

ADVANCED SYMBOLICS INC.

Pulling back the Curtain on Al Polling

Kenton White

Secret

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Representative Samples











Jesse Bridgewater PhD • 2nd

VP of Data Science at Livongo [hiring data scientists] San Francisco Bay Area Current: VP of Data Science at Livongo Connect

Connect

Connect

Connect

Connect



Revanth Pentyala • 2nd Sr. Data Scientist

San Francisco Bay Area Current: Senior **Data** Scientist at 24 Hour Fitness

& Ron Van Holst and Gabriel Wainer are shared connections



Poornima Siddabattuni • 3rd

Data Leader - hiring Data Scientists! Hyderabad Area, India

Alex Allan • 2nd in

Co-founder at Kortical - The automated machine learning platform for professional d... London, United Kingdom

Current: Co-founder & CTO at Kortical - ...to traditional data science approaches. Instead...

Kevin V. • 2nd

Vice President, Product Management | Alternative Assets | Data Science | Nanotech... Greater Boston Area

Past: Principal Data Scientist — Devonshire Investors at Fidelity Investments

& Aaron Zilkie, Shane Eaton, and 2 other shared connections



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Ali Haidar • 2nd Data Scientist at Shopify Ottawa, Canada Area

Past: Data Scientist at Canadian Federal Government

& Shahzad Khan, PhD is a shared connection



How far are you from Trump?





Twitter is just Journalists and Academics There are only Bots on Twitter My Grandmother isn't on Facebook Young people are leaving Facebook

cals recombine without escaping from the liquid cage.

(c) The molecules dissociate and escape from the cage. In this case we would not expect them to move more than a few molecular diameters through the dense medium before being thermalized.

In accordance with the notation introduced by Burton, Magee, and Samuel,²² the molecules following

22 Burton, Magee, and Samuel, J. Chem. Phys. 20, 760 (1952).

In conclusion we would like to emphasize that the qualitative result of this section is not critically dependent on the exact values of the physical parameters used. However, this treatment is classical, and a correct treatment must be wave mechanical; therefore the result of this section cannot be taken as an *a priori* theoretical prediction. The success of the radical diffusion model given above lends some plausibility to the occurrence of electron capture as described by this crude calculation. Further work is clearly needed.

Metropolis-Hastings Algorithm

THE JOURNAL OF CHEMICAL PHYSICS VOLUME 21, NUMBER 6 JUNE, 1953

Equation of State Calculations by Fast Computing Machines

NICHOLAS METROPOLIS, ARIANNA W. ROSENBLUTH, MARSHALL N. ROSENBLUTH, AND AUGUSTA H. TELLER, Los Alamos Scientific Laboratory, Los Alamos, New Mexico

AND

EDWARD TELLER,* Department of Physics, University of Chicago, Chicago, Illinois (Received March 6, 1953)

A general method, suitable for fast computing machines, for investigating such properties as equations of state for substances consisting of interacting individual molecules is described. The method consists of a modified Monte Carlo integration over configuration space. Results for the two-dimensional rigid-sphere system have been obtained on the Los Alamos MANIAC and are presented here. These results are compared to the free volume equation of state and to a four-term virial coefficient expansion.

I. INTRODUCTION

THE purpose of this paper is to describe a general method, suitable for fast electronic computing machines, of calculating the properties of any substance which may be considered as composed of interacting individual molecules. Classical statistics is assumed, only two-body forces are considered, and the potential field of a molecule is assumed spherically symmetric. These are the usual assumptions made in theories of liquids. Subject to the above assumptions, the method is not restricted to any range of temperature or density. This paper will also present results of a preliminary twodimensional calculation for the rigid-sphere system. Work on the two-dimensional case with a Lennard-Jones potential is in progress and will be reported in a later paper. Also, the problem in three dimensions is

II. THE GENERAL METHOD FOR AN ARBITRARY POTENTIAL BETWEEN THE PARTICLES

In order to reduce the problem to a feasible size for numerical work, we can, of course, consider only a finite number of particles. This number N may be as high as several hundred. Our system consists of a square† containing N particles. In order to minimize the surface effects we suppose the complete substance to be periodic, consisting of many such squares, each square containing N particles in the same configuration. Thus we define d_{AB} , the minimum distance between particles Aand B, as the shortest distance between A and any of the particles B, of which there is one in each of the squares which comprise the complete substance. If we have a potential which falls off rapidly with distance, there will be at most one of the distances AB which can make a substantial contribution; hence we need

$$A(x \to x') = \min\left(1, \frac{P(x')}{P(x)} \frac{g(x' \to x)}{g(x \to x')}\right)$$

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Post Stratification



Secret

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Probabilities

How do you know...

Where a person lives?

How old a person is?

What is a person's ethnicity?

How much a person earns?



Meet Linda

Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations. Which is more probable?

1. Linda is a bank teller.

2. Linda is a bank teller and is active in the feminist movement.



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BEING A GOOD

IS 3% TALENT 97% NOT BEING DISTRACTED BY THE INTERNET

20

Classifiers ASI Uses

Baby name tables Genealogical databases **Avatar** Geotags **Pronoun Analysis Regional Identification** Word Usage Job Descriptions / Titles

	101001406	65	Female	0.00061501
	101001406	25-34	Female	0.00082001
	101001406	35-44	Female	0.00082001
	101001406	45-54	Female	0.00071751
	101001406	55-64	Female	0.00061501
	101001406	25	Male	0.13653137
	101001406	65	Male	0.17117671
	101001406	25-34	Male	0.12576876
	101001406	35-44	Male	0.13786388
	101001406	45-54	Male	0.18880689
	101001406	55-64	Male	0.23595736
	101885355	25	Female	0.00200501
	101885355	65	Female	0
	101885355	25-34	Female	0.00130326
	101885355	35-44	Female	0.0006015
	101885355	45-54	Female	0.00010025
	101885355	55-64	Female	0
	101885355	25	Male	0.64090226
	101885355	65	Male	0.00681704
	101885355	25-34	Male	0.19789474
	101885355	35-44	Male	0.09423559

Person 1

Person 2

Secret

3

Objective Measures

More than 1 way to see things...



Engagement

How many people are discussing the topic

This is not everyone in the sample

Like response rate, if people did not feel obligated to answer

Focus on objective issues and not subjective opinion

Engagement of people discussing COVID and the economy

NOT

Engagement of people feeling the COVID is responsible for economic hardships

How does Polly understand? — Topic Models

"Arts"	"Budgets"	"Children"	"Education"
NEW	MILLION	CHILDREN	SCHOOL
FILM	TAX	WOMEN	STUDENTS
SHOW	PROGRAM	PEOPLE	SCHOOLS
MUSIC	BUDGET	CHILD	EDUCATION
MOVIE	BILLION	YEARS	TEACHERS
PLAY	FEDERAL	FAMILIES	HIGH
MUSICAL	YEAR	WORK	PUBLIC
BEST	SPENDING	PARENTS	TEACHER
ACTOR	NEW	SAYS	BENNETT
FIRST	STATE	FAMILY	MANIGAT
YOBK	PLAN	WELFARE	NAMPHY
OPERA	MONEY	MEN	STATE
THEATER	PROGRAMS	PERCENT	PRESIDENT
ACTRESS	GOVERNMENT	CARE	ELEMENTARY
LUVE	CONGRESS		

The William Randolph Hearst Foundation will give \$1.25 million to Lincoln Center, Metropolitan Opera Co., New York Philharmonic and Juilliard School. "Our board felt that we had a real opportunity to make a mark on the future of the performing arts with these grants an act every bit as important as our traditional areas of support in health, medical research, education and the social services," Hearst Foundation President Randolph A. Hearst said Monday in announcing the grants. Lincoln Center's share will be \$200,000 for its new building, which will house young artists and provide new public facilities. The Metropolitan Opera Co. and New York Philharmonic will receive \$400,000 each. The Juilliard School, where music and the performing arts are taught, will get \$250,000. The Hearst Foundation, a leading supporter of the Lincoln Center Consolidated Corporate Fund, will make its usual annual \$100,000 donation, too.

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Polly Decision Matrix

Polly has to decide if a message is on topic.

HO: The message is on topic

HA: The message is off topic

		Decision		
		Reject H0	Fail to Reject H0	
ual	H0 True	Type 1 Error (False Negative) Miss an on topic message	Correct Decision	
Act	HA True	Correct Decision	Type 2 Error (False Positive) Collect an off topic message	

Overfitting

It is tempting to reduce both Type 1 and Typ2 errors to 0

This is called over fitting

When both Type 1 and Type 2 errors are 0 there is no learning

Instead Polly has just memorized the training data

We must decide which error we will minimize, Type 1 or Type 2?



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Learning



*i*POLITICS POSTMEDIA P DISRUPTION tvo cpac **EWALRUS** Polly has accurately predicted:

- 2015 Canadian Federal Election
- 2016 BREXIT Referendum
- 2016 US Presidential Election
- 2018 Ontario Provincial Election
- 2018 U.S. Midterm Election
- 2019 Canadian Federal Election
- 2019 Alberta Provincial Election
- 2019 Manitoba Provincial Election
- 2020 BC Provincial Election
- 2020 Saskatchewan Provincial Election
- 2020 US Presidential Election



Party	Forecast	Actual	Error
NDP	47.7%	48.1%	+0.4%
Liberals	33.8%	33.2%	-0.6%
Greens	15.1%	13.0%	-2.1%
Other	3.4%	5.7%	+1.7%
NDP Seats	58	57	+1

Region	GP	Libs	NDP	Other Total
BNWC	0.8%	-2.3%	2.2%	-0.8%
Fraser Valley	-1.7%	-5.5%	3.5%	3.7%
Kootenays	4.7%	0.7%	-6.1%	0.6%
North	2.3%	2.9%	-9.4%	4.2%
NVSC	6.7%	-2.7%	-2.4%	-1.6%
OKSB	0.6%	0.8%	-0.3%	
Richmond	-0.5%	3.3%	-2.1%	
Surrey	-0.4%	3.2%	-1.9%	-0.9%
Thompson	-1.8%	4.2%	-2.7%	0.3%
Van Island	8.5%	-6.5%	-1.5%	-0.5%
Vancouver	3.4%	1.7%	-2.8%	-2.3%
Victoria	7.8%	-6.1%	1.7%	-3.4%
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A Priori Model

- Achrekar, Gandhe, Lazarus, Yu, Liu 2012
 - VARX forecast of seasonal influenza



A Priori Model

One Step Look Ahead



References

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