4/2/2620

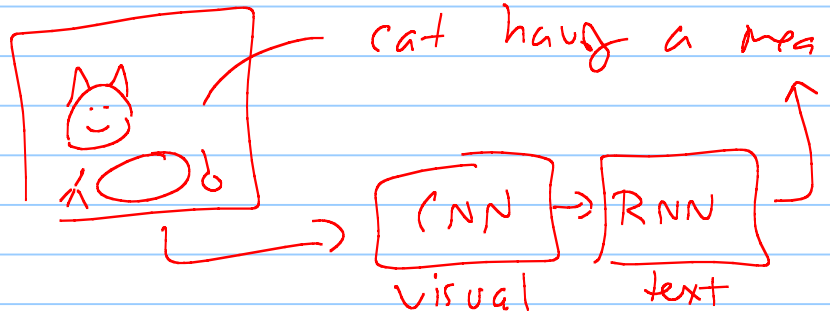
Note Title 4/2/2020

Context

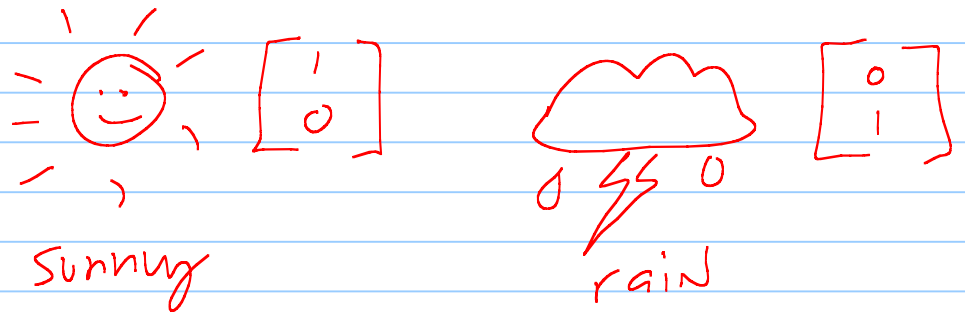
- humans dont start thinking from scratch every second
- thoughts have persistance
- "typical" NN "cannot" achieve this
  - RNN
  - approx
- applications
  - speech recognition
  - language modeling
  - image captioning
  - ...

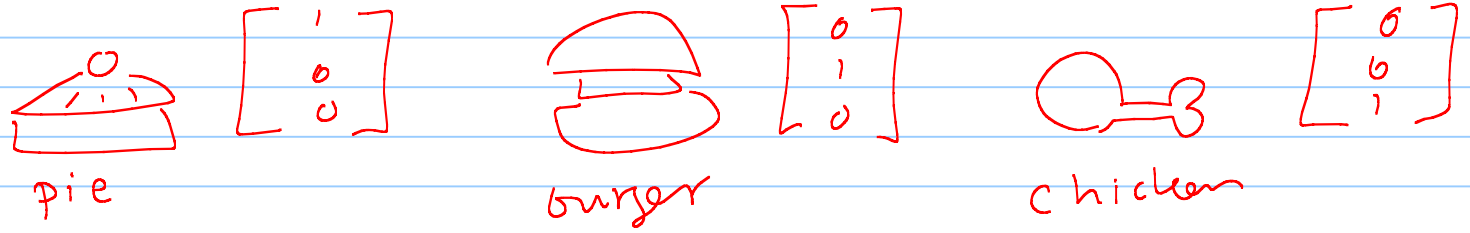
signals-text

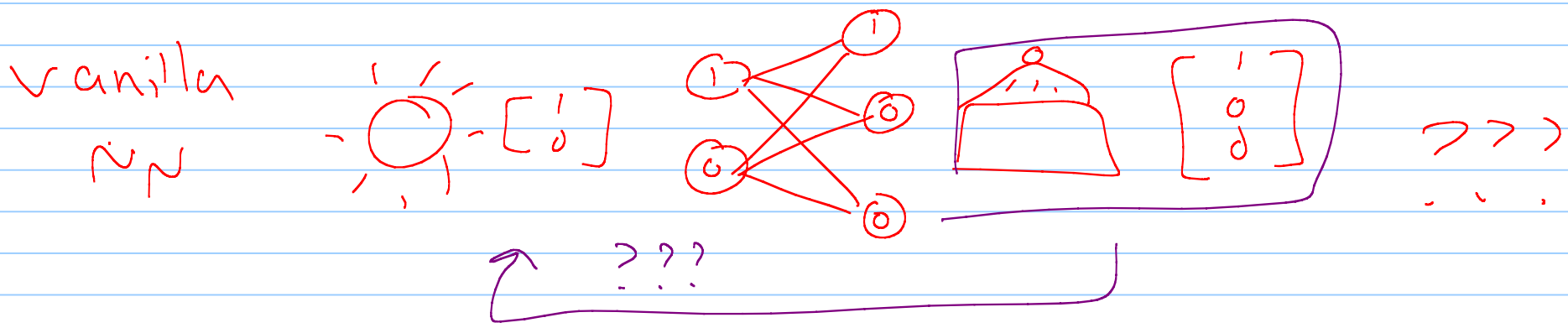
"NLP"



Recurrent Neural Net (RNN)

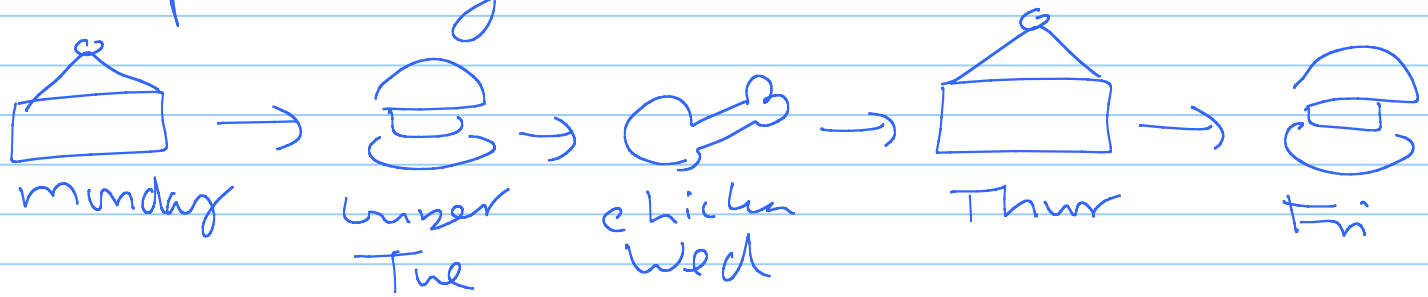






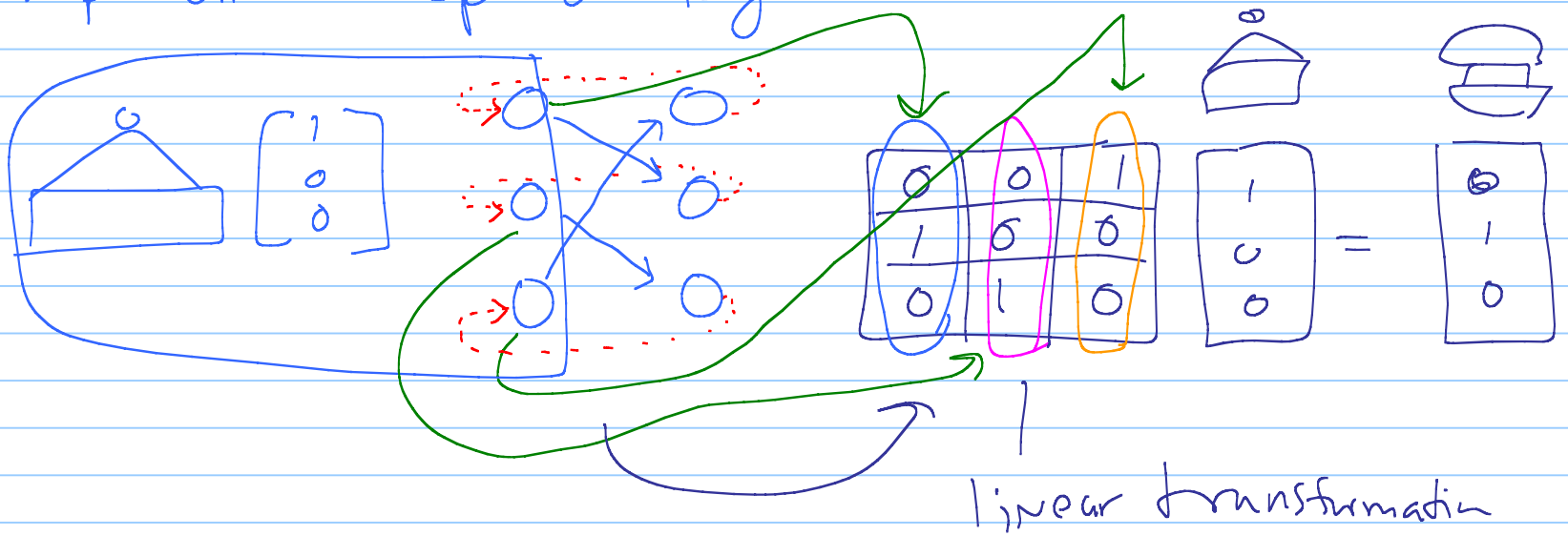
↑ sequence

* time dependency

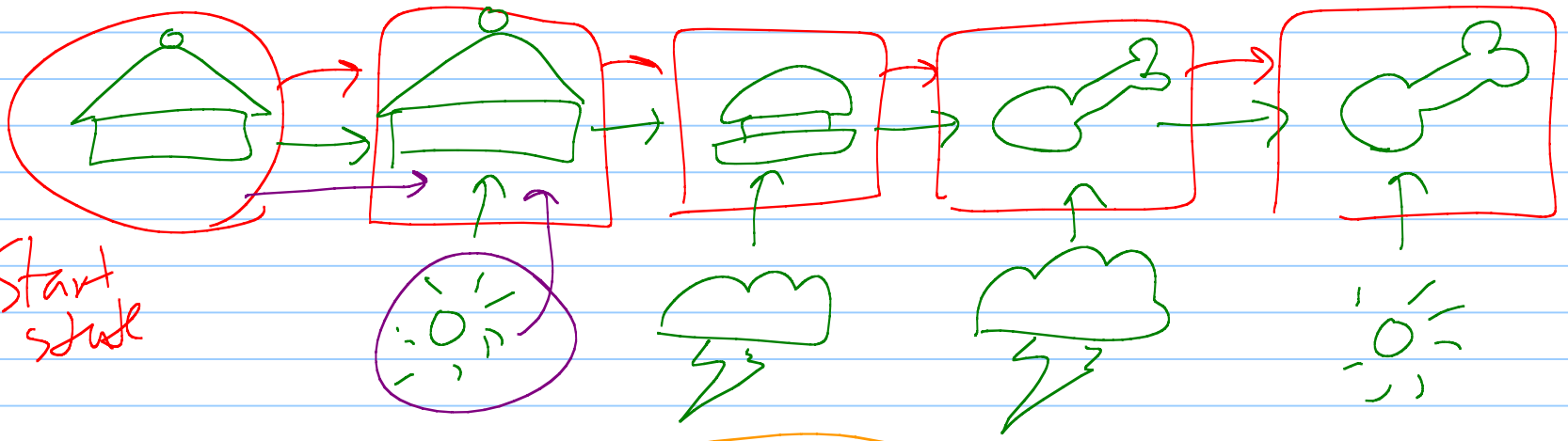


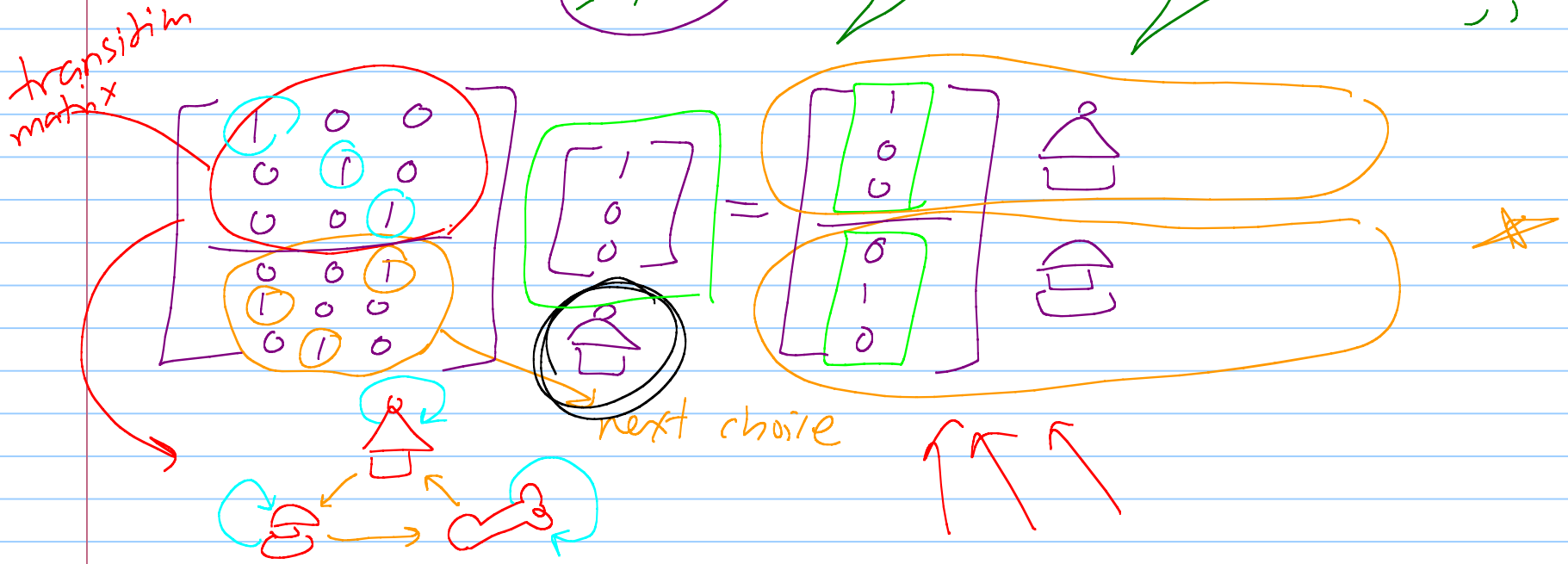
one step time dependency

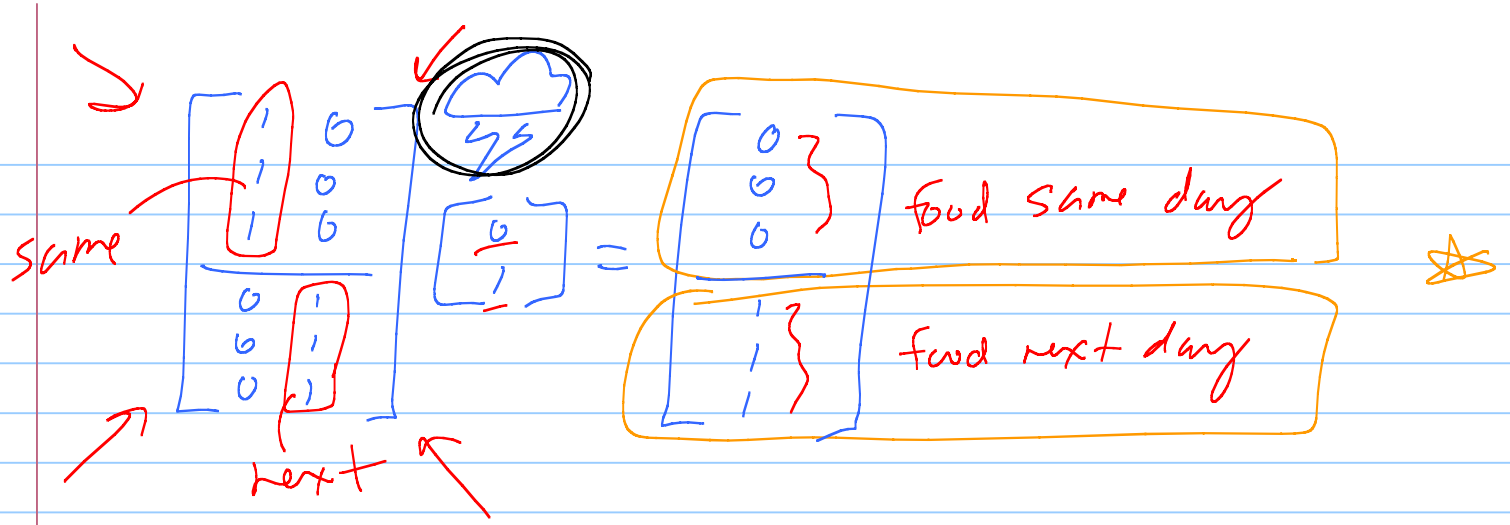
e.g.,



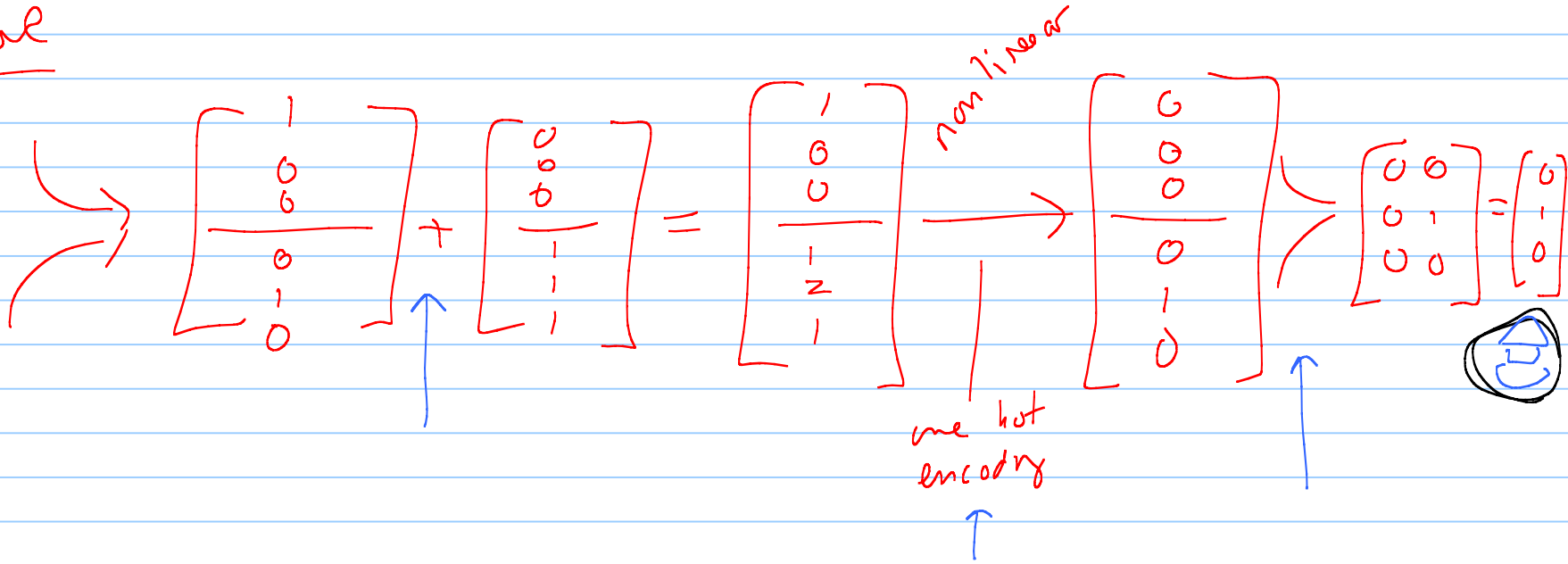
Combine with an input now

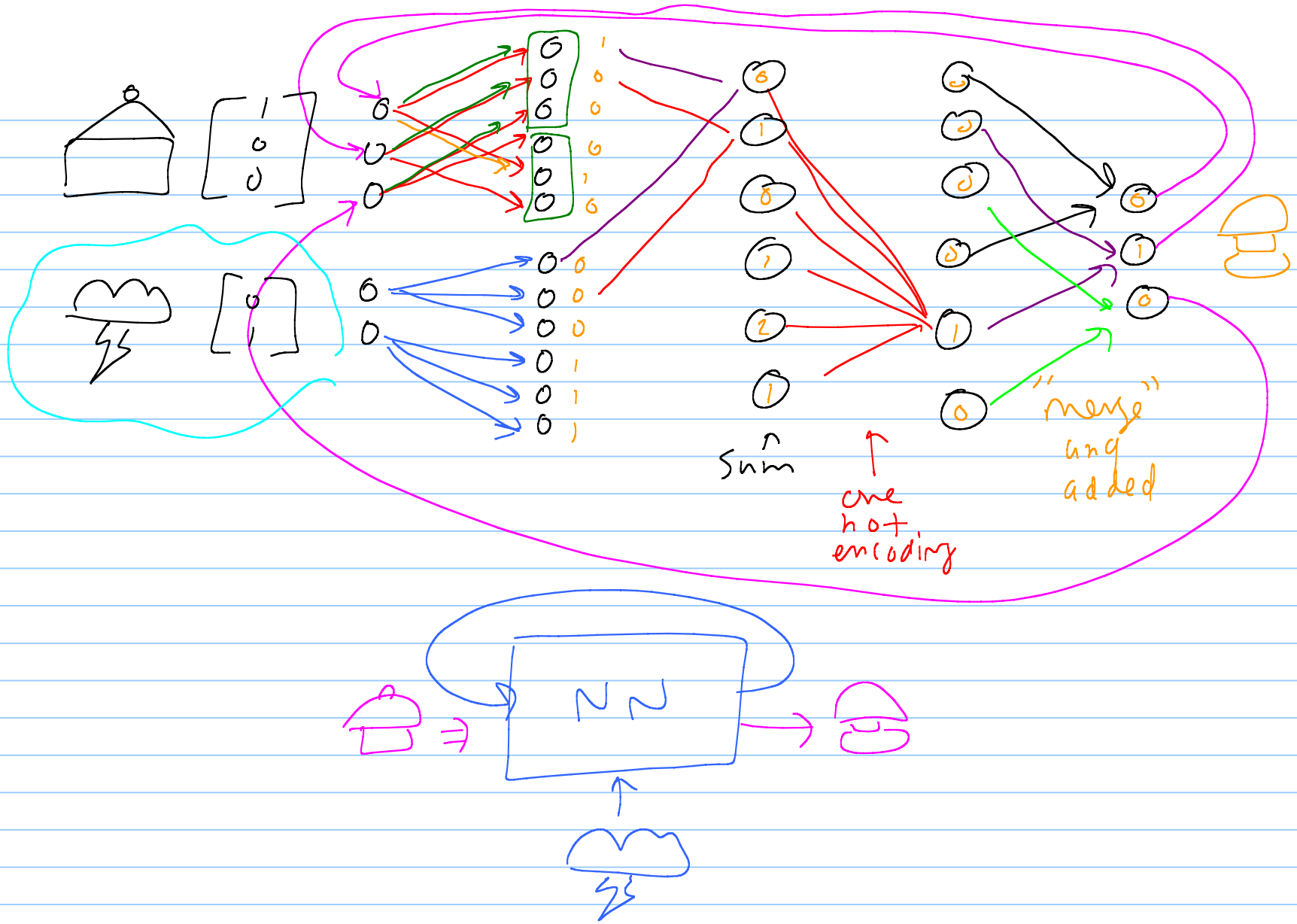




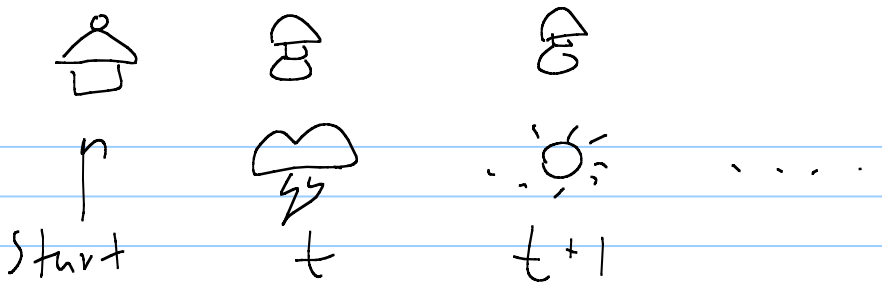

same
next
food same day
food next day

Combine


non linear
one hot encoding


sum
one hot encoding
"merge" ing added
NN

Train =>



Limitations

- limited memory
- not good at long term seq
  - NLP → sentence, paragraph
  - Signal-2-text

↓

Can do better → LSTM

Block diagram

fold out

$$h_t = f_W(h_{t-1}, x_t)$$

new state — f x with parameters W — old state — input