

Interacting with Artificial Intelligence Part 2

University of Oslo, 2018

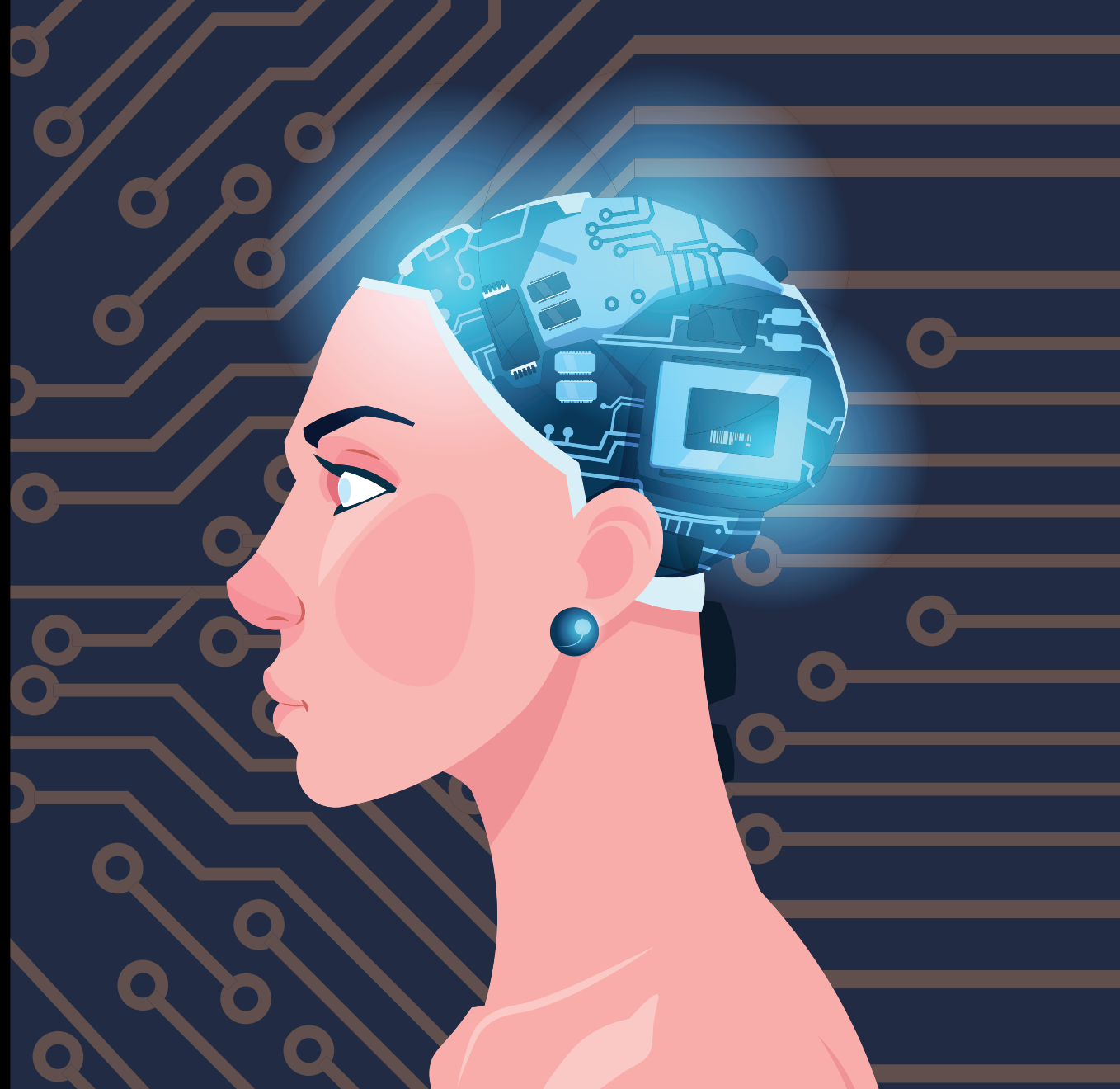
Agenda

Day 1:

1. Introduction to Artificial Intelligence and Deep Learning
2. Create a classifier
3. Create a AI-based chatbot

Day 2

1. Present your chatbot
2. Create a generative chatbot

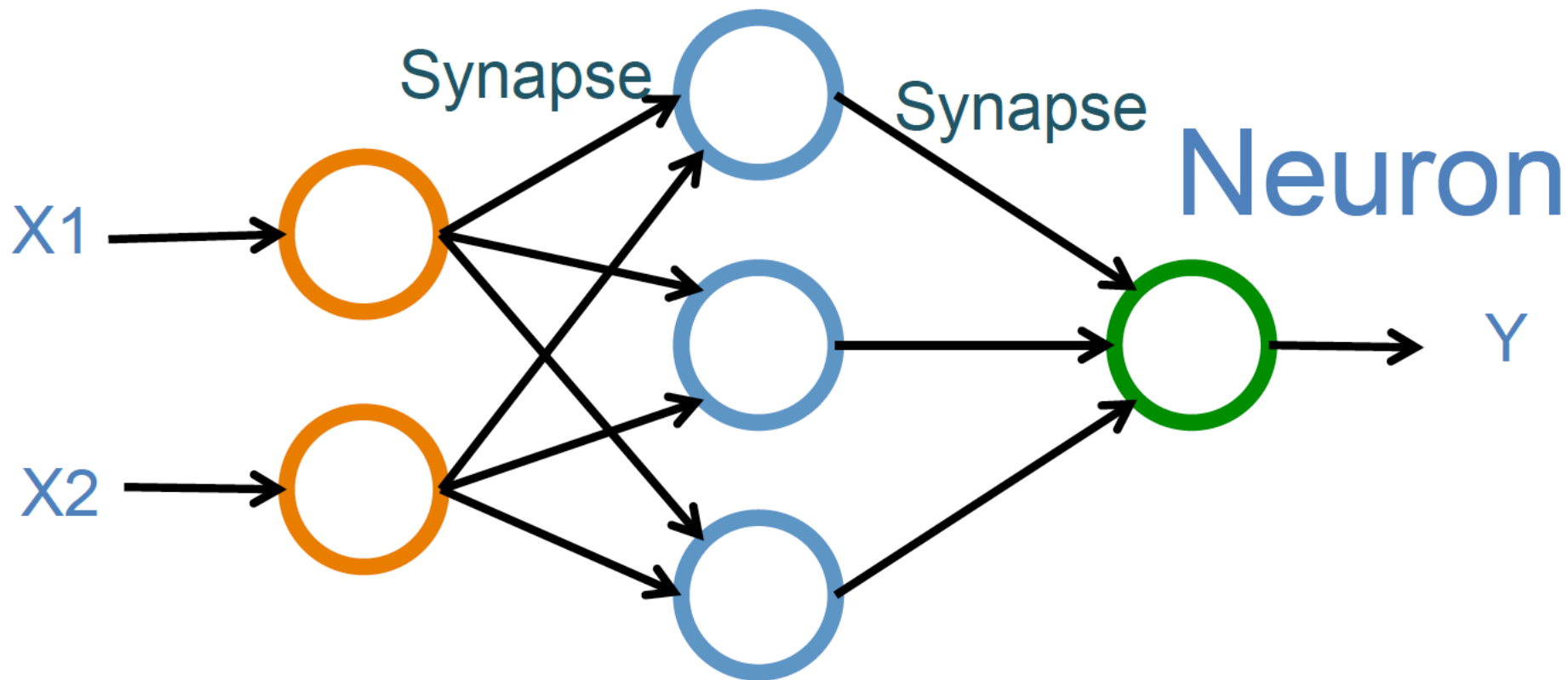


Input Layer
(X)

Hidden Layer
(H)

Output Layer
(Y)

Neuron

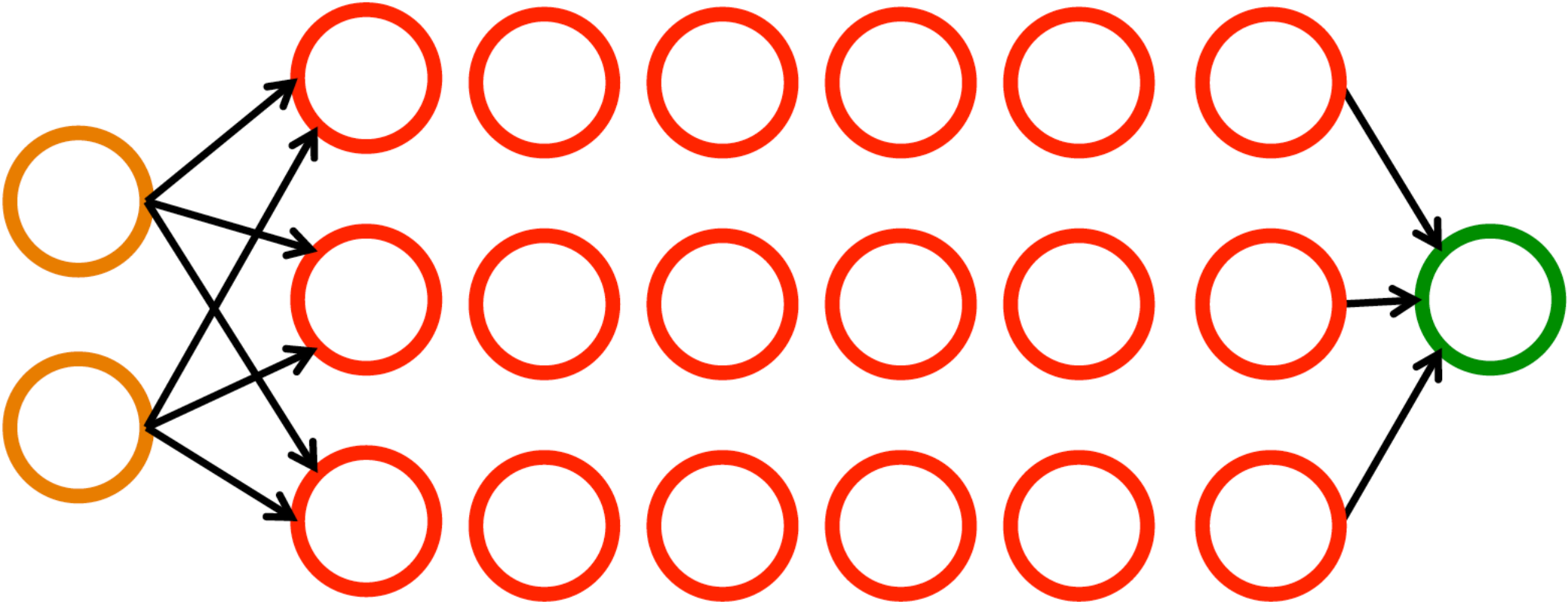


Input Layer
(X)

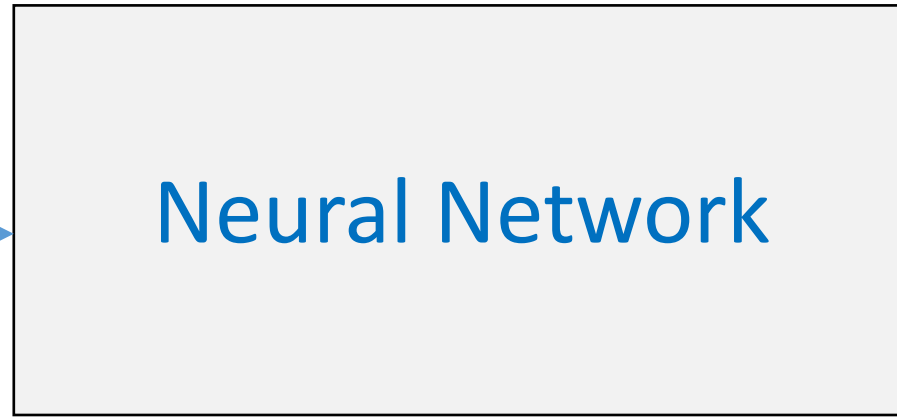
Hidden Layers
(H)

Output Layer
(Y)

Deep Neural Networks
Deep Learning

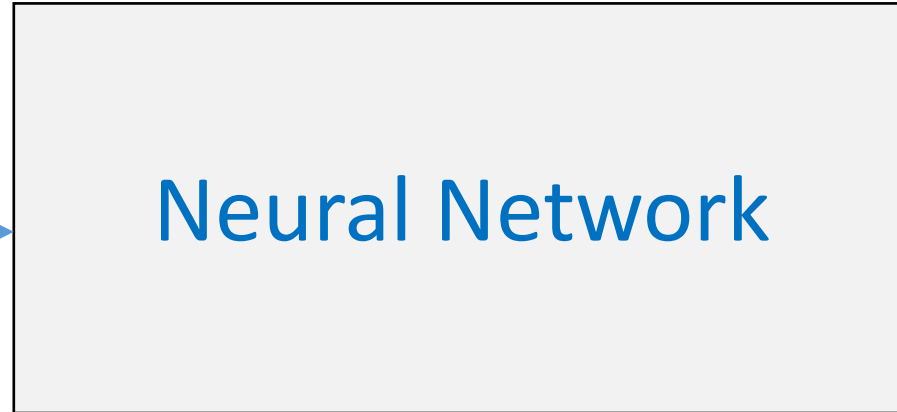


I like pizza
and tacos



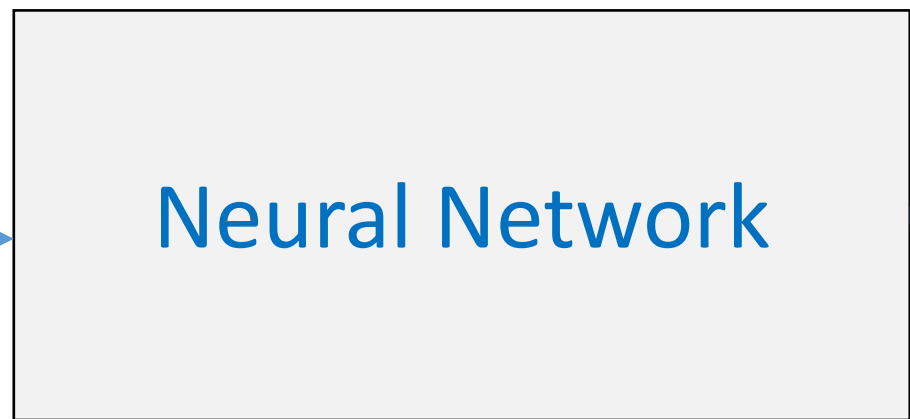
Food

I drive a
big truck



Cars

Hei alle
sammen

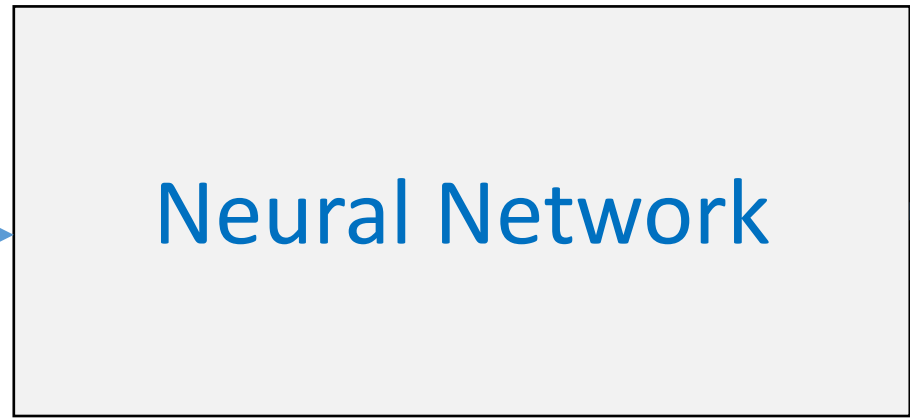


Neural Network



Norsk

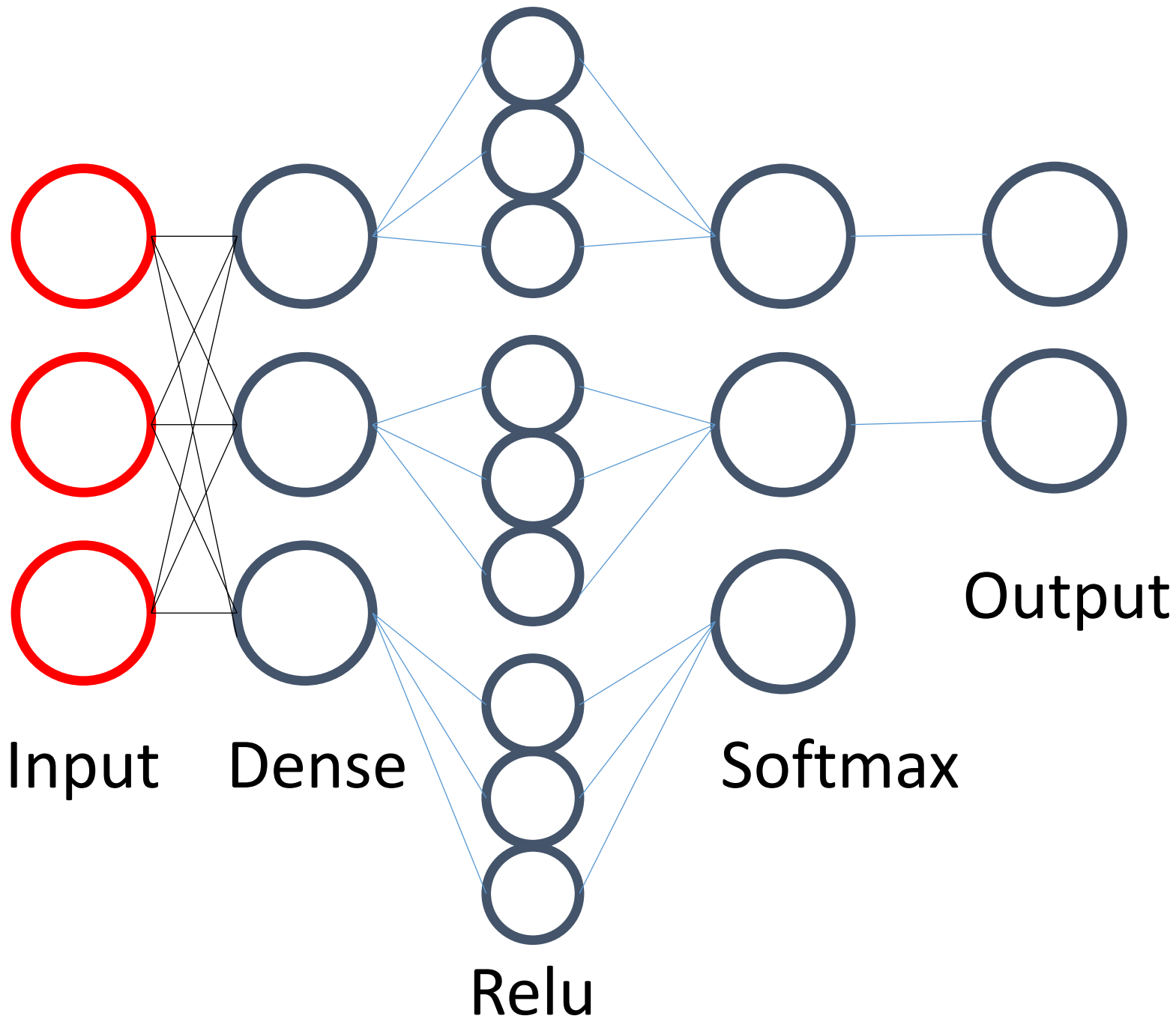
Hi
everyone



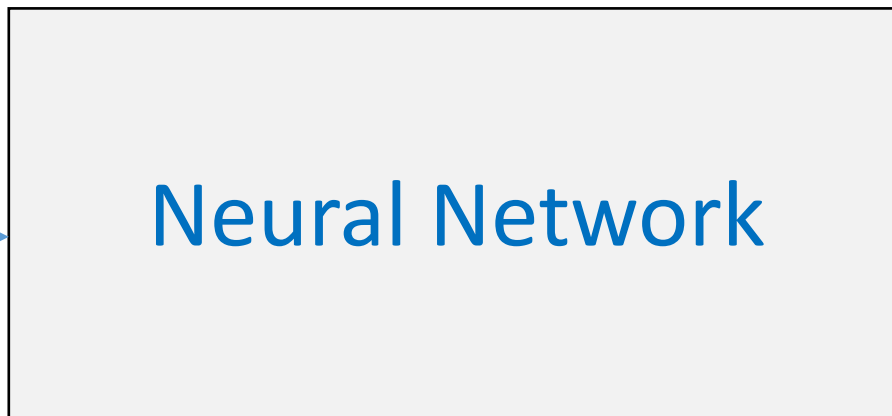
Neural Network



Engelsk

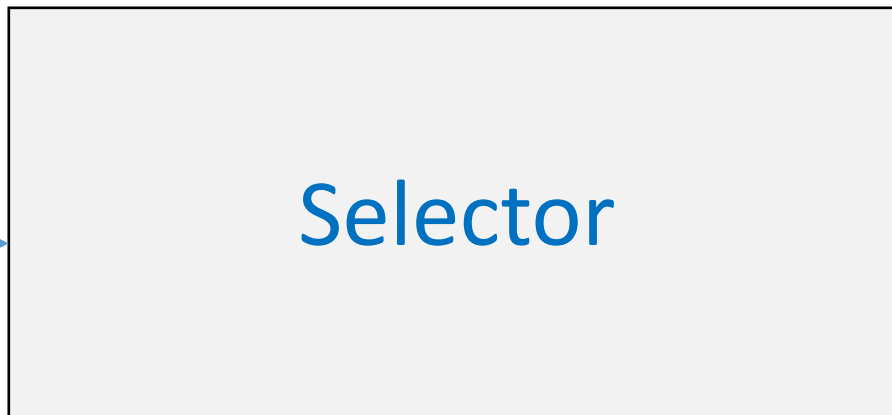


I am your
father



Darth
Vader

Darth
Vader



Come to
the dark
side

Draw a network with:

a vocabulary of 4 possible words

4 classes

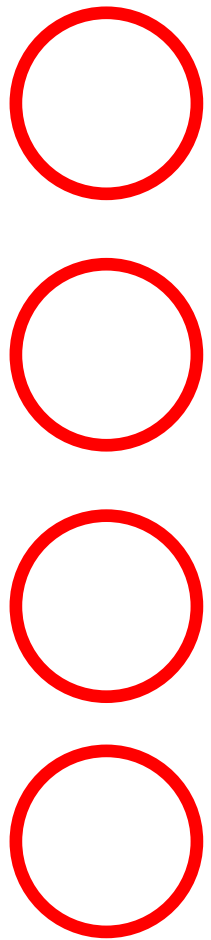
1 dense layer

1 relu layer

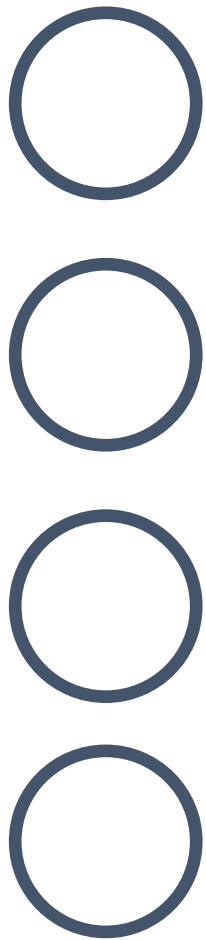
1 softmax layer

1 output layer

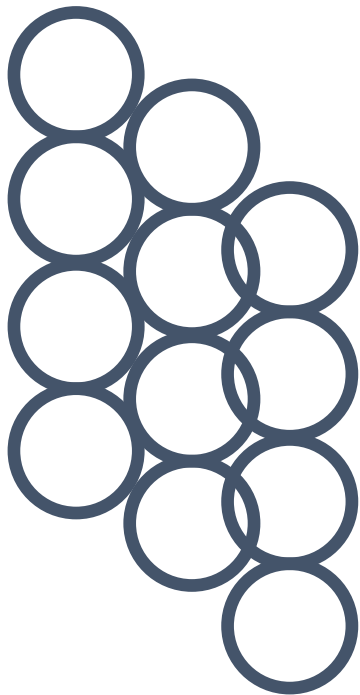




Input



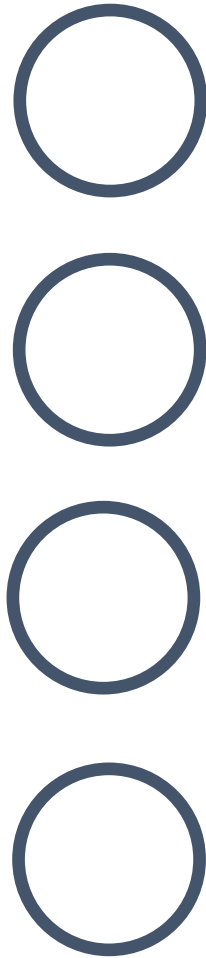
Dense



Relu



Softmax



Output

Curse of dimensionality. Any suggestions?



Stemming

Cars

Car

Running

Run

Runs

Run

Agder

Agder

Elections

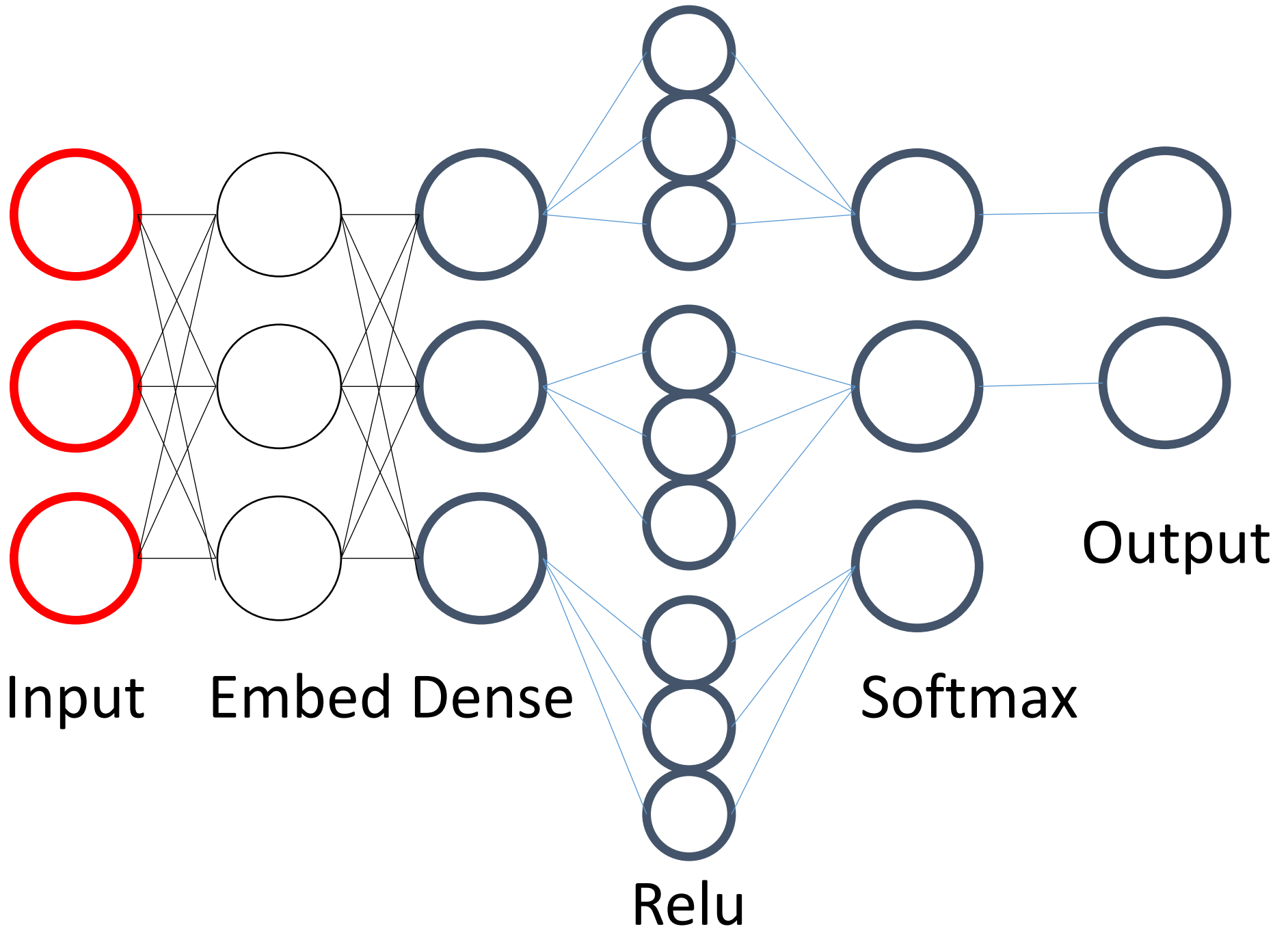
Elect



Stemming

- `>>> from nltk.stem import *`
- `>>> words = ["elections", "cars", "car", "sheep", "fish"]`
- `>>> stemmer = PorterStemmer()`
- `>>> stemmer.stem("elections")`
- `'elect'`
- `>>> singles = [stemmer.stem(i) for i in words]`
- `>>> singles`
- `['elect', 'car', 'car', 'sheep', 'fish']`



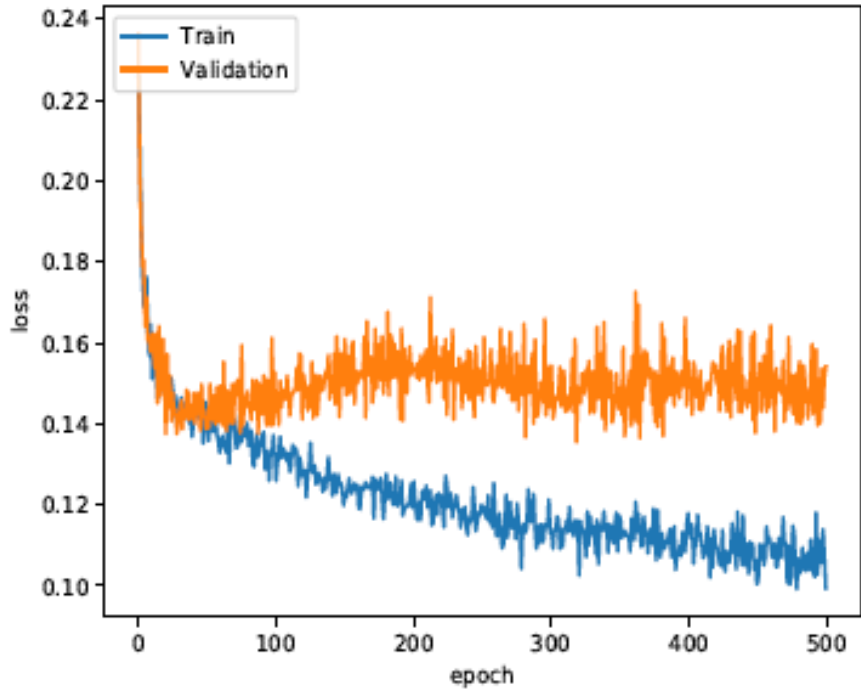


- Show embeddings code

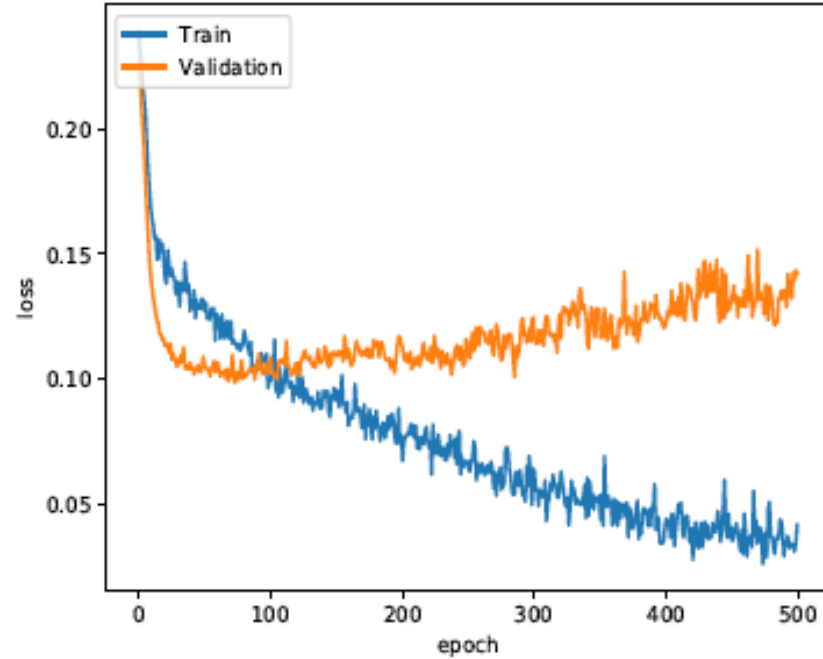
How do we know if the AI has learnt well?



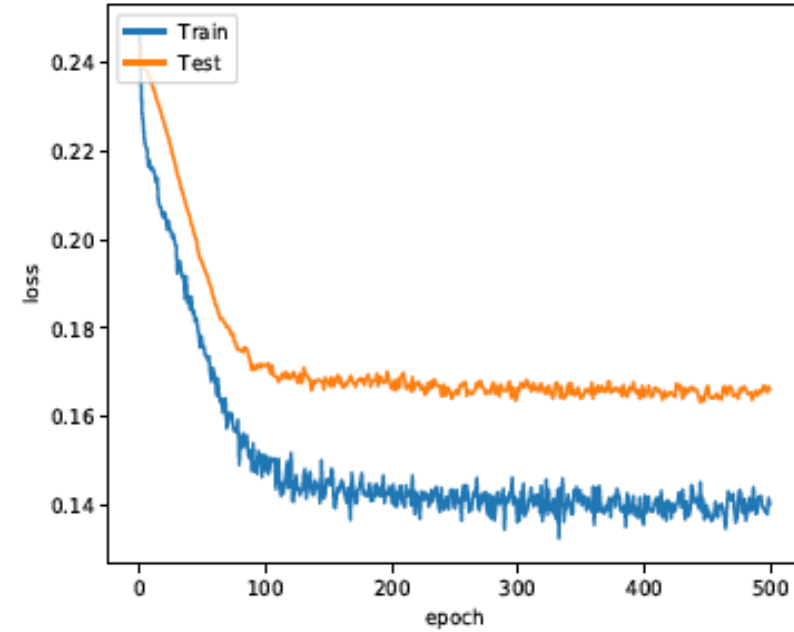
Model Loss SELU



Model Loss ReLU

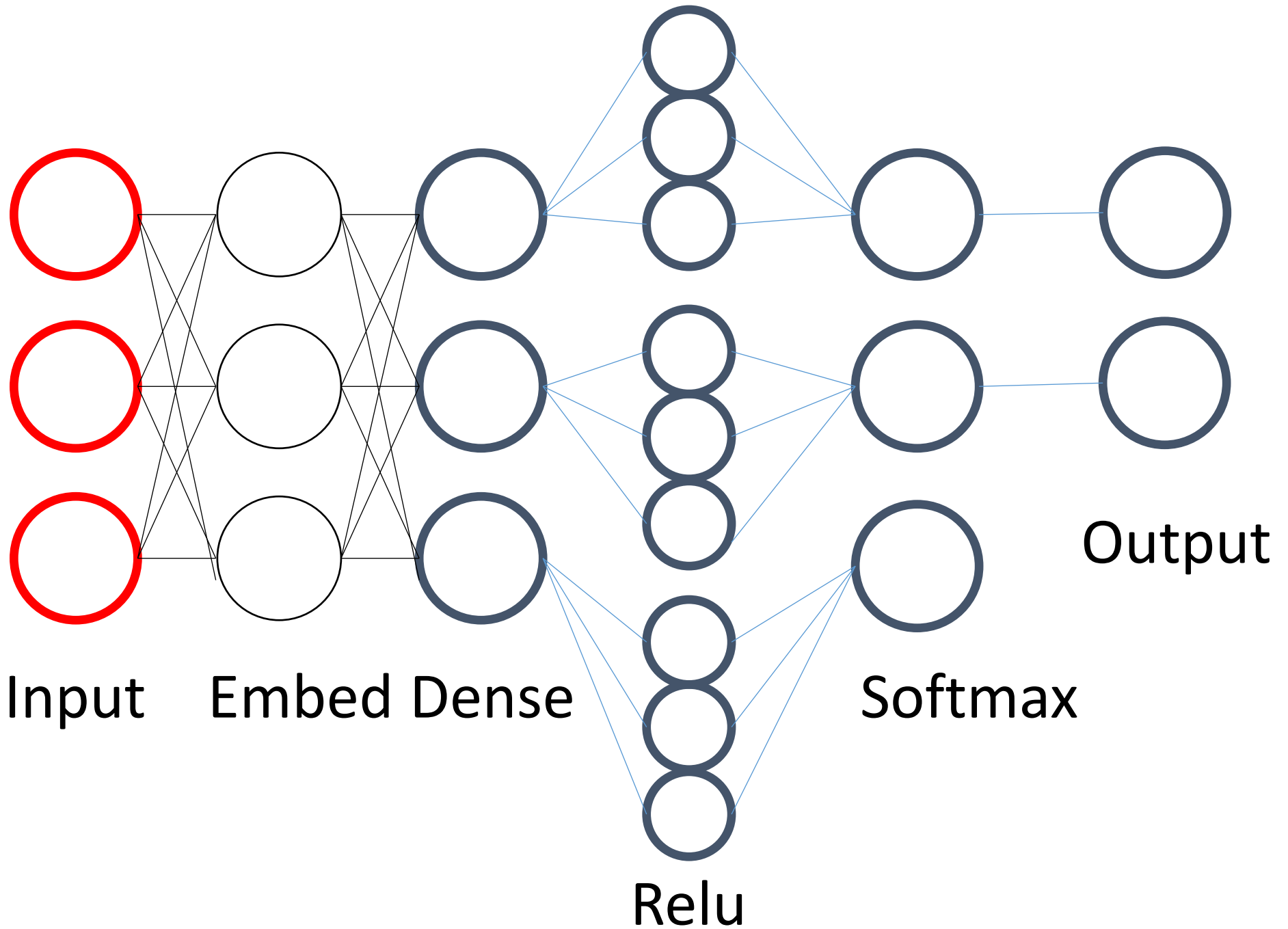


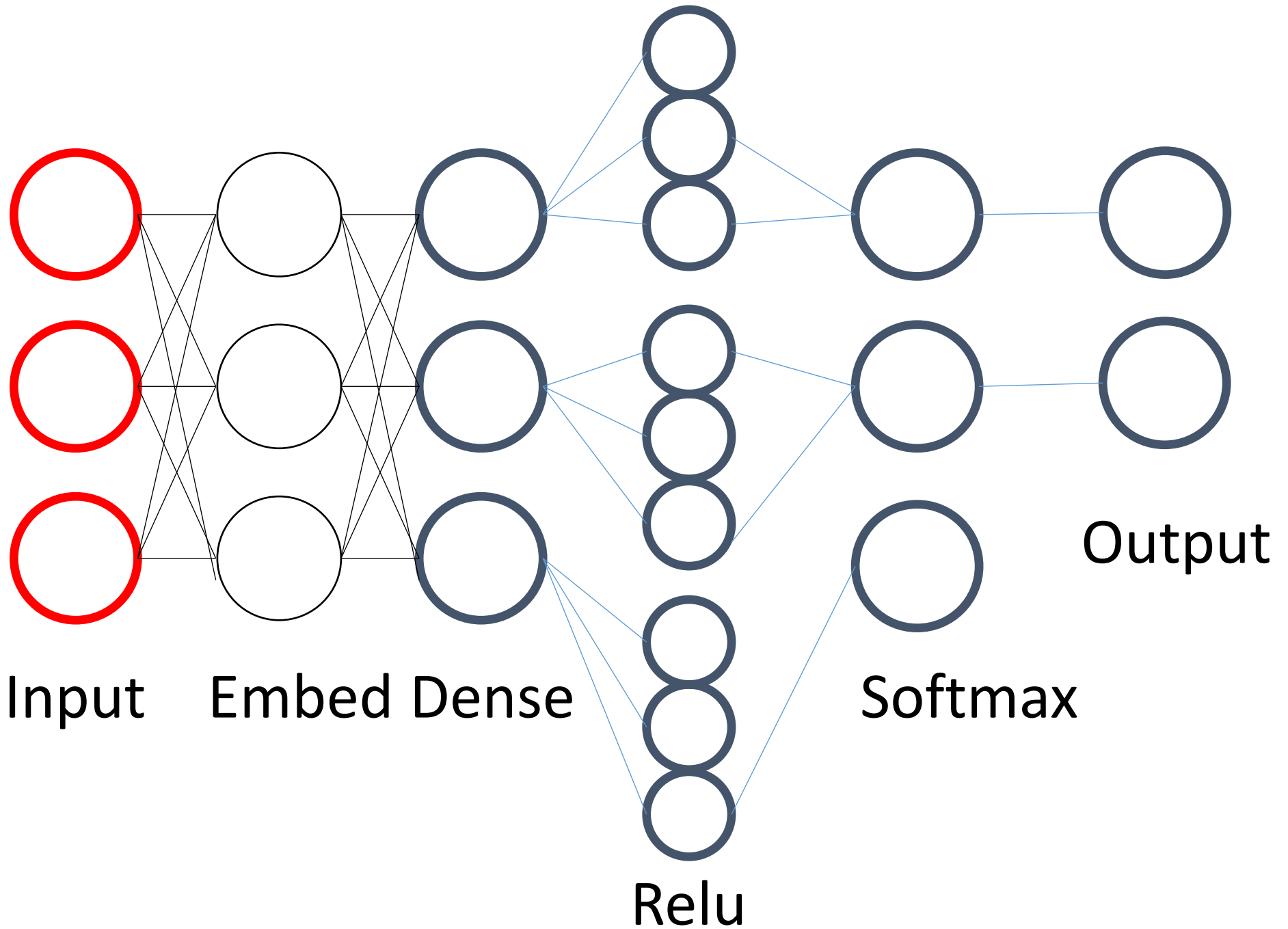
Model Loss ELU



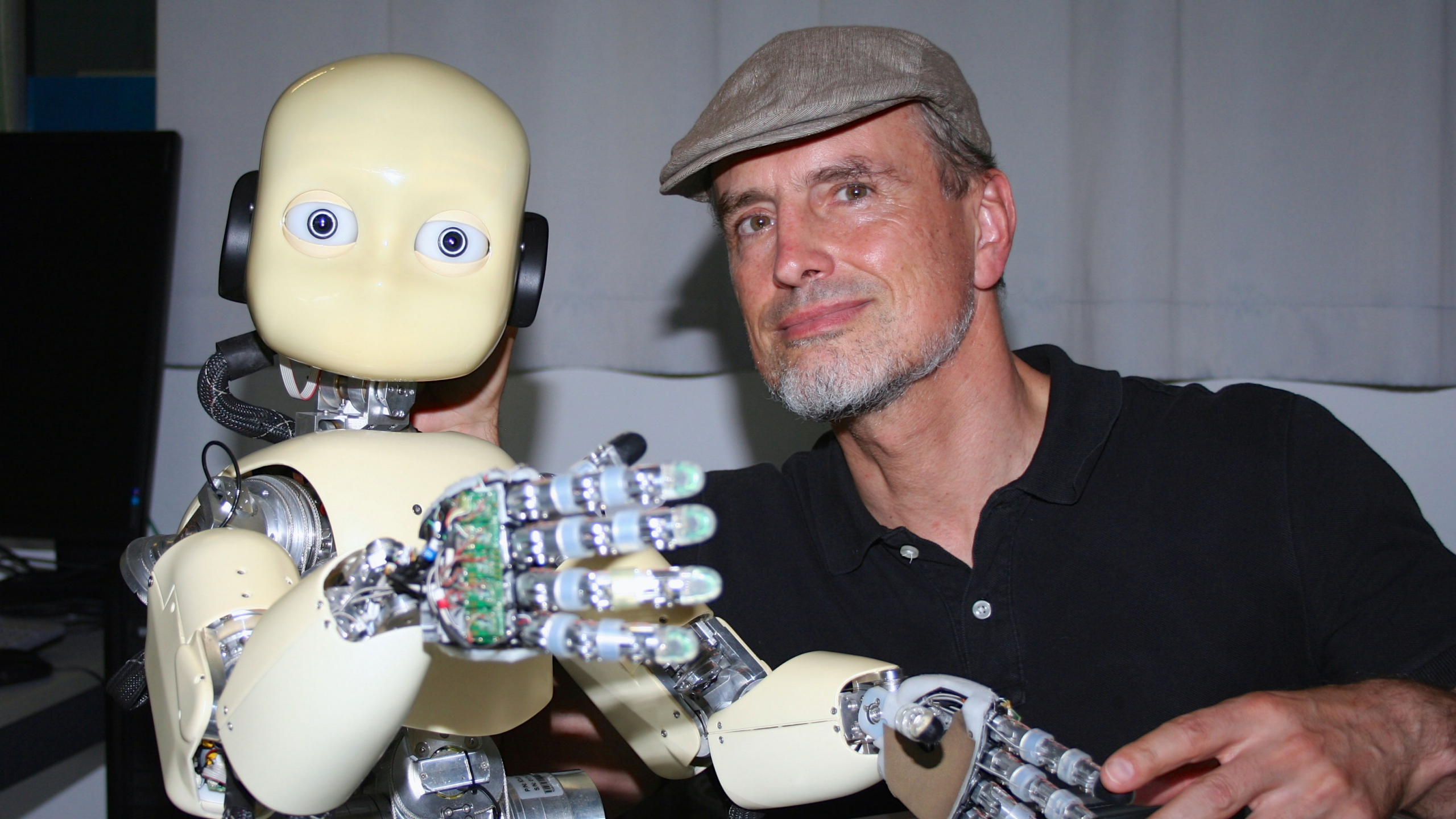
(Dutt et al. 2018)

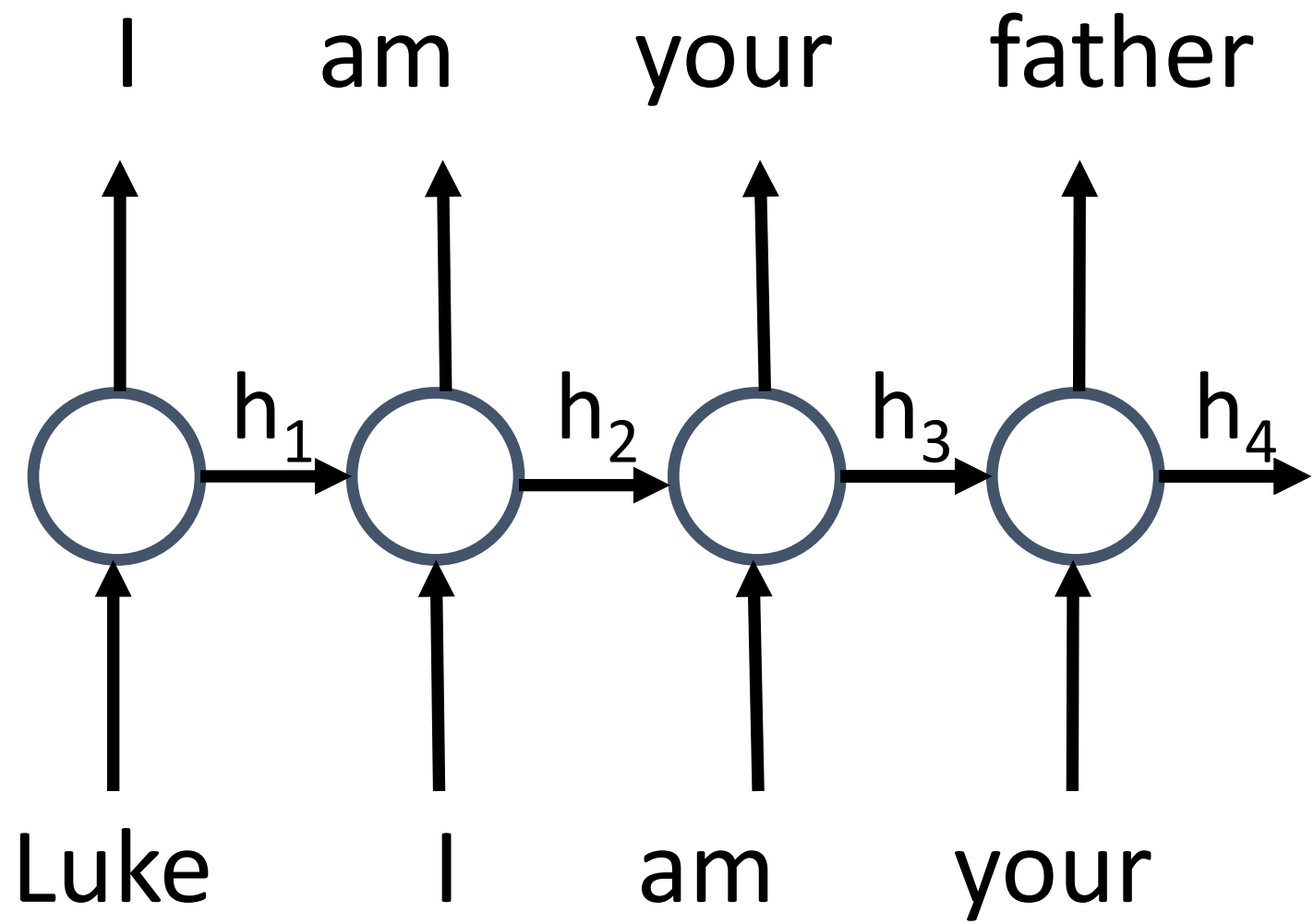


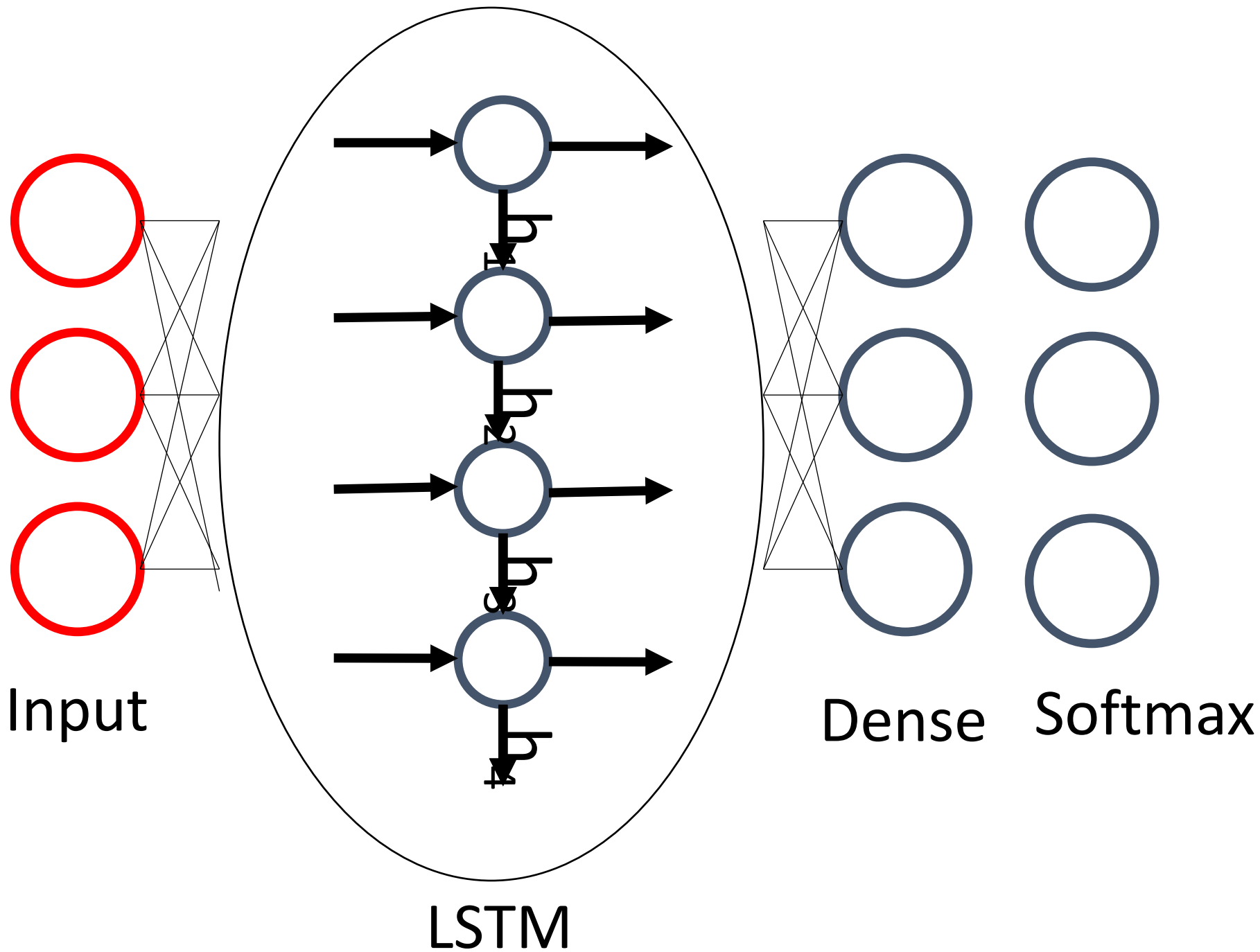




- Show dropout







- Show Classifier

Predict next words



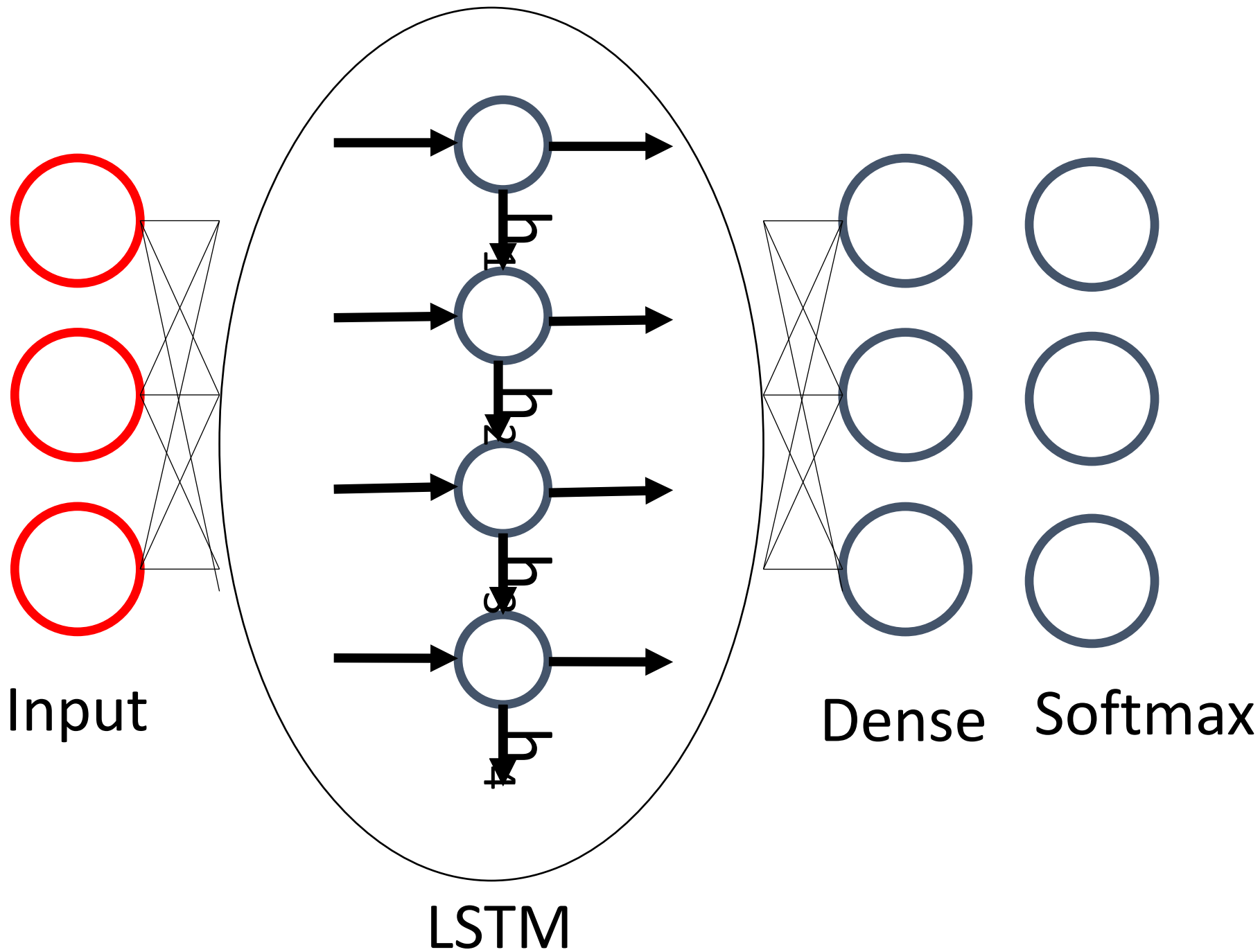
Predict next fooc

- Monday: Pizza
- Tuesday: Sushi
- Wednesday: Taco
- Thursday: Pizza
- Friday: Sushi
- Saturday: ?

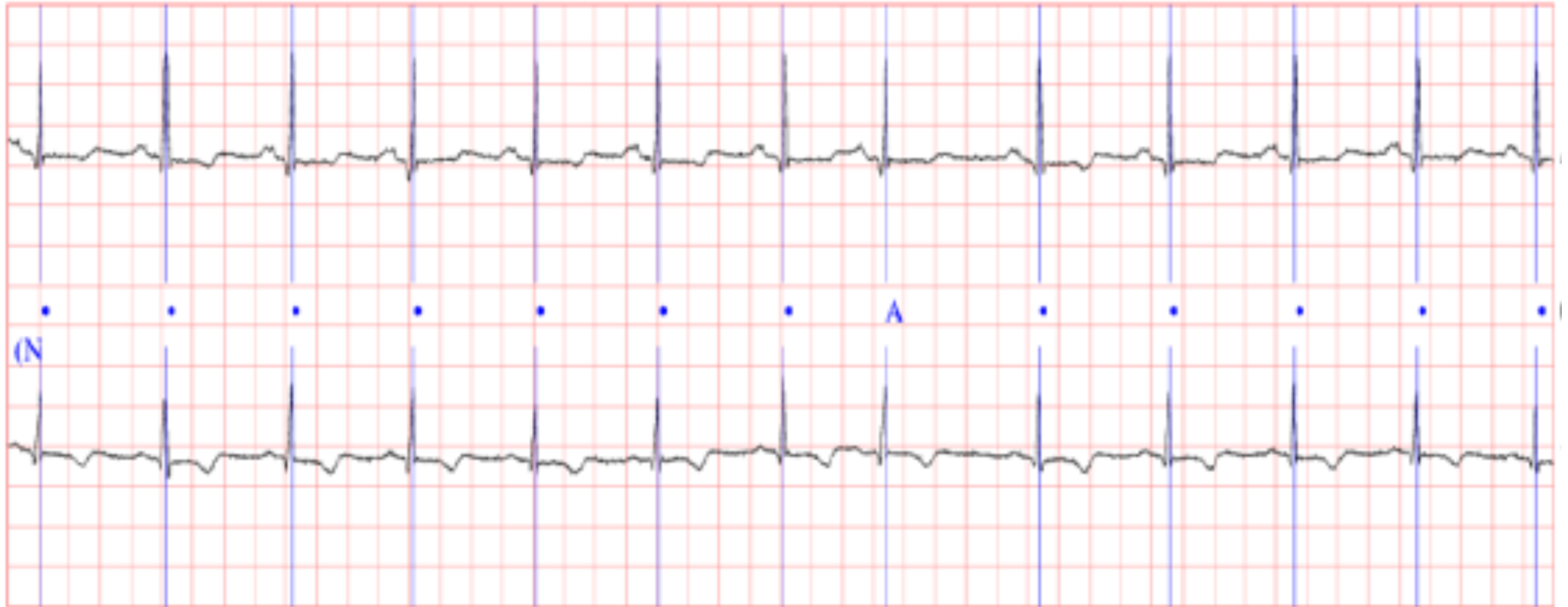


Proverbs

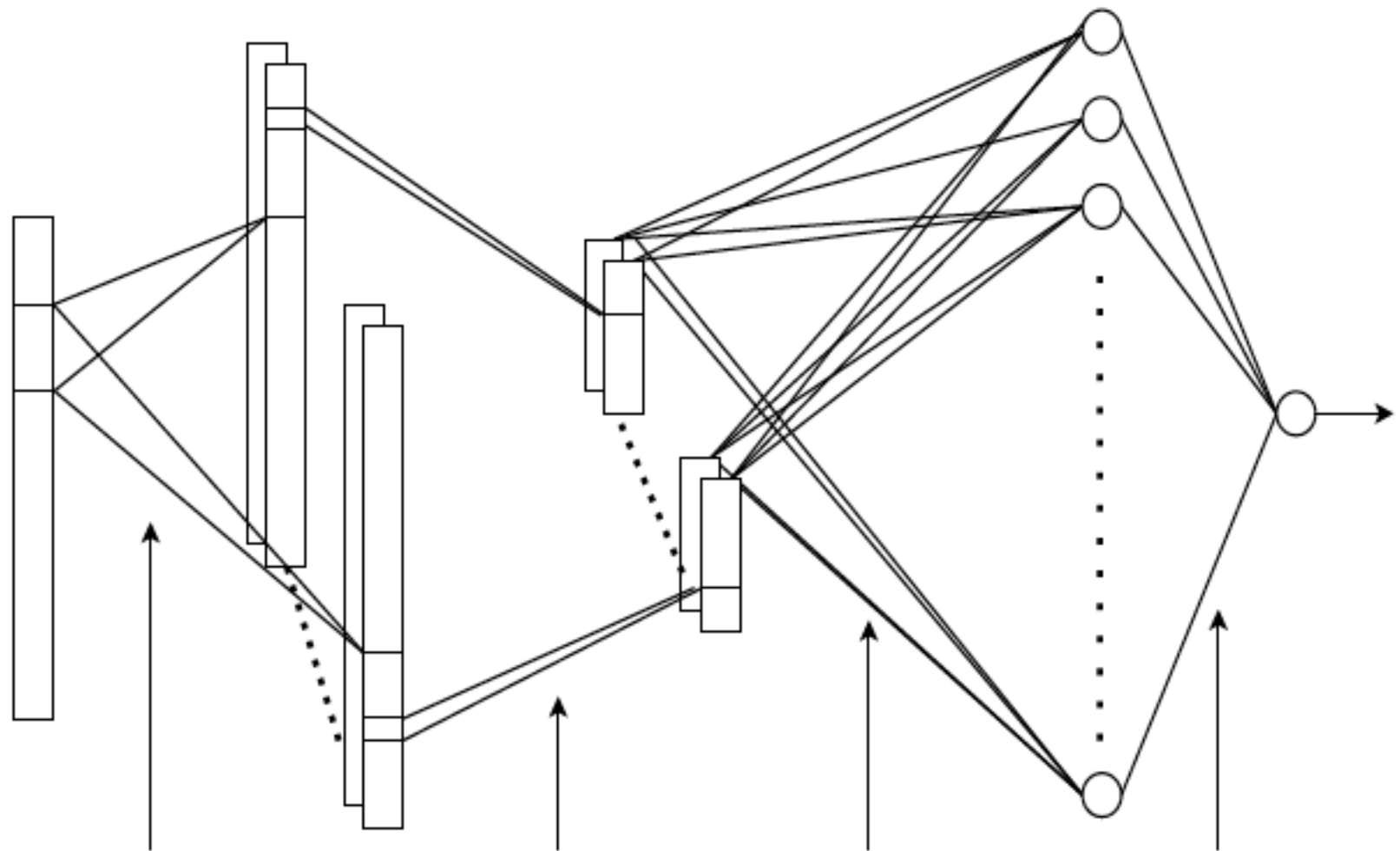
- The pen is mightier than the
- A picture is worth a thousand
- You cannot make an omelet without breaking a few
- Practice makes



- Show Generator



Not yet published



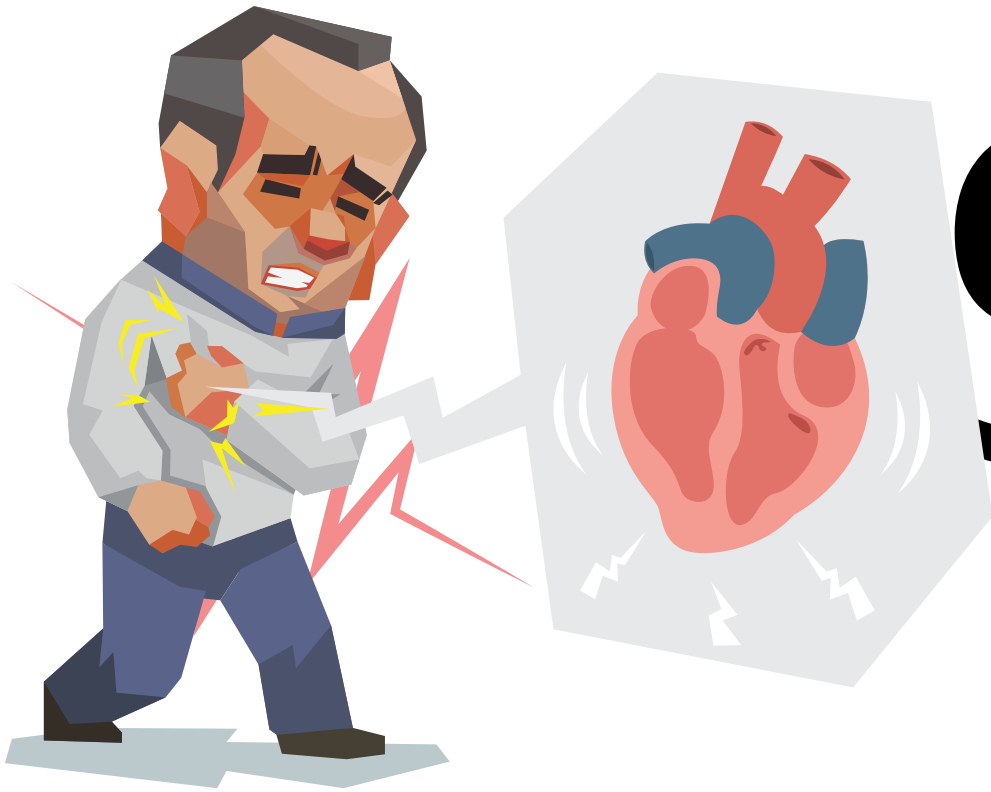
Convolutional

Max Pooling

Full Connection

Full Connection

Not yet published



99.18%

Not yet published





Generasjon 1:

smReAngnneer?enie ddaknaeF ndiok e
gngelTsenojdnealddCDS?kr re e e e ateotn?feekh
VaeemtvG ee?Dfejo esriPgea

Generasjon 18:

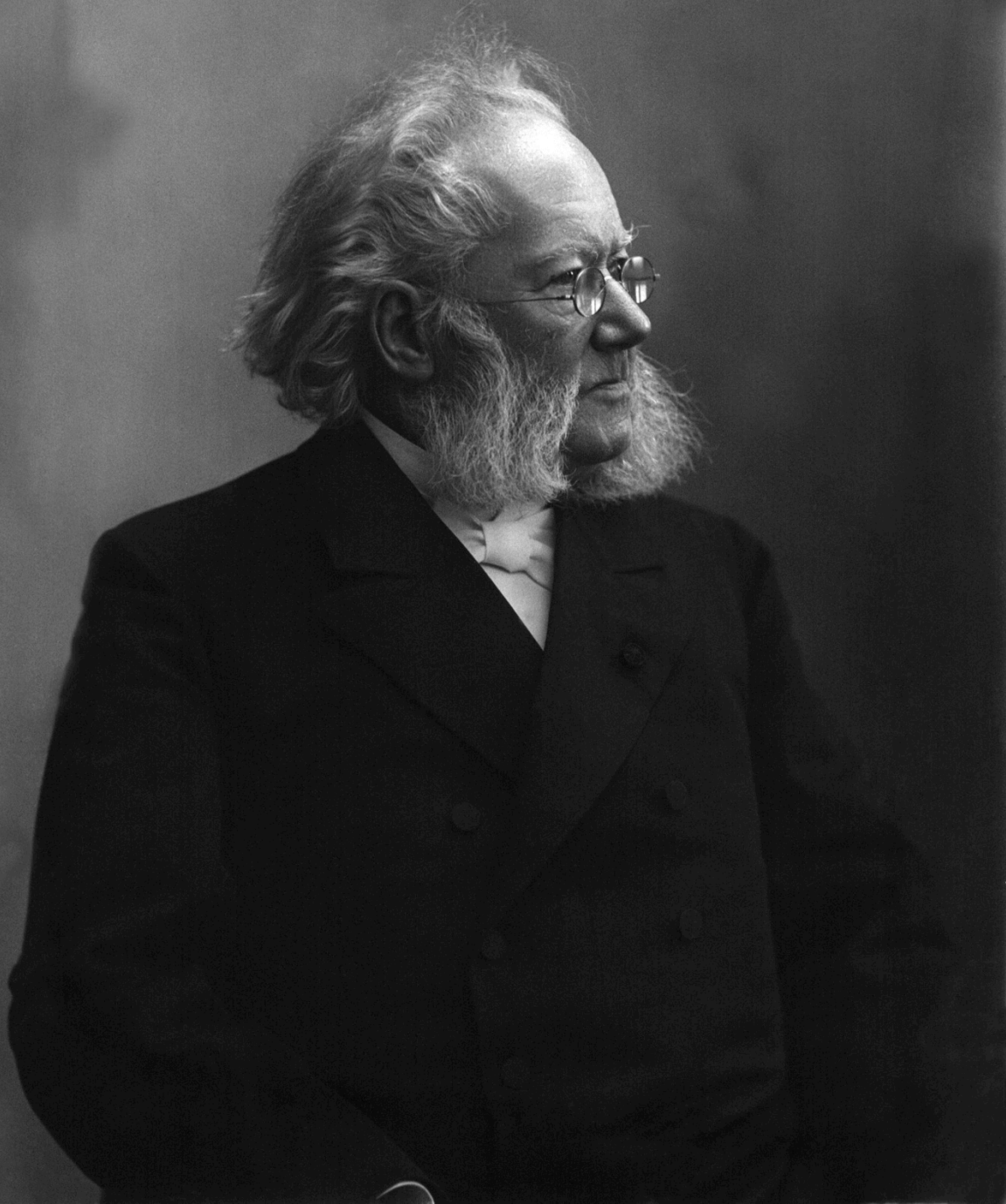
Hvorfor har lukket altså ikke talt, De har flyst mig
en usvore emmerink her og tager gj?

MYDAM JULIAN

Generasjon 30:

FRU ALV

stemmer. Jeg kommer imod Taushed og
fremmede på gode forvirret og forfærdet!
Hendes hænder åbner hænderne i nytten, hun
går gennem griber og åbne landsmand. Lad så
hele hendes hænder.



Generasjon 100:

HOVSTAD

Kejseren snakker på anden år.

HEDVIG uden at se på

Hvorfor tidt måtte De fortælle ham ikveld?

HOVSTAD

Men så vil jeg tænke på det pynteligste, Hedvig.

Nå, så skriver en i de store flasker. Alle vor vanvid.

Se så; ifald I er til hele løftet? Du vil sagtens.

HEDVIG sér hændt på ham

Ja så har jeg det så grusomt.

HOVSTAD

Vel vil du også skrive.

God morgen!

Raushet handler om at jeg har en tro, og tenne lys. Jeg har stillet i et hellig rom.

Mitt hjerte vanker i forventning. Og hjertet skal være glede.

Og Jesus, Jesus. Ved bordet sitter englene fra din tid og sier dette:

”Han fant de fattige og uvetlige for å være nær.”

Gud ble tent av sin sorg og ventet.

Du er verd å elske.

