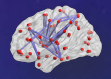


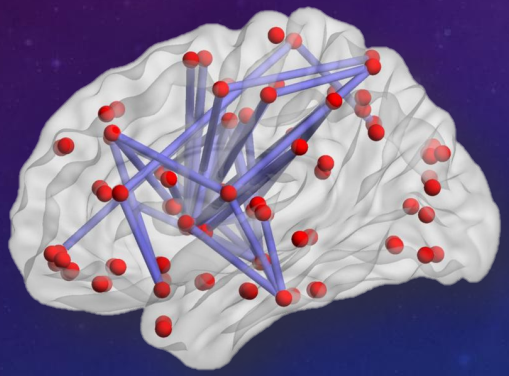
PAPERLESS•AI

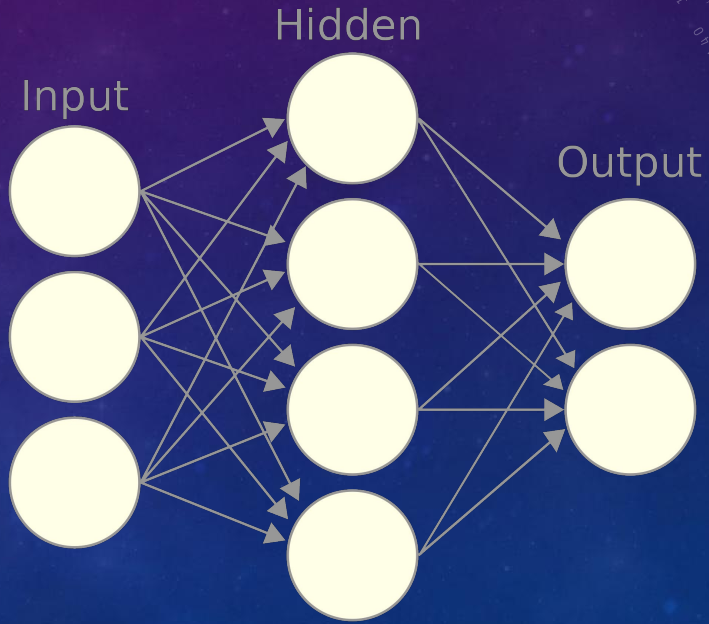
CARD RECOMMENDATION ENGINE WRITTEN IN PYTHON USING ARTIFICIAL NEURAL NETWORK.

STAMPY DAY 2016

SI TE FENG

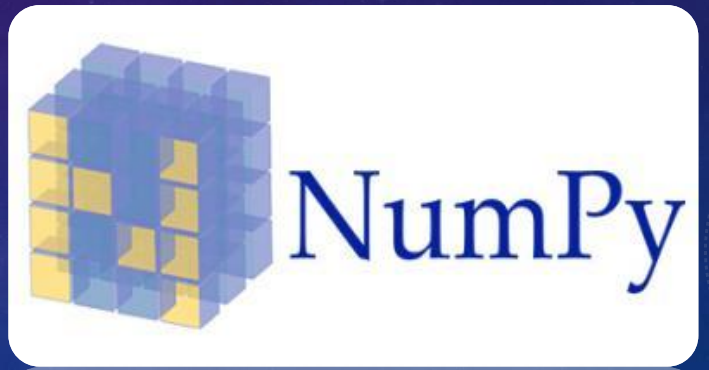
ARTIFICIAL NEURAL NETWORKS

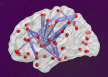




FRAMEWORKS

- TensorFlow: Open source machine intelligence framework. Provides state of the art neural network training algorithms
- Numpy: Computation framework in Python. Useful for matrix transformations on input data





PAPERLESS•AI USAGE

Given a database of users sending data with Cards [A, B, C, D]
Database => { ABC BC BCD ACD AC }

And given a user who has sent these cards in the past:
CurrentUserCards => [B, C]

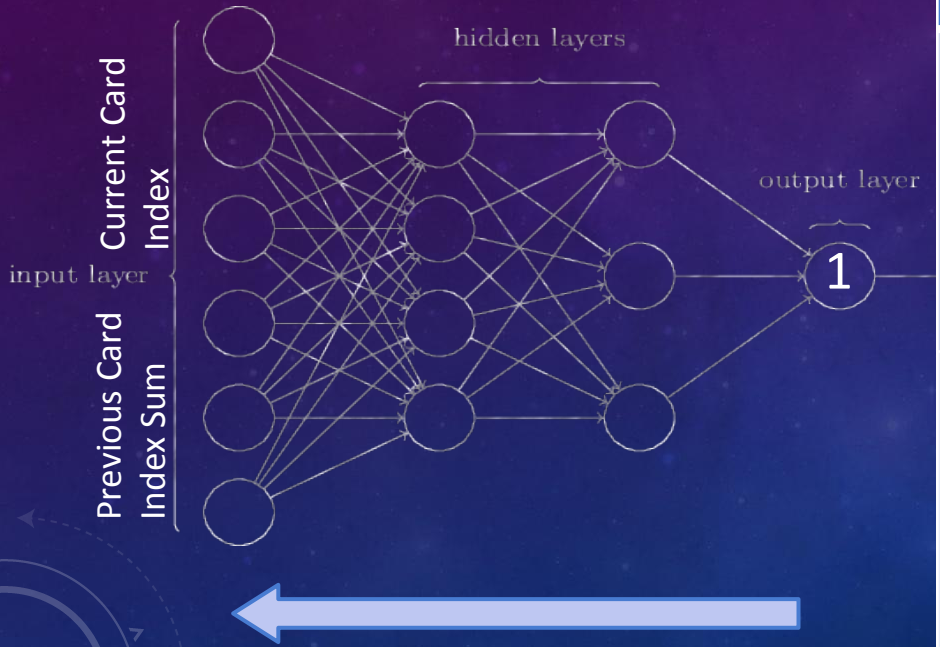
PaperlessAI predicts the next card the user is going to send, sorted by chance:
CurrentPrediction => [A: 25.1%, D: 7.16%]


HOW TO TRAIN YOUR
PAPERLESS•AI
Paperless
POST

TRAINING EXAMPLE (ADAGRAD BACKPROPAGATION)

Given User Card Data: [A, B, C]

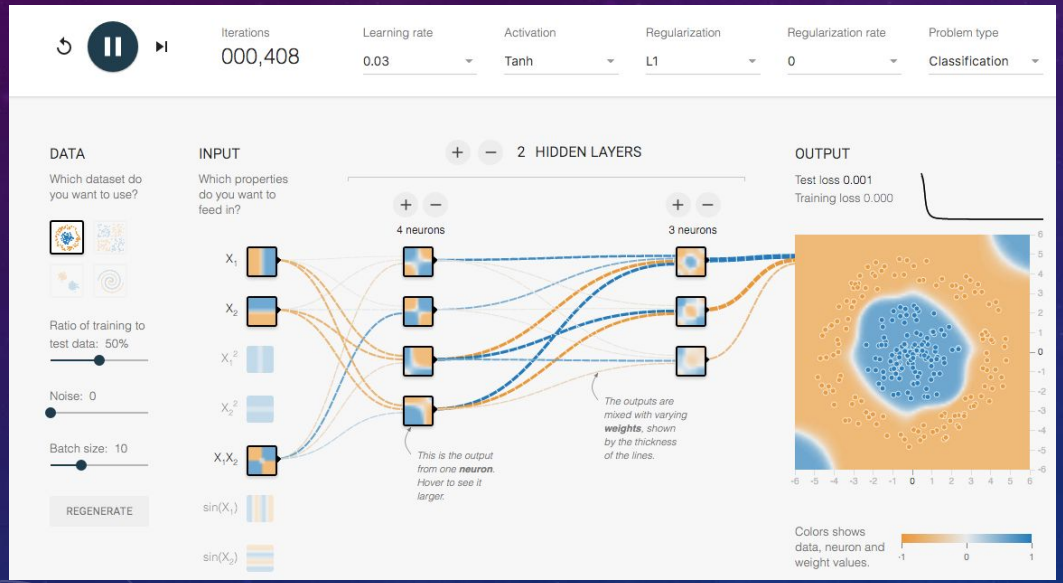
Input: Card Index



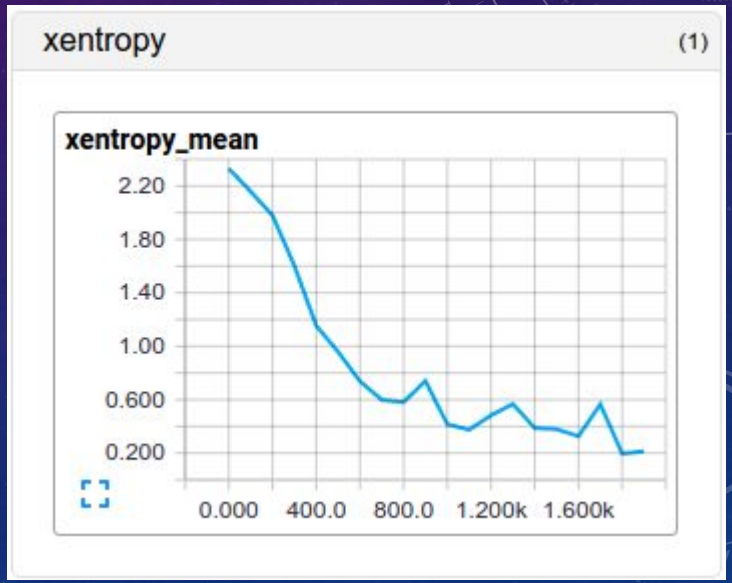
Positive Correlation	Negative Correlation
Input UserCardHistory => [B, C] CurrentCard => A Output SendPossibility => 1.0	Input UserCardHistory => [B, C] CurrentCard => D Output SendPossibility => 0
Input UserCardHistory => [A, C] CurrentCard => B Output SendPossibility => 1.0	Input UserCardHistory => [A, C] CurrentCard => E Output SendPossibility => 0

TRAINED PAPERLESS•AI

Example: Neural Net Visualization



Example: Error rate vs. Training Time



USING PAPERLESS•AI - EXAMPLE

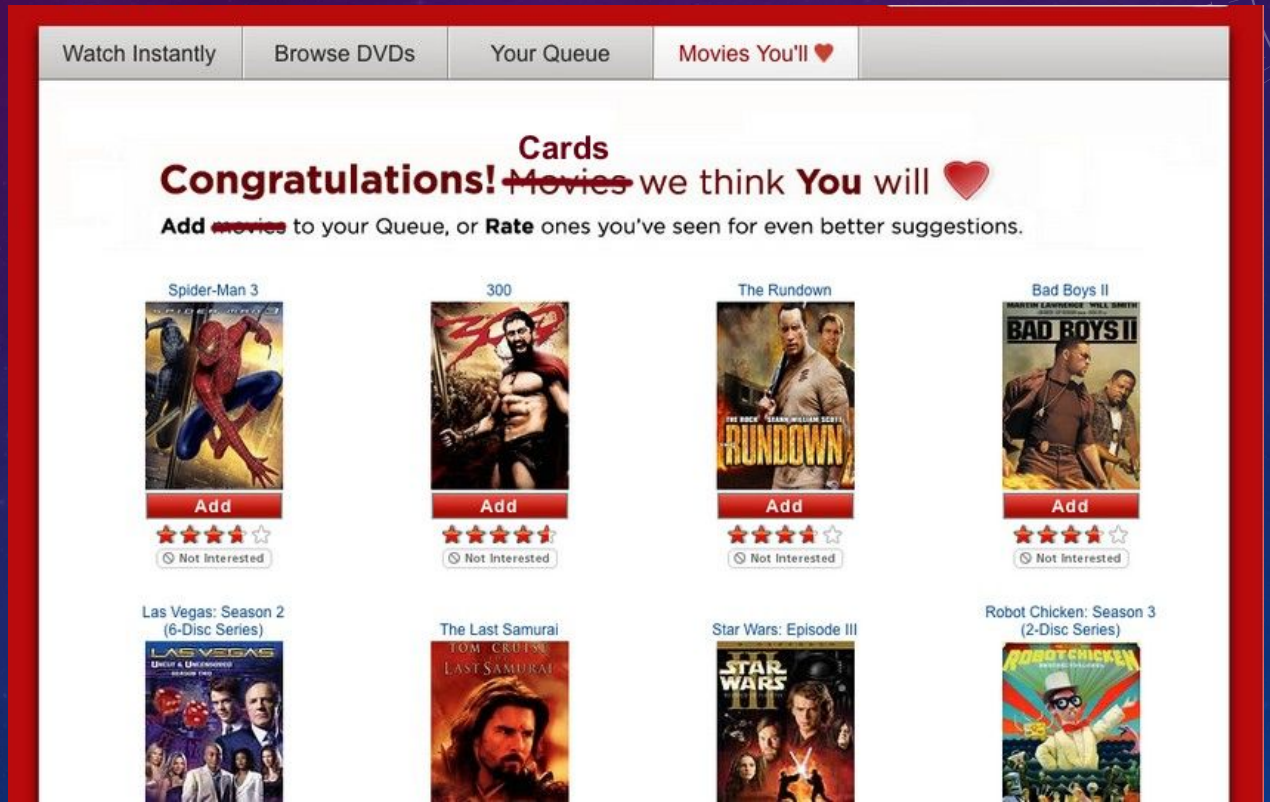
3.10% chance user will send another orange card next

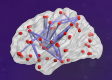
3 means user has previously sent 3 cards with orange color

WHAT DOES THIS MEAN FOR OUR USERS?

- Personalized recommendation engine that can help our users to pick their next card in 1 click.
- More exposures on our best designs leads to a higher perceived brand value
- Retain new customers

PRODUCT RENDERING





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