

Wrap Up

Introduction to
Artificial Intelligence
COS302
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Fall 2001

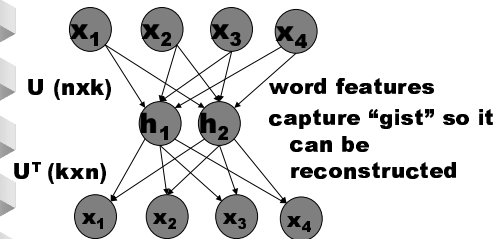
Administration

Laptop four is busted.
Course evaluations.

Plan

LSI and autoassociation
Topic list
Second half Themes
Wrap up

Passage Autoassociator



We'll Make Computers Brighter (sorry Billy Joel)

Gang and Kedar relaxation
color graphs by propagation
Neighbor goal state Davis Putnam
change to CNF
CSP & satisfaction
forward checking giving traction
BFS and DFS and
A* is the best

Verse 2

Local search save time
optimize hill climb
Nim Sharks GSAT
chess evaluation hacks
Alpha beta game tree
prune the branch and you'll see
Fitness function reproduction
phase transition min-max

Chorus

We'll make computers brighter
With their "and" and "or"ing
They'll beat Alan Turing.
We'll make computers brighter
Smarter than a porpoise
Train it with a corpus

Verse 3

Markov model Chinese Room
Nim-Rand in a matrix form
Labeled data, missing data
logic of Boole
Discount rank list
Altavista Wordnet
IR bag-of-words
flip around with Bayes Rule

Verse 4

Rap song n-queen
Susan swallowed something green
Language model classify
take a max and multiply
Zipf's law trigrams
smooth it out with bigrams
Naïve Bayes winning plays
write another program

Chorus

We'll make computers brighter
With their "and" and "or"ing
They'll beat Alan Turing.
We'll make computers brighter
Smarter than a porpoise
Train it with a corpus

Verse 5

HMM part-of-speech
they will learn if you will teach
Baum-Welch if you please
Rush Hour and Analogies
Weighted coins network lags
Viterbi finds most likely tags
Start running watch for ties
expectation maximize

Verse 6

Learning function feature
try learning who's a girl
overfit PAC bounds
build your own decision tree
Too big memorize
cross validate to generalize
supervising pure leaf
fit the function to a 't'

Chorus

**We'll make computers brighter
With their "and" and "or"ing
They'll beat Alan Turing.
We'll make computers brighter
Smarter than a porpoise
Train it with a corpus**

Verse 7

**Delta rule backprop
hidden unit don't stop
Learn pairs sum squares
linear perceptron
Error surface is quite bent
just descend the gradient
and-or sigmoid
nonlinear regression**

Bridge/Chorus

**XOR learning rate
squash the sum and integrate
Neural net split the set
How much better can it get?
Chorus: We'll make computers brighter
With their "and" and "or"ing
They'll beat Alan Turing.
We'll make computers brighter
Smarter than a porpoise
Train it with a corpus**

Verse 8

**LSI max and min
local search is back again
TOEFL pick best
essay grade pass the test
Matrix Plato SVD
vectors all in high D
All the points are in the space
don't you make an Eigenface!**

Verse 9

**Segmentation Saturn spin
Probabilities a win
Q and P iteratively
Bayes net CPT
Autopilots in the sky
Play chess masters for a tie
Alan Alda robots cry
All of this is in AI!**

Chorus

**We'll make computers brighter
With their "and" and "or"ing
They'll beat Alan Turing.
We'll make computers brighter
Smarter than a porpoise
Train it with a corpus**

Final Chorus

We'll make computers brighter
Hope you had some fun
Because the class is done, is
done, is done...

Probability Models

Compare and contrast

- unigram
- bigram
- trigram
- HMM
- belief net
- Naïve Bayes

Classification Algs

Compare and contrast

- Naïve Bayes
- decision tree
- perceptron
- multilayer neural net

Missing Data

Compare and contrast

- EM
- SVD
- gradient descent

Dynamic Programming

Compare and contrast

- Viterbi
- forward-backward
- minimax
- Markov chains (value iteration)
- segmentation

Big Picture: This is AI?

We learned a bunch of programming
tricks: people still do the hard work.

- Yeah, that's true.
- It's not such a bad thing: building
more flexible software (search,
learning).
- We're working towards more
independent artifacts; not there yet



Thank You!

Thanks for your help!

- **Gang and Kedar**
- **Lisa and the kids**
- **AT&T**
- **Andrew Moore**
- **Family Feud survey respondents**
- **Peter Stone**
- **all of you!**