



Introduction to Research with Deep Learning for an Agile Audience

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March 1, 2021



How **your** work can help **our** work.

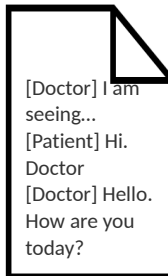
Take-Aways

- High-level Neural Networks
- What can break the process
- High-level Deep Learning
- Where would Agile fit?

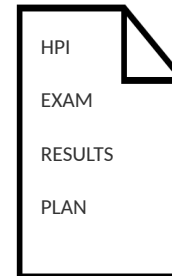
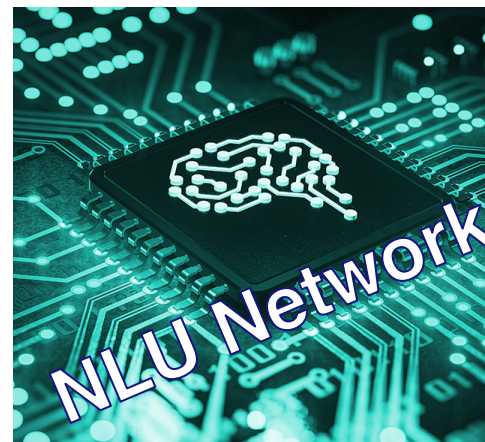
Full DAX AI pipeline



Recording



Transcript



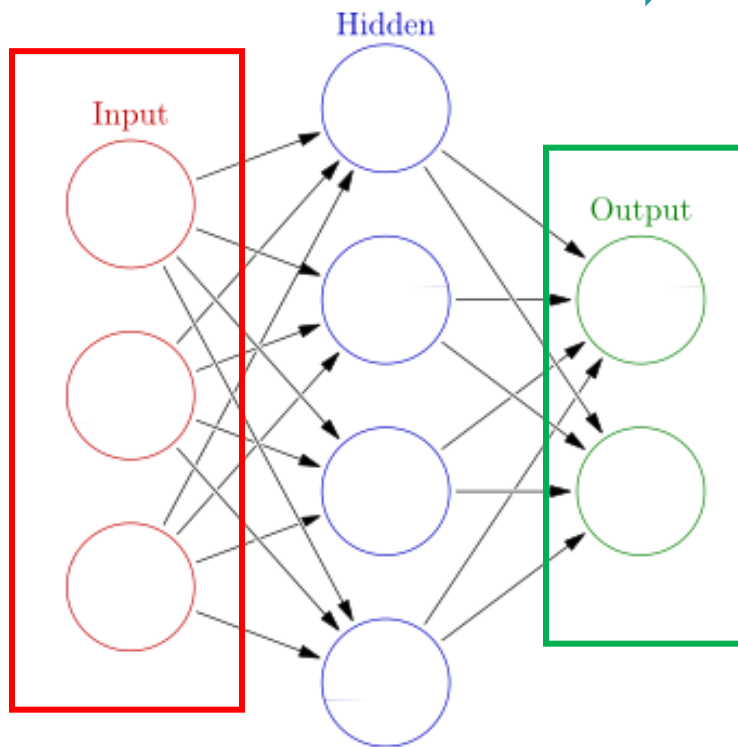
NLU Draft

Neural Networks

Neural Network the easy par

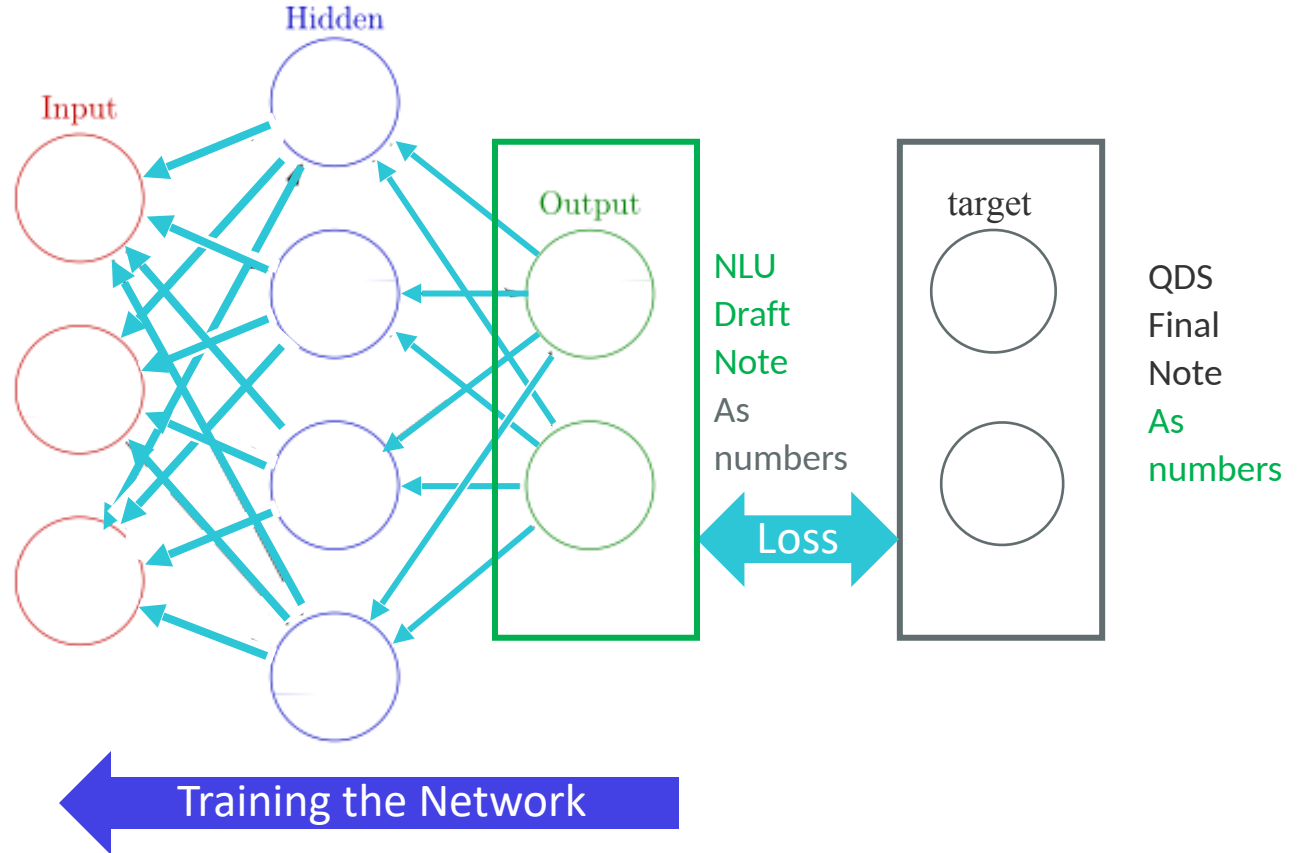
Running the network 

Transcript of patient
Encounter
Encoded as
numbers



NLU Draft Note
Decoded from numbers

Neural Network
the more



Draft

MOVE TO FRONT

HISTORY OF PRESENT ILLNESS

HISTORY OF PRESENT ILLNESS:

Teancum Allemond is a pleasant 17-year-old left-hand-dominant female here today for evaluation of right ankle and right thumb injuries. The ankle injury was sustained 2 weeks ago while playing basketball for ██████████ High School. The pain is localized to the lateral aspect of the knee. There is intermittent swelling. She has been able to weight-bearing and ambulate. Kalei has been working with her athletic trainer and notes that she has been taping and utilizing a brace. These treatments decreased her pain. The right thumb has been symptomatic for many months following a jamming injury, also during basketball. There have been multiple hits to the thumb, most recently approximately 2 weeks ago. She reports a tightness and throbbing around the 1st joint of the thumb. There is a pulling sensation with range of motion and increased pain with increased activities. She denies weakness in the thumb. Kalei has attempted icing the thumb and ankle for symptom relief.



QDS 1

ACCEPT



Version 3 by Annie Brown on 3/16/2021

CHIEF COMPLAINT

Evaluation of right ankle and right thumb injuries.

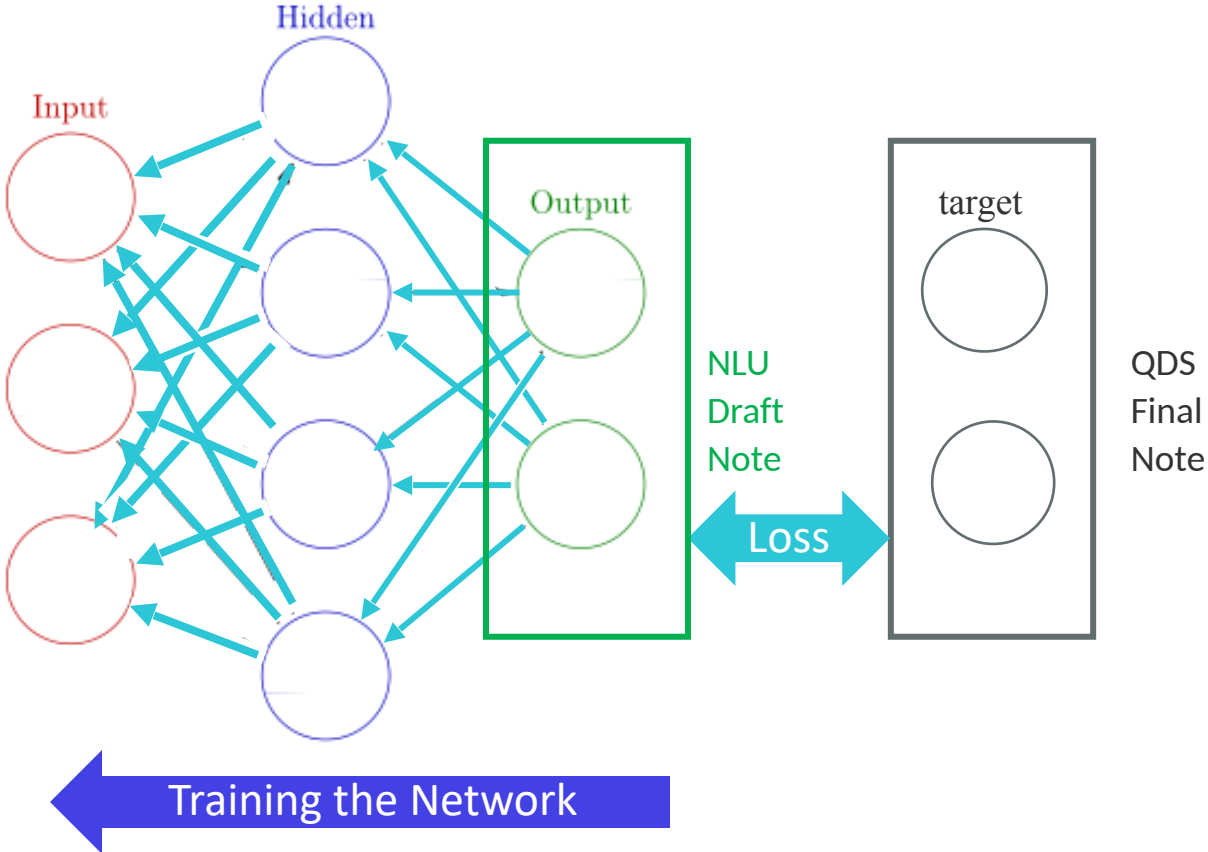
newlines

colon

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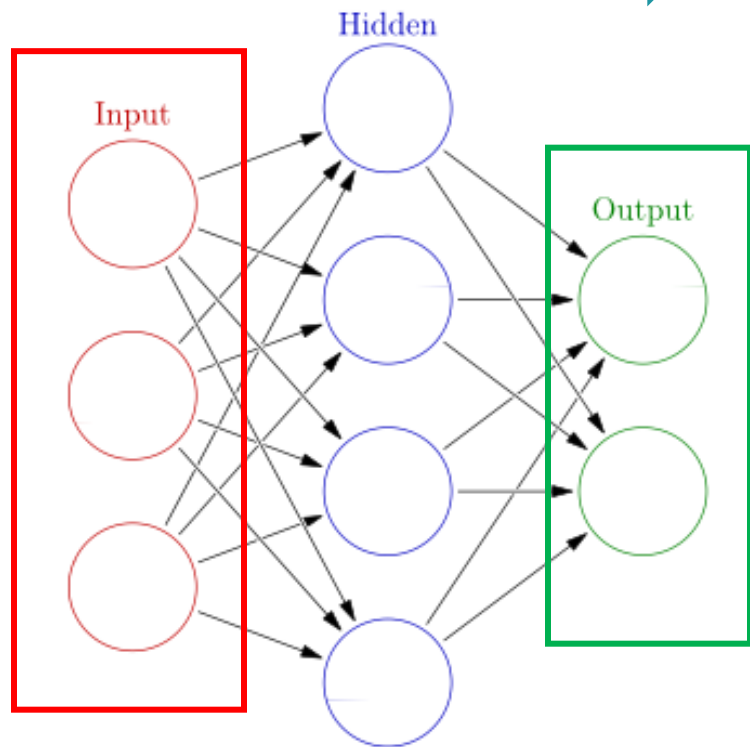
Neural Network Training step



Neural Network
Try Again

Running the network 

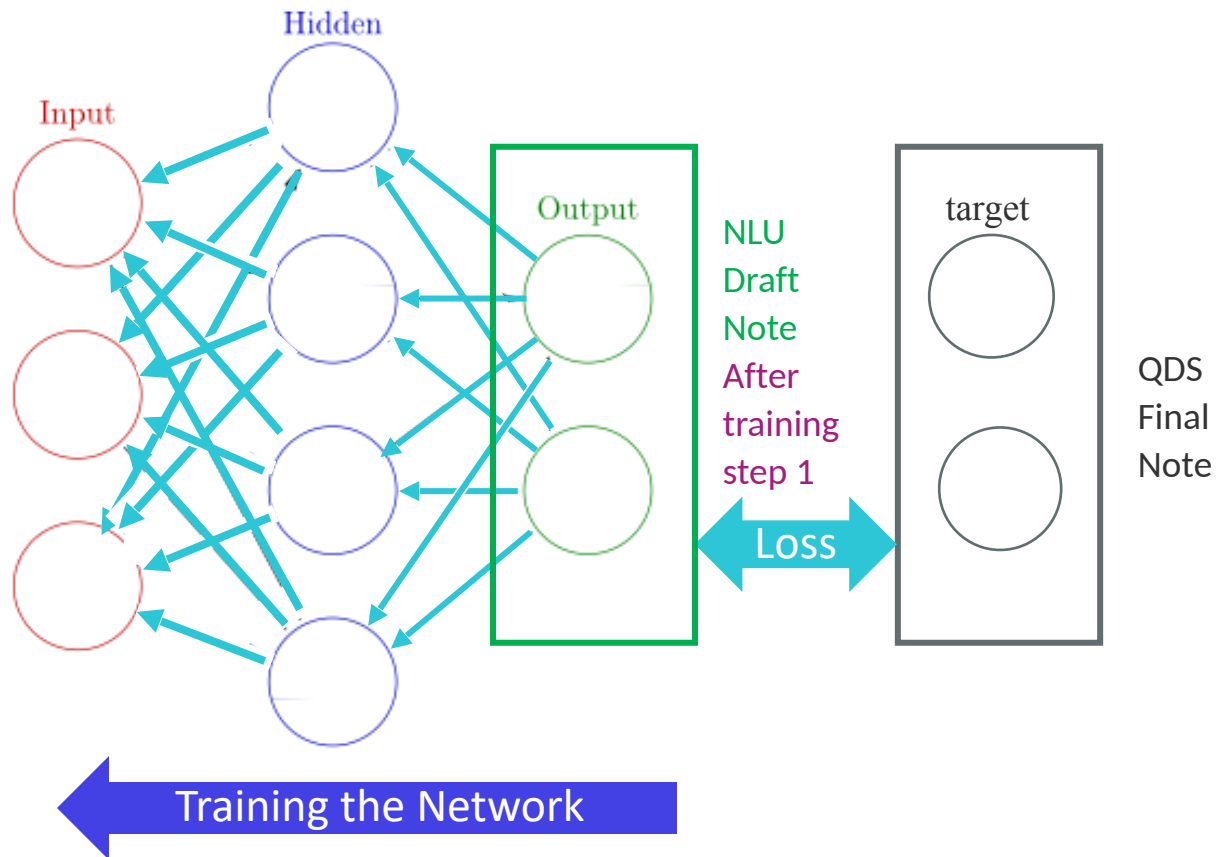
Transcript of patient encounter



NLU Draft Note
After training step 1

Neural Network

Training step 2





Data Consistency

Version 1 by QDS 1 on 7/27/2020

CHIEF COMPLAINT

Bilateral shoulder pain

Right wrist pain

HISTORY OF PRESENT ILLNESS

MR. Patient returns noting his pain in his left shoulder is a 9/10, his right shoulder is just starting to hurt a bit.

He is coming to get an evaluation. He is really coming in to see if we would support him on a nerve ablation for his left shoulder as redacted his pain specialist, said she was able to do this. He had a good result in his lumbar spine. He would like to try this. He is not interested in proceeding with any shoulder replacement at this point, as he does suffer from arthritic change in the left shoulder. His right shoulder is only a mild variant of his left and is just starting to hurt, it does not bother him much. He had a steroid injection in his left shoulder with a glenohumeral subacromial injection on redacted 3 months and 11 days ago.

On his shoulder questionnaire follow-up he reports that he is worse. Everything tends to make it worse, including sleeping. Exercise, sports, lifting, bending, and working on the computer makes it worse. The pain in the left shoulder started long ago. He describes aching, locking, catching, popping, and instability in the shoulder. Being in the front of

Version 1 by QDS 2 on 7/8/2020

CHIEF COMPLAINT

Right shoulder pain.

Left shoulder pain.

HISTORY OF PRESENT ILLNESS

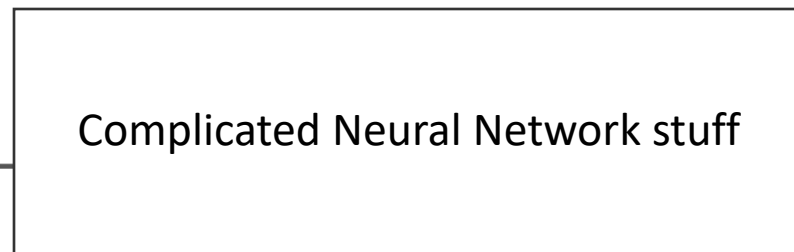
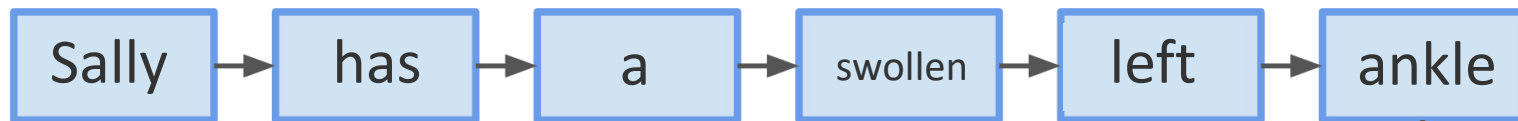
redacted is a ___-year-old right-hand-dominant male who presents today for evaluation of bilateral shoulder pain, left greater than right.

The patient reports his left shoulder pain began "a while ago" and he reports his right shoulder pain as began recently.

Today he localizes his left shoulder pain to the anterior and posterior aspects as well as to the neck and upper back. His pain is rated as a 9/10 and is worse with sleeping, exercising, playing sports, bending, lifting, and working on a computer. He describes general aching and endorses mechanical symptoms of popping, locking, catching, and general instability. The patient underwent a glenohumeral and subacromial injection to the left shoulder on redacted is not interested in a total shoulder arthroplasty due to his ongoing arthritic change. However, he is requesting support to undergo a nerve ablation for the left shoulder as his injections only provide temporary relief. He presently sees a pain specialist, redacted who can perform the nerve ablation. She previously performed a

Deep Learning

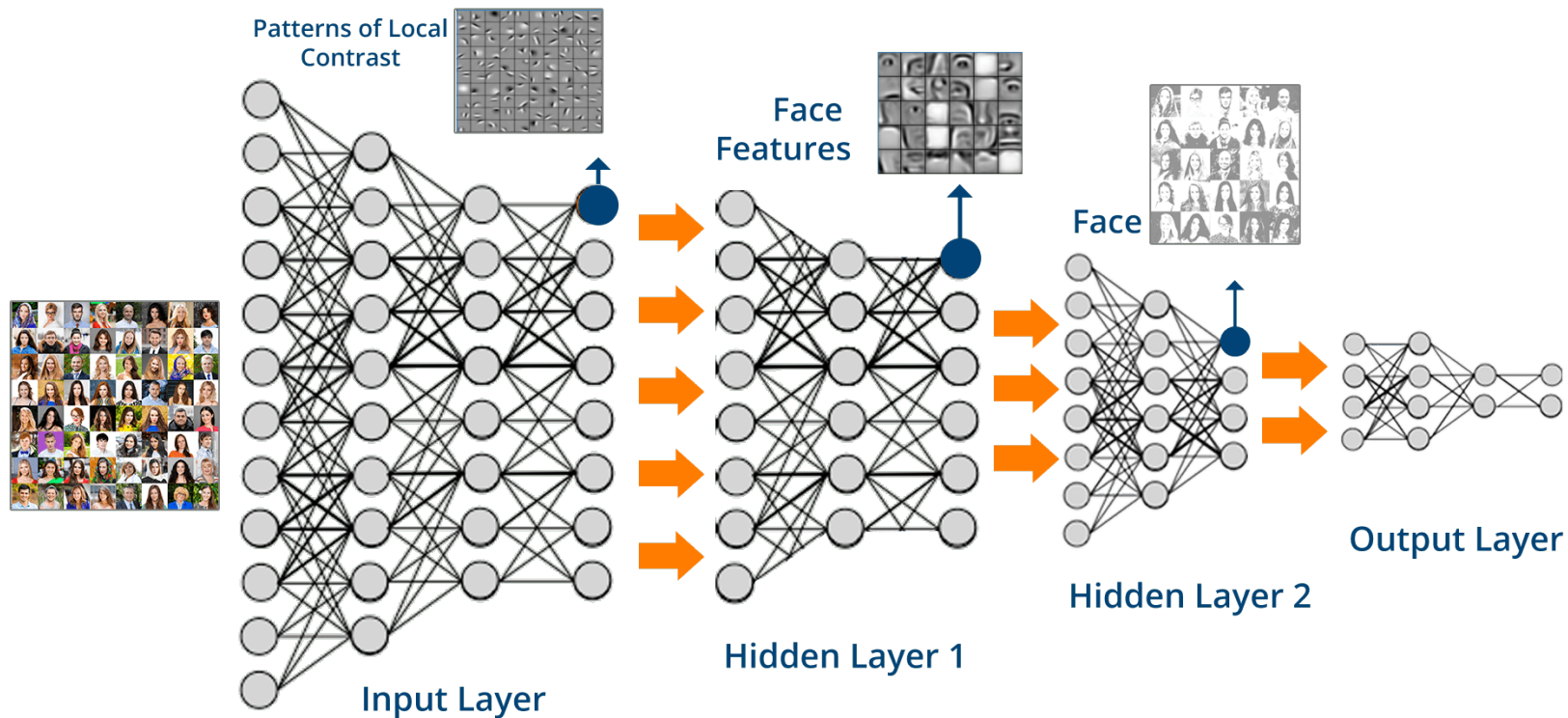
Encoder



Decoder



What is a Deep Neural Network?

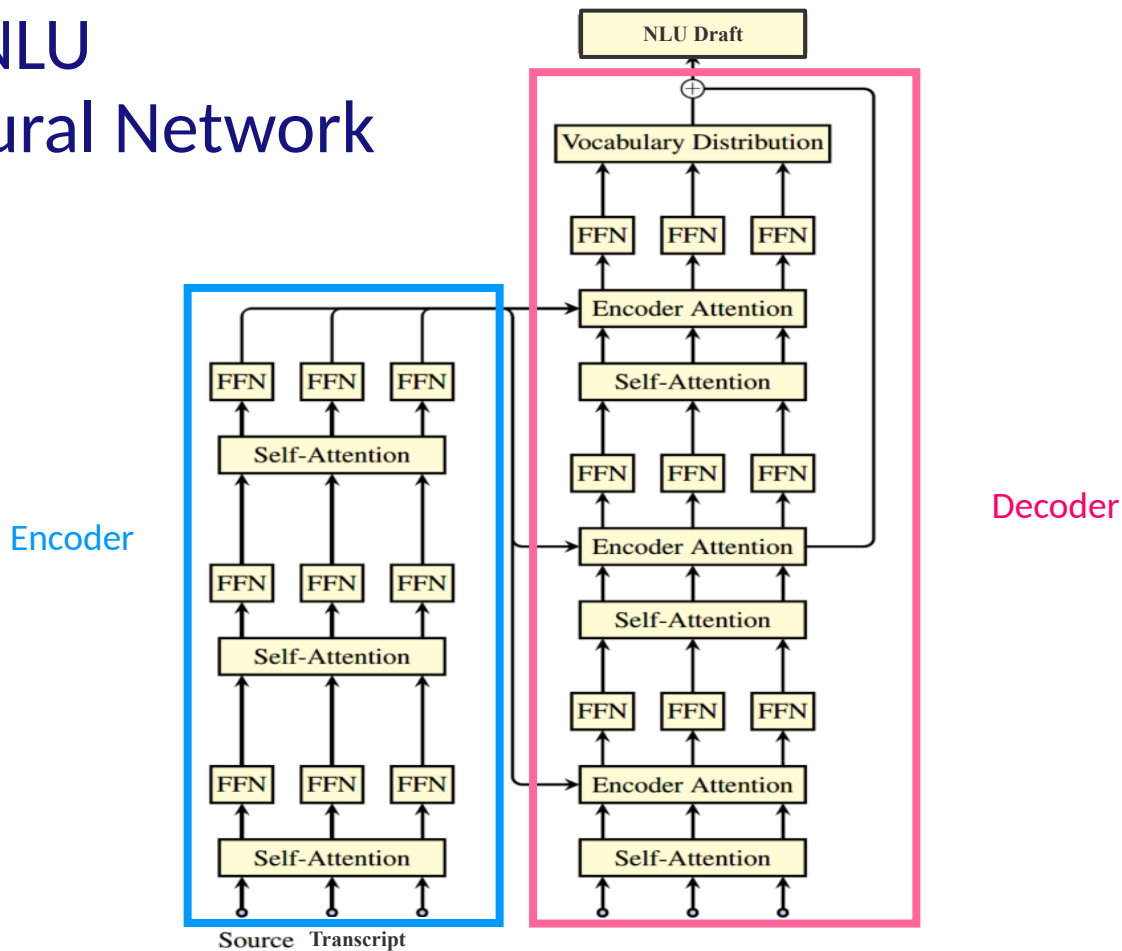


Chihuahua vs. Blueberry Muffin?

Machine learning is never perfect and often makes errors that humans wouldn't.



Nuance NLU Deep Neural Network



Where would Agile fit?

Define the problem

1. Lay out the full description of the input/output data
2. Should this data yield an answer to the question you are asking
 1. Legacy of malevolence
3. Consult subject matter experts
4. Consult AI ethics experts
 1. Hidden demographics

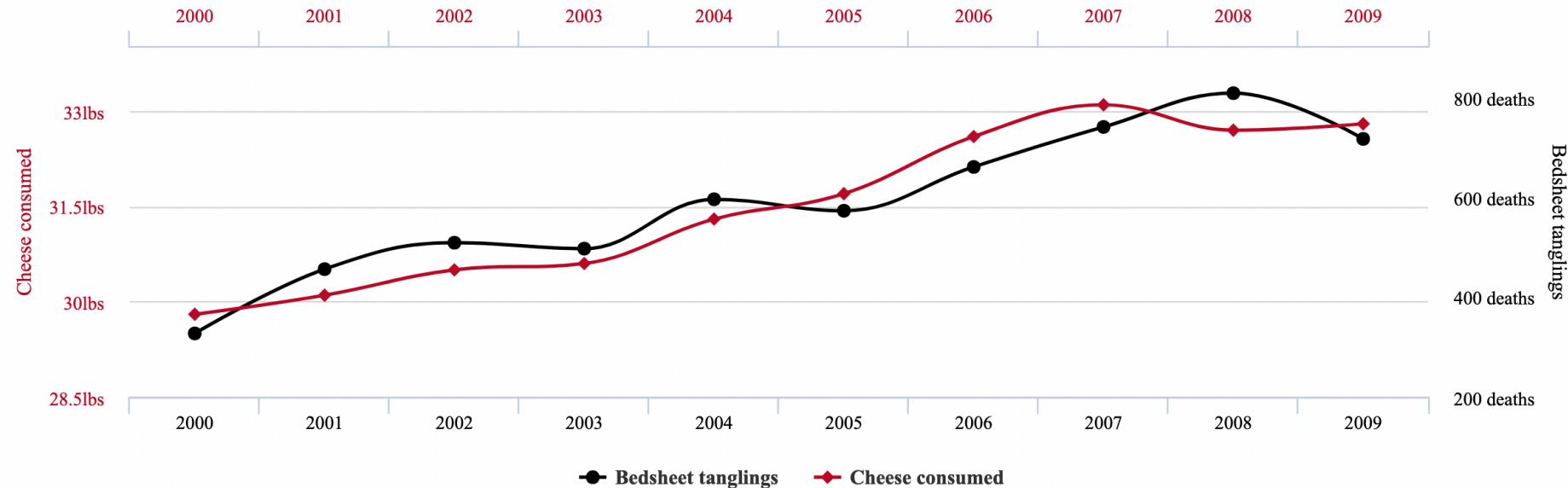
<https://www.tylervigen.com/spurious-correlations>

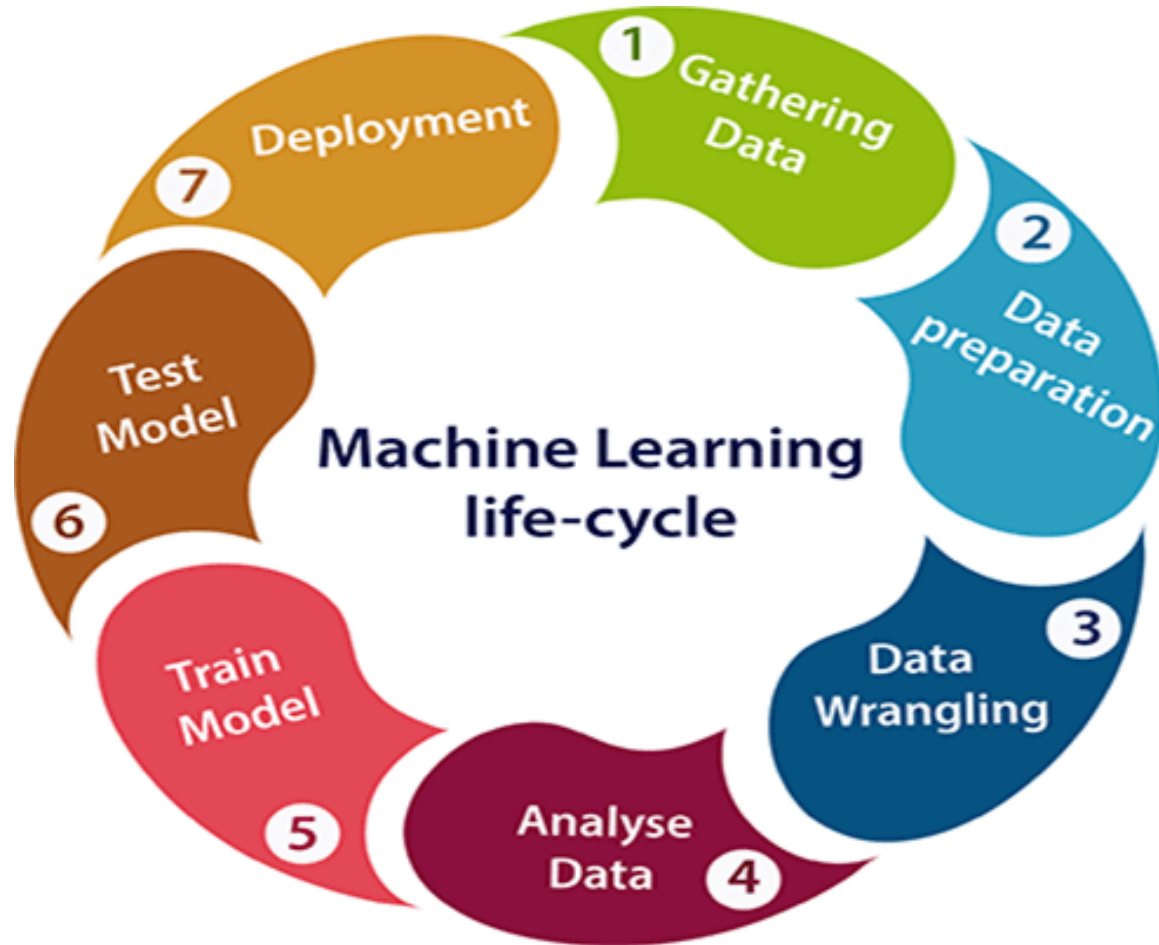
Per capita cheese consumption

correlates with

Number of people who died by becoming tangled in their bedsheets

Correlation: 94.71% ($r=0.947091$)





Thank you