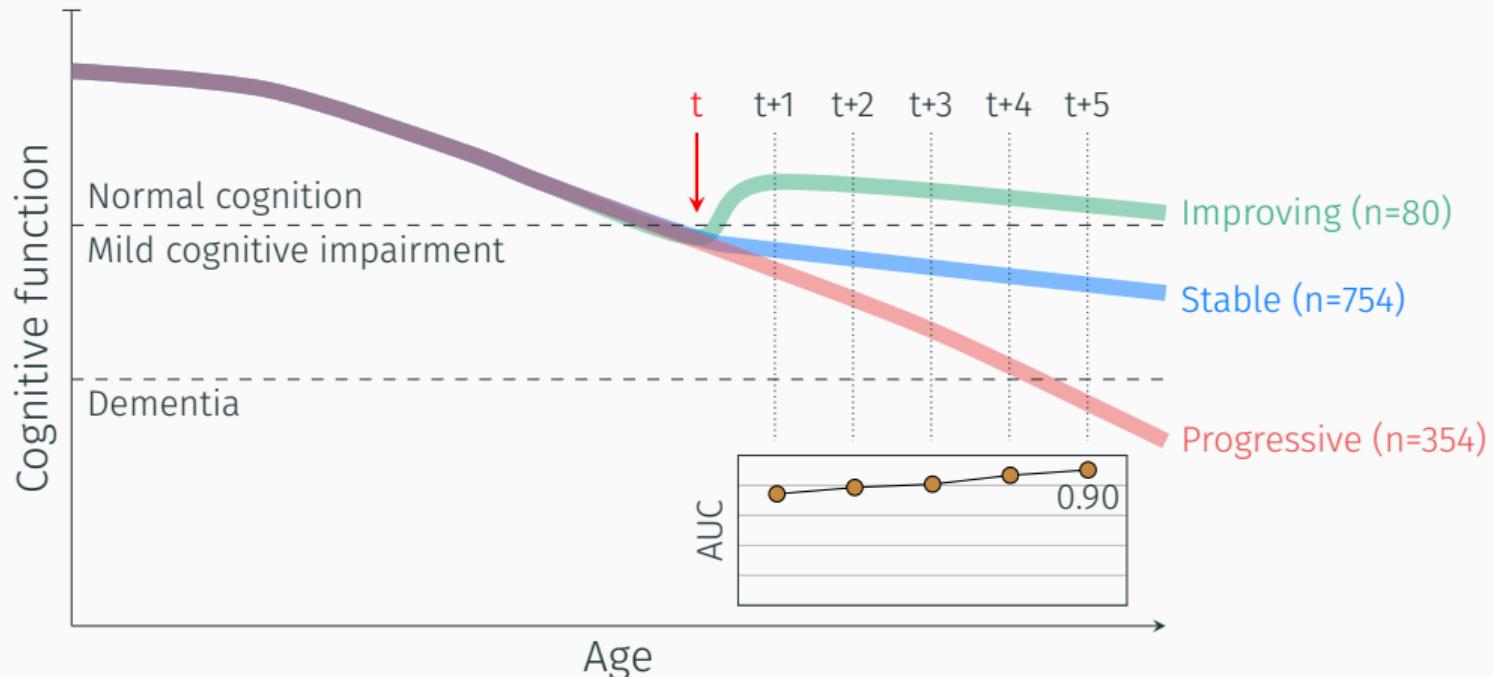
Forklarbar kunstig intelligens og demens



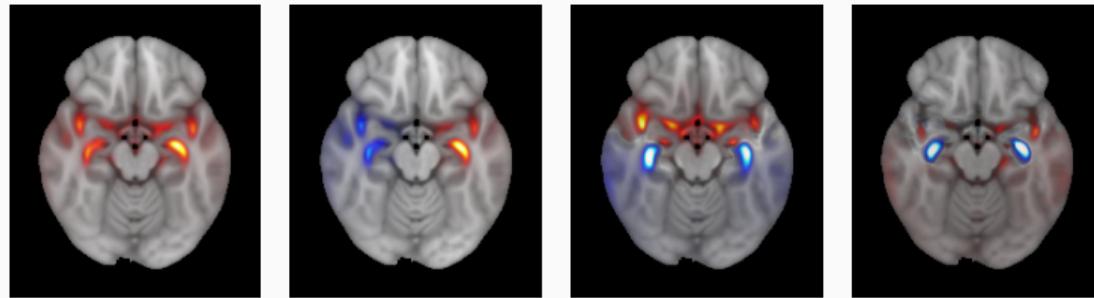
Forklarbar kunstig intelligens og demens



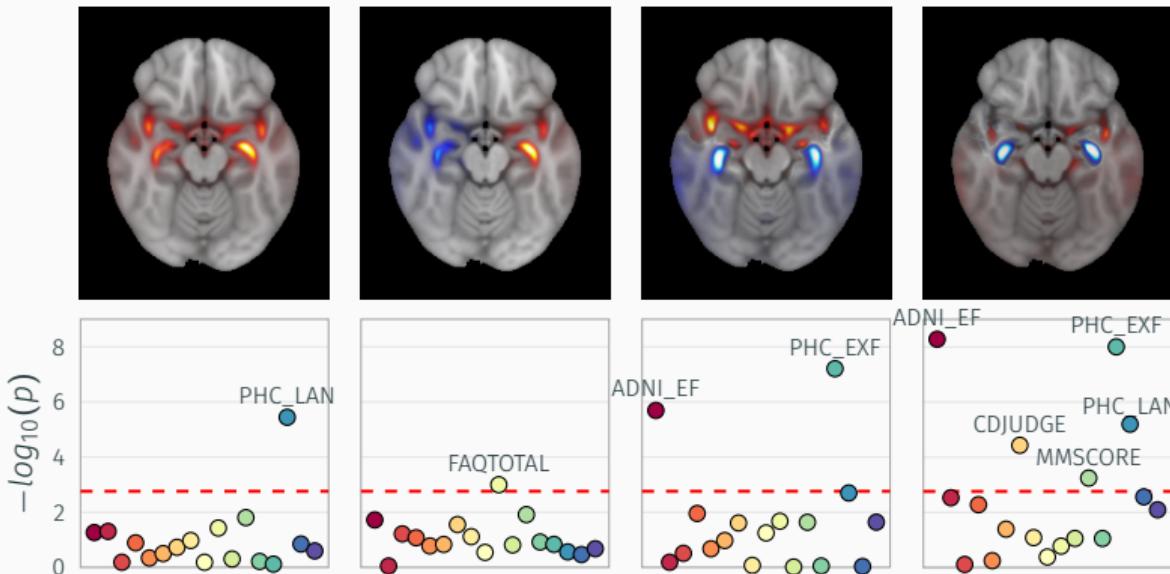
Forklarbar kunstig intelligens og demens



Forklarbar kunstig intelligens og demens



Forklarbar kunstig intelligens og demens



Takk for oppmerksomheten!
estenhl@uios.no



UNIVERSITETET
I OSLO

