



Understanding AI

Foaad Khosmood

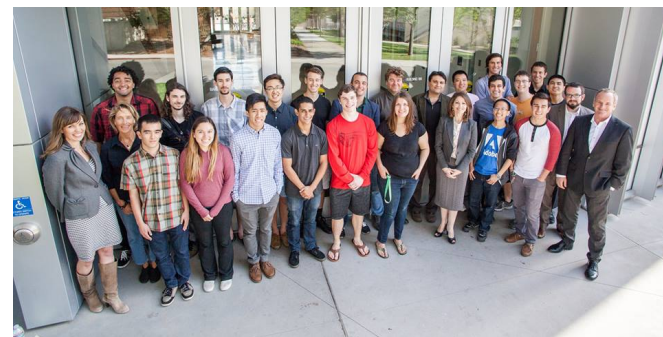
Civil Grand Jurors Association / Oct. 2025



INSTITUTE FOR ADVANCED TECHNOLOGY
AND PUBLIC POLICY

iatpp.calpoly.edu





Institute for Advanced Technology and Public Policy (IATPP)



Foaad Khosmood is a professor of Computer Engineering with specialization in Natural Language Processing and AI. He serves as the research director for the Institute for Advanced Technology & Public Policy.



INSTITUTE FOR ADVANCED TECHNOLOGY
AND PUBLIC POLICY iatpp.calpoly.edu

INSIDE THE NEWSROOM

CalMatters' Digital Democracy fuses journalism, AI and data to supercharge legislative transparency for California



BY SONYA QUICK

APRIL 9, 2024 UPDATED MAY 28, 2025

Republish



CAL POLY
College of Engineering



UNIVERSITY OF CALIFORNIA
SANTA CRUZ

Digital Democracy

- Philanthropically funded research through CalMatters
- Since 2015 / ~\$10M
- Unprecedented tool for Government transparency at the state level
- Uses AI to produce quality searchable records, analysis
- Helps citizens stay informed and organize
- Helps reporters uncover stories at the state legislature
- digitaldemocracy.org

The screenshot displays the Digital Democracy CalMatters website interface. At the top, the logo "DIGITAL DEMOCRACY CALMATTERS" is visible next to a search bar containing the text "Search for bills, hearings, people, and more". Below the header, navigation links for "Issues", "Directories", "Legislators", and "Data & Methodology" are present, along with a "Donate" button. The main content area features a "Hearings" section with the title "Senate Standing Committee on Appropriations" and the date "August 5, 2024". A video player shows a hearing in progress, with a red overlay at the bottom indicating "AB 1814 Ting" and the topic "Law enforcement agencies: facial recognition technology". Below the video is a "Search transcript" bar. To the right of the video, a sidebar provides additional information: a "View Agenda" button, a "CURRENTLY DISCUSSING" section for "Bill AB 1814" (Law enforcement agencies: facial recognition technology) with a "View Bill Detail" link and a "Download Transcript" button, a "COMMITTEE ACTION: PASSED" status, a vote tally (FOR 7, AGAINST 0, NO VOTE 0), a list of participants (Brian Jones, Steven Bradford, Anna Caballero, Angelique Ashby), and a "Show all 7 votes" link. At the bottom of the sidebar, it notes "Previous bill discussion: July 2, 2024" and a "Speakers" section listing "LEGISLATOR Anna Caballero". The main content area also includes a "Welcome" message from Anna Caballero and a transcript snippet from Becca Cramer Mowder.

California government transparency effort expanding to New York



Lt. Gov. Gavin Newsom and former state Sen. Sam Blakeslee discuss their Digital Democracy initiative during a news conference in Sacramento, Calif. | AP Photo/Rich Pedroncelli

By CARLA MARINUCCI
02/07/2017 06:01 AM EST



SN FRANCISCO — A bipartisan group of political leaders from California, including Lt. Gov. Gavin Newsom, is backing the expansion of a pioneering online video platform that allows citizens and journalists easier access to information about their government.



ISSIE LAPOWSKY

BUSINESS FEB 7, 2017 6:01 AM

A Heroic AI Will Let You Spy on Your Lawmakers' Every Word

A new platform uses artificial intelligence to let voters keep track of every official word uttered by state legislators.

Los Angeles Times

EDITORIALS

Better civic engagement is clicks away

A new online initiative offers a blueprint for making government more transparent.

CALIFORNIA IMPACT

Cal Poly and the University of Miami Team Up to Help Newspapers — Using AI

THE SACRAMENTO BEE

Part of the McClatchy Media Network

EDITORIALS

Transparency at the Capitol, online at last

By the Editorial Board

UPDATED MAY 08, 2015 12:01 AM

OPINION

Digital Democracy will empower Californians



By GAVIN NEWSOM and SAM BLAKESLEE
May 6, 2015 at 12:00 a.m.

THE ORANGE COUNTY REGISTER

Digital Democracy 2.0 Launched in April 2024

Palo Alto
ONLINE

Menu

CALMATTERS

CalMatters' Digital Democracy fuses journalism, AI and data to supercharge legislative transparency for California

by CalMatters
April 9, 2024 5:00 am



OPINION

'Digital Democracy' Project Penetrates California's Opaque Political Processes

By Dan Walters, CalMatters Commentary
Published 10 months ago on April 14, 2024

MORE FROM DAN WALTERS

GWIRE

gt INDUSTRY INSIDER

NEWS

AI-Enabled Tool Throws Open the Digital Doors of the State Capitol

An AI-enabled tool from the journalism nonprofit CalMatters is giving access to t

**CAPITOL WEEKLY**
COVERING CALIFORNIA GOVERNMENT AND POLITICS

PODCAST

Game Changer? Calmatters' Digital Democracy project aims to try

The Mercury News

CalMatters launches an immense, updated and user-friendly gold mine of political data that records every dollar and vote

CBS NEWS

SACRAMENTO | News Weather Sports Vir 46°

INVESTIGATIONS

Using new AI, grieving moms discover California lawmakers killed popular fentanyl bill by *not* voting

By Julie Watts, Ryan Sabalow - CalMatters
Updated on: May 2, 2024 / 11:06 AM PDT / CBS News California





Finalist, Harvard Kennedy School: Innovations in American Government Award



The Poynter Journalism Prizes

The Punch Sulzberger Prize for Journalism Innovation

Julie Watts, Ryan Sabalow, Foaad Khosmood

CalMatters and CBS News California

California's Fentanyl Fight

Sponsor: The New York Times

Poynter.50
Journalism. Truth. Democracy.



EDWARD R. MURROW
AWARDS
— 2025 —



CalMatters' Digital Democracy and CBS News collaboration wins Emmy award



BY SONYA QUICK

JUNE 16, 2025

Republish



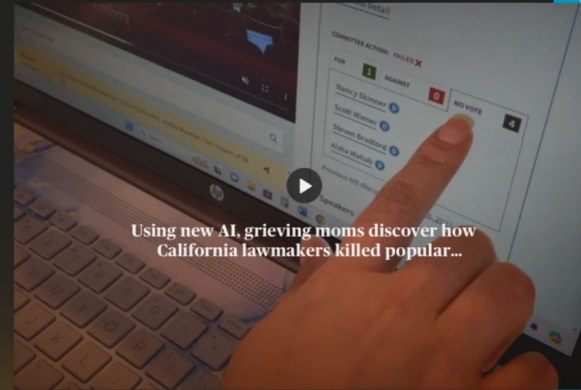
2025 WINNER



SAN FRANCISCO | NORTHERN CALIFORNIA
EMMY® AWARDS

Sameea Kamal, Ryan Sabalow and Foaad Khosmood
(CalMatters' Digital Democracy team), Julie Watts and
Dennis Lopez (CBS News)

Politics & Government News



Using new AI, grieving moms discover how
California lawmakers killed popular...

CALIFORNIA IMPACT

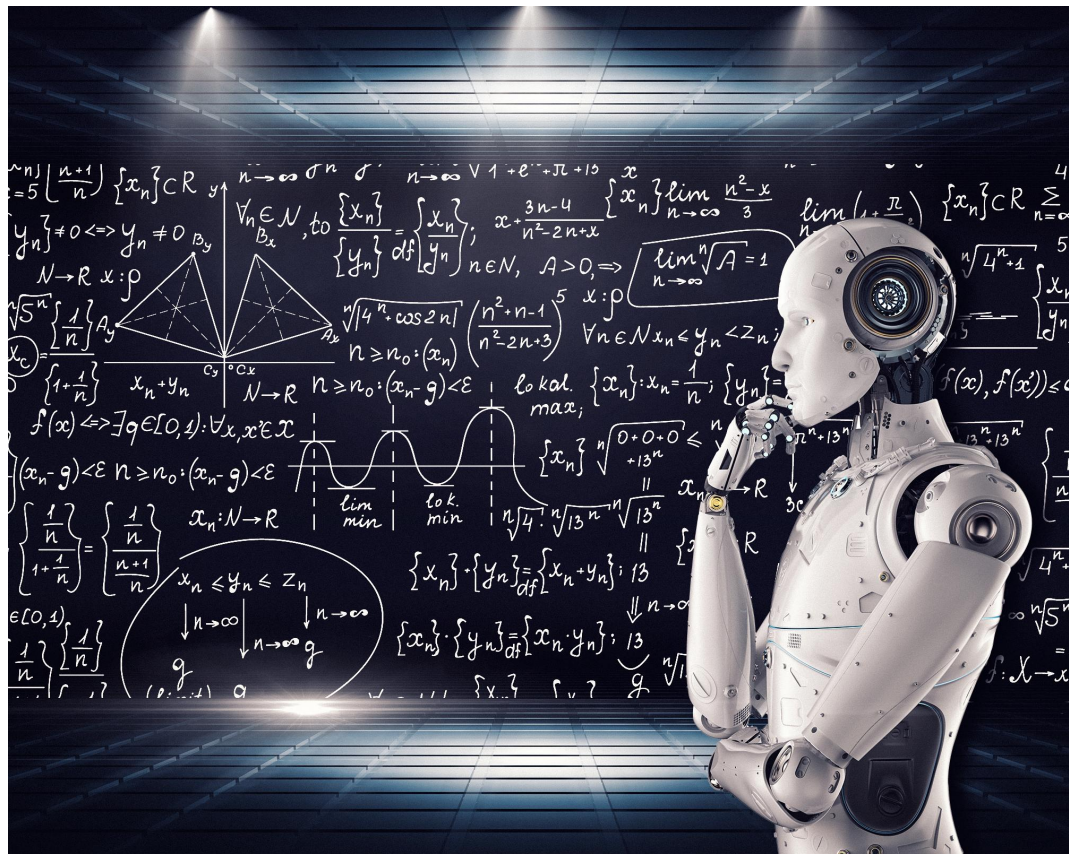
Digital Democracy, Created at Cal Poly, Wins Emmy for Political Reporting



Relevant Eras of AI

(As seen by Foaad)

- The Era of Logic
 - Programmer understands the problem and the steps toward solution
- The Era of Statistical Inference
 - Programmer understands enough of the problem to pick out the important features and possible outcomes, then another, generic program makes a decision based on frequency and prominence of features
- The Era of LLMs
 - Programmer understands little about the substance of the problem/solution.
 - Lots of data has been processed as a generic knowledge base



environment

percepts



sensors

reasoning



decision
making

actions



actuators

E.L.I.Z.A. Talking

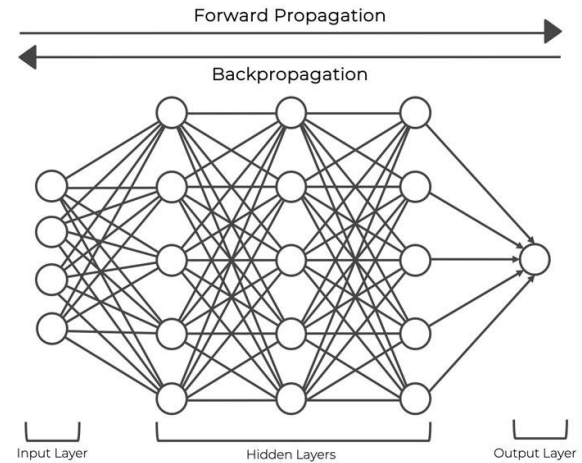
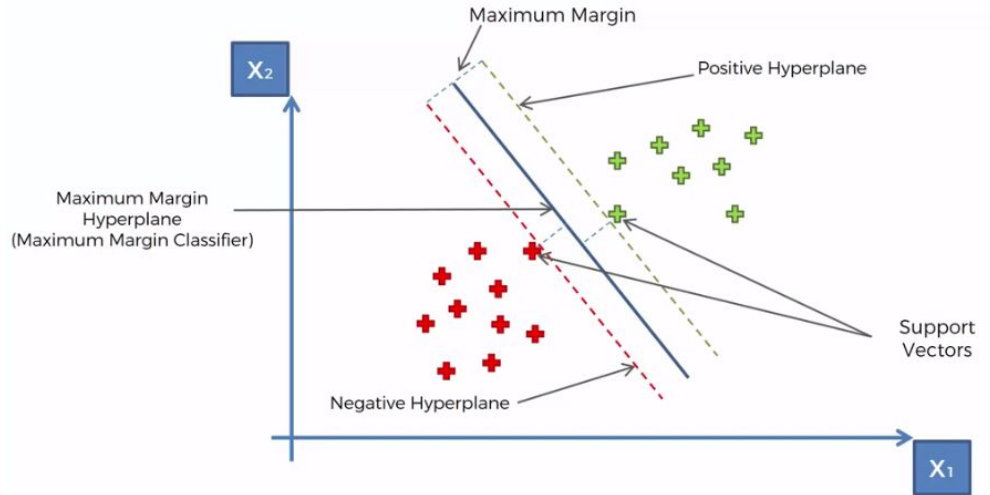
ELIZA

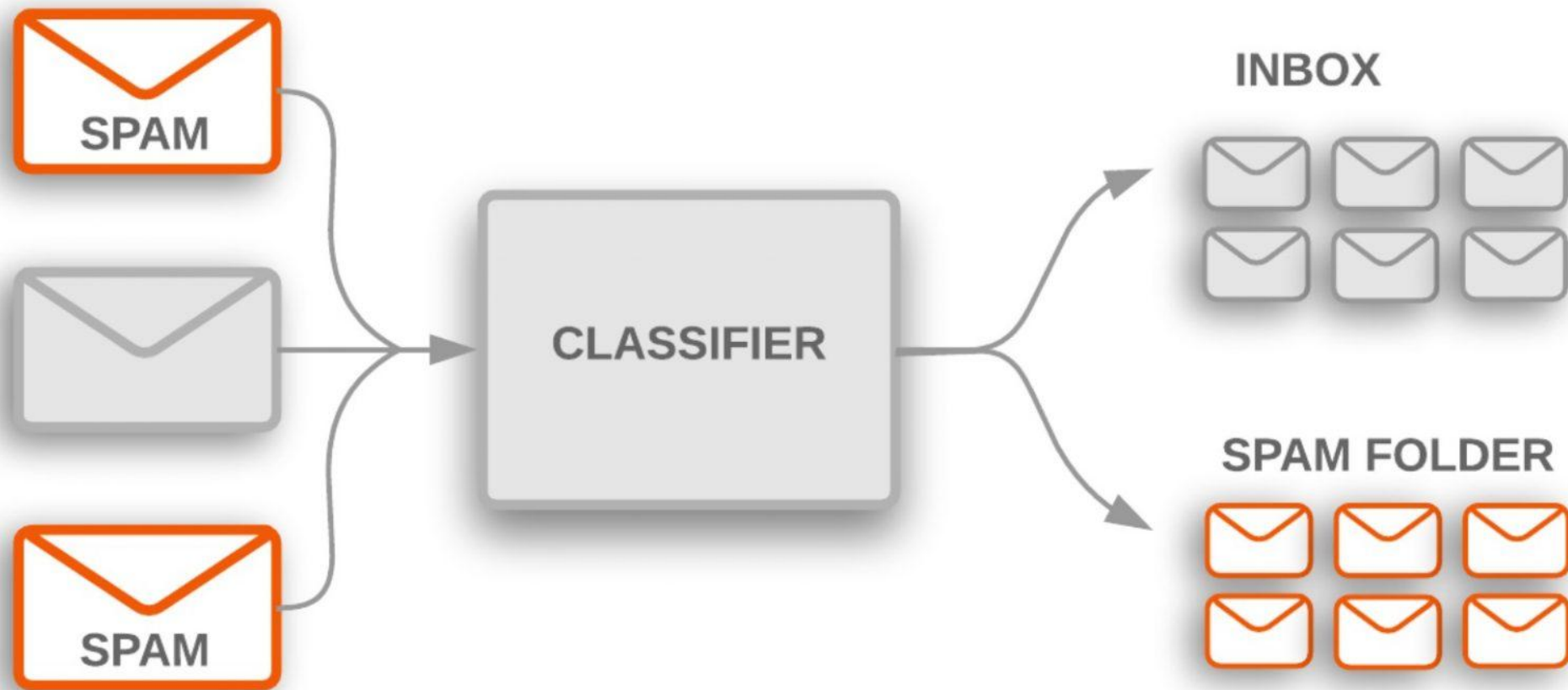
Uses logic

Coded manually



Machine Learning and Neural Nets



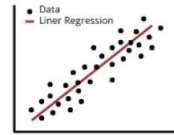


Machine Learning

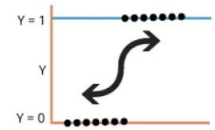
- Uses algorithms
- Requires feature engineering
- Makes statistical predictions

Top 8 Machine Learning Algorithms explained in less than 1 minute each

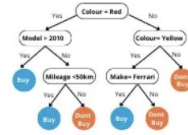
Linear Regression



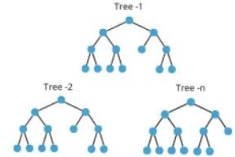
Logistic Regression



Decision Trees



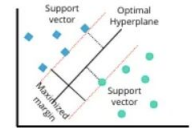
Random Forest



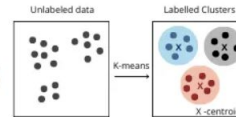
K-Nearest Neighbor



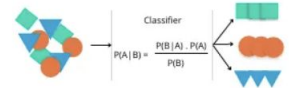
Support Vector Machine



K-Means Clustering



Naïve Bayes



The Bag of Words Representation

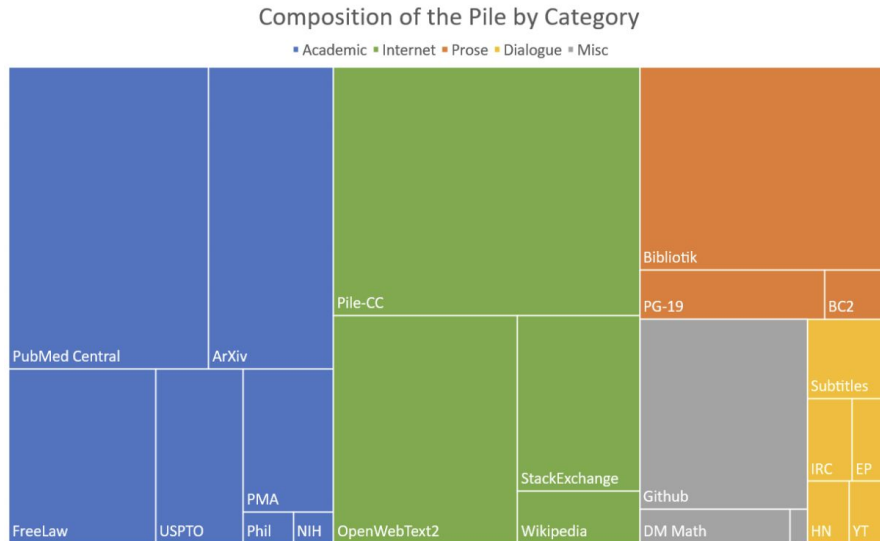
I love this movie! It's sweet, but with satirical humor. The dialogue is great and the adventure scenes are fun... It manages to be whimsical and romantic while laughing at the conventions of the fairy tale genre. I would recommend it to just about anyone. I've seen it several times, and I'm always happy to see it again whenever I have a friend who hasn't seen it yet!



it	6
I	5
the	4
to	3
and	3
seen	2
yet	1
would	1
whimsical	1
times	1
sweet	1
satirical	1
adventure	1
genre	1
fairy	1
humor	1
have	1
great	1
...	...

LLMs

- Work by prediction
- No feature engineering necessary
- Requires large models, developed at great cost



Words!

was would in among and be take more positively her be Ah what o circumstances Lucy to could gentleman the may your press former and Her to calmness to such her the consider have been other be everything Dashwoods herself a her you be people he no The supposed But I clock all know you sunk it as suffer attentions the My Mrs not landau her girl hour till aunt he altering Colonel soon Randalls suffering way in thoughts her my day time have complacency immediately who when spirit in Mrs to her was day and beauty conceal had provided own I either a a father and Chapter had The never transaction idea disappointment give feel satisfied set Captain utmost not been my would minutes any to evening wanted minutes a very of misery to concern thousand these when balance and increasing He but cross of happy suspense wishes that of fine herself were year be after not very he chance had an of her any all caprice it far believed humour say escorted kinder circle_Elinor Ah Knightley honourable himself what am delay on felt but credit if this more out yourself that carry I smallest I know drawings would in interest thing by autumn mahogany there fever his letter that husband state It to have Knightley her aggravation sent ask help to But her Frank and was be was hear to at her rich I or feelings strange invite great not present Bates at literally herself a but exigence taking a that been should all of find here on her that to pause a in severe with he herself April countenance drawn you of had of imaginary the future were consequence is choice independent had recover with her his cannot Mr of have heart you her had tell her disappointment as its sensibility Mrs must wait soon him shall could subject the no Much to an the fine Her and timber do what great would acquaintance said uneasy such smile Without in is always relieve called it the disapproved fire then of be unable farther Mrs her never Perry for all is say make was I about Cowper said observed said that point employed to tolerably moderation eye is had done with be She Me enough or wait Harville while entered having She curricule weight find make vanity is this my two their Broadwood with submit all of and and indeed see to looking my WE a but other this giving

Jane Austen (Bigrams)

She had ere long enough for the pleasure, if woman's side, but the recollection of what is quite a moment, looked so truly loved him honourably and farther.-- I do, and subdued; take disgust in time, why are quite without a few words, but altogether very pretty loud about me! Mr. Emma; and August, and Marianne, Elinor, uniting to convince her first, or Wednesday, the child, a ship. Bates, every leisure enough by the extreme affection and very fine work, he had received a nuncheon at that Miss Woodhouse taken up in the evil before breakfast; the young man who said how unlike it; and she does not be otherwise, continued; remiss, I am -- so rich, the most anxiously attentive, were at my dear, for themselves. Robert Martin, this pattern gown is only return of you were funds of gallantry. In short.

Lord bless you after Captain Harville. Dixon? He looked back from it, and keen, when his evident that any return of concealment where to be assured of Highbury, because, by midsummer, and the wretched. Harriet rejected the same village of his being unwell! He had you. Mr.

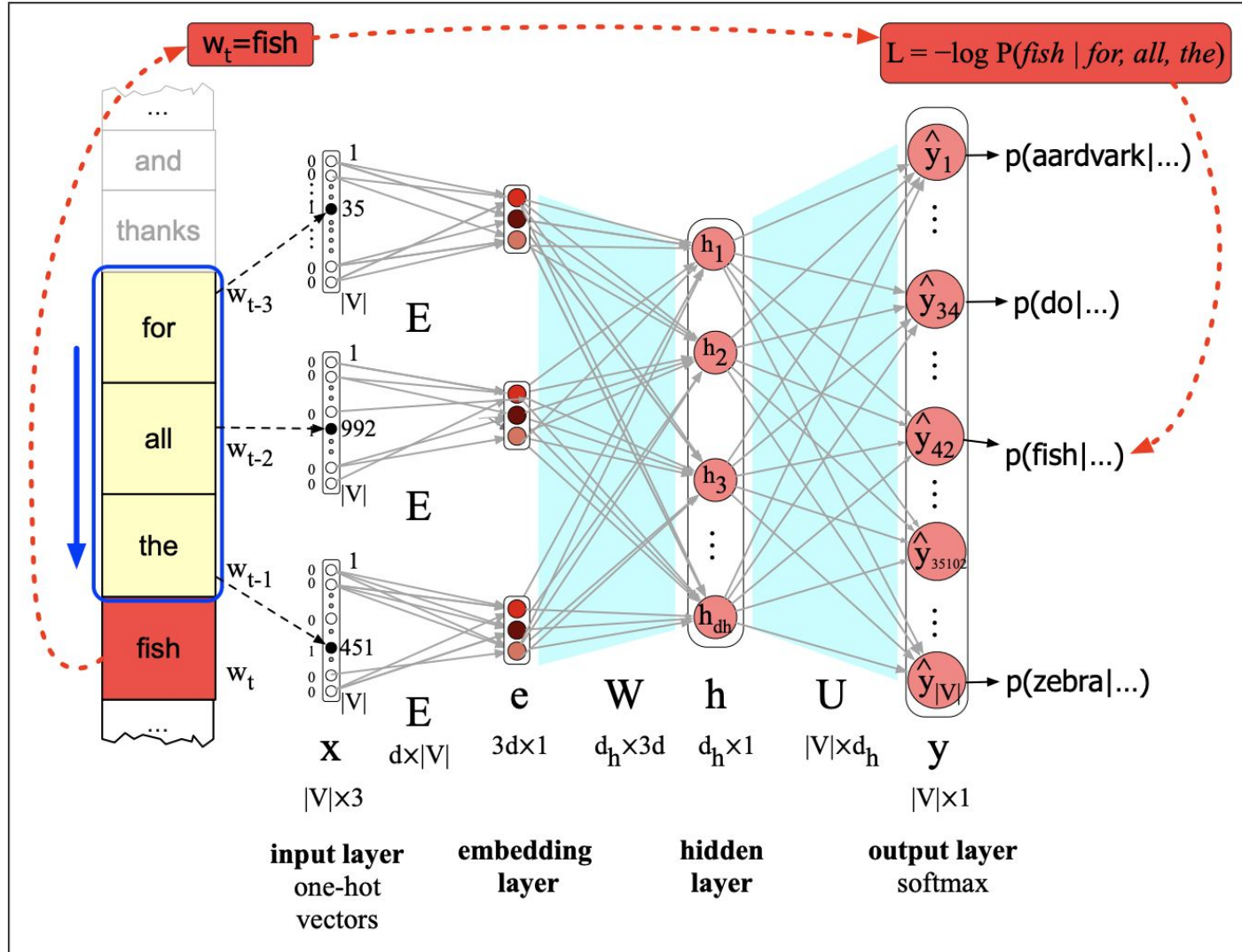
He had none in no delay on first subject of seeing him highly blamable, may long. Ever since. Elinor's speech proclaimed; his manners have a man, and had passed along the baby and when footsteps. how can a very evident.

Austen (Trigrams)

I always forget her look and manner of writing to Willoughby that he felt all the world immediately, and pressed against his heart. She was a good word for me to death. If you mean to be silly if they are things that I shall speak. Jane's second song, however. A Hartfield edition of Shakespeare would have felt the loss of the horses.

She never did run smooth -- I wish Hetty had not been able to turn in? I give you my dear sir, if not openly -- encouraging you to have found the solid so fully supporting the superficial, that _some_ people may not care if it was very well satisfied to consider it with best advantage to the display of greenhouse plants, that you will be!-- None of that circumstance, and of compassionate attachment on each side. There was a bustle, and that you should, I should have seen Mr. Frank Churchill. His looks shewing him not.

That is good for it seems doubtful; and with you to caution and silence, perhaps, by the bye, good humoured smile, and their acquaintance proportionably advanced, he hesitatingly replied, My fortune was never any burst of my friend Mrs Rooke let me talk to one another to the passing hour. It will not like strange voices; and though I have of misconduct, and decent enough to desire. Emma had formerly been so resolutely encountered but in general. Good heavens, Charles Hayter; a look of surprise.-- No, these words, spoken with such screams as reached your brother was civilly offering a seat for her to do it. When your father and mother are quite in fairy - land!-- Such a transformation!-- Must not compliment, said he, and I was considered with a voice rather of frightened, enquiring companions, than she could send us home in every way.



TECH · A.I.

Iconic leftist intellectual Noam Chomsky says chatbots are ‘marvels of machine learning’ but also the banality of evil, rebooted

BY TRISTAN BOVE

March 8, 2023 at 12:01 PM PST



Intelligencer

ARTIFICIAL INTELLIGENCE | MAR. 1, 2023

You Are Not a Parrot

And a chatbot is not a human. And a linguist named Emily M. Bender is very worried what will happen when we forget this.

By Elizabeth Weil, a features writer at New York



WIRED

BACKCHANNEL BUSINESS CULTURE GEAR IDEAS SCIENCE SECURITY

SIGN IN

SUBSCRIBE

PIA CERER

BUSINESS JAN 26, 2023 7:00 AM

ChatGPT Is Coming for Classrooms. Don't Panic

The AI chatbot has stoked fears of an educational apocalypse. Some teachers see it as the reboot education sorely needs.



Lessons for Jurors

- Ask for evidence!
 - Verify evidence!
- Summaries tend to make up facts
- Do not assume the landscape / be misled by overwhelming numbers
- Do not share confidential knowledge

Questions?

foaad@calpoly.edu

foaad.net

iatpp.calpoly.edu

