

Motivasjon for grunnkurset i statistikk

Hva gjør statistikere?

GEOGRAPHICAL AND STATISTICAL TABLES.

MOUNTAINS IN THE ORDER OF THEIR HEIGHT.

AMERICA.		EUROPE.		ASIA.		AFRICA.	
First Rank.	Feet.	First Rank.	Feet.	First Rank.	Feet.	First Rank.	Feet.
Sorata, Andes,	25,400	Mont Blanc, Alps,	15,700	Chumularee, Hin.,	29,000	Moons Loos, Soudan, Is. 15,000	
Himant,	24,400	Mont Rosa,	15,300	Dhawalageri, "	28,500	Samen, Abyssinia,	15,000
Chimborazo,	23,000	Matterhorn, Alps,	14,800	Hindo Koosh,	20,000		
Sierra Santa Maria,	19,100	Schreckhorn,	13,400	Belur Tag, highest,	20,000		
Antisana, Andes,	18,100	Orler Peak,	12,800	—Plateau of Pamir,	15,600		
Cotopaxi, vol.	18,000	Simpson,	11,700	Elburus, Caucasus,	18,600		
Atacama,	18,000	Sierra Nevada, Sp'n,	11,500	Great Ararat, Arm.,	17,800		
Popocatepetl, Mex.,	17,000	Maladetta, Pyrenes,	11,500	Kiyatschy, Kans.,	15,700		
Yliniza, Andes,	16,000	Mont Perlu,	11,000	Pessoumbra, Sumatra,	15,200		
Mt. Brown, Chip. Mts.,	16,000	Velan, St. Bern. Alps,	10,800				
Pichincha, Andes,	15,900	Mt. Etna, Sicily,	10,800				
Tolma,	15,900	St. Gothard, Alps,	10,600				
Cordillera of Gua-temala,	15,000						
Mt. Fairweather,	14,700						
James Peak, Chip. Mts.,	11,500						
Grand Sorrania, Hocht,	9,000						
Sierra de Cobre, Cuba,	9,000						
Silla de Carrizacas,	8,600						
Organ Peak, Brazil,	7,400						
Blue Mts., Jamaica,	7,300						
Black Mts., N. C.,	6,476						
Mt. Washington, N. H.,	6,200						
Ronn Mt. N. C.,	6,038						
Katabidin, Me.,	5,300						
Mt. Marcy, N. Y.,	5,300						
Mansfield Mt. Gr. Mts.,	4,300						
Outer Peak, Virg.,	3,700						
Came's Rump, Gr. Mts.,	4,100						
Killington Peak,	3,900						
Round Top, Catskill,	3,800						
High Peak,	3,700						

PRINCIPAL CANALS OF THE WORLD.

Canal	Length, Miles.	Width, Feet.	Depth, Feet.	No. Locks.	Span, Feet.
Portland to Sebago Pond,	20	30	3	25	
Boston to Lowell,	27	30	3	104	
Providence to Worcester,	45	34	4	48	
Northampton to New Haven,	78	40	4	60	220
Albany to Buffalo,	363	60	4	83	668
Albany to Whitehall,	97	40	4	18	381
Erie C. at Utica, to Chautauq R.,	85				
Erie Canal at Rome to Black R.,	38				
Erie C. at Syracuse to L. Ontario,	38				
Hudson R. to Lackawanna, Pa.,	83				
Rochester to Allegany R.,	119				
Delaware R. to Raritan R.,	42				
Hudson R. to Delaware R.,	101	32	4	915	
Columbia, Susq. R. to Allegany M.,	172	40	4	108	920
Allegany Mts. to Pittsburgh,	104	40	4	66	1184
Canal along Susque. R., from Havre de Grace to Lackawanna,	156				861
—Branch west to Bellefonte,	89				40
Bristol to Easton,	59	40	5	21	164
Ohio R. at Beaver, to Shenango R.,	73				61
Philadelphia to Reading and Port Carbon,	108	36	3	125	620
—Branch to Susquehanna R.,	82	36	4	95	119
Easton along Lehigh R.,	84				
Delaware R. to Honesdale,	25				
Delaware R. to Chesapeake Bay,	13	66	10	4	12
Potomac R., N. W. to Hancock,	136	48	5	407	
James R. Richmond to Kanawha R.,	175				
Canal through Dismal Swamp,	23	40	6	6	104
Cleveland to Ohio R.,	307	40	4	49	500
Ohio R. at Cin. to Maumee R.,	178				
Ohio Canal to Beaver R. Pa.,	85				
Walosh R. to Lake Erie,	187				
Ohio R. to Whitewater R.,	30				
Lake Michigan to Illinois R.,	106				
Cooper R. to Santee R.,	22	32	4	13	
Around Muscle Shoals, Tenn. R.,	33				
New Orleans to Berwick Bay,	85				
Ottawa R. to Lake Erie,	135				
Lake Ontario to Lake Erie,	42				

ANTARCTIC REGIONS.

Erebus, volcano,	12,400
Terror,	12,000

RIVERS IN THE ORDER OF THEIR LENGTH.

AMERICA.		E. CONTINENT.	
First Rank.	Length, Miles.	First Rank.	Length, Miles.
Amazon,	4,000	Yang-tze-king,	4,300
Mississippi,	3,100	Nile,	2,500
Missouri to mouth of Mississippi,	4,491	Volga,	2,400
St. Lawrence & Lakes,	2,000	Amor,	2,000
Arkansas,	2,000	Yenesei,	2,000
La Plata & Paraguay,	2,000	Oby,	2,000
Rio del Norte,	2,000	Lena,	2,000
Mackenzie's River,	2,000	May-king or Cambo,	2,000
Orinoco—Churchill,	1,500	Danube,	1,800
Red R.—Platte R.,	1,300	Indus,	1,600
Ohio alone,	1,300	Congo or Zaïre, (?)	1,500
St. Francisco, Brazil,	1,300	Euphrates,	1,400
Tennessee,	1,300	Ganges,	1,300
Yellowstone,	1,100	Iravady,	1,200
Colorado,	1,000	Dnyeper,	1,100
Burrampooter,	1,000	Gihon,	1,000
Columbia,	980	Zambeze,	1,000
Magdalena,	700		
Cumberland,	600		
Savannah,	600		
Rio Brasos,	600		
Alabama,	500		
Apalachicola,	500		
Potomac—James,	500		
Osage—Ottawa,	500		
Walash,	500		
Susquehanna,	500		
Great Kanawha,	450		
Pedee—Santee,	450		
Rio Trinity—Tombigbee,	450		
Connecticut,	400		
Illinois—Wisconsin,	400		
Altamaha,	400		
Rosnoke—Sabine,	350		
York—St. John's,	350		
Hudson,	350		
Delaware—Flint,	300		
Monongahela,	270		
Cape Fear—Pencobscot,	250		
Yazoo,	250		
Shenandoah—Pascagoula,	200		
Merrimack,	200		
Licking, Ky.,	200		
Kenbecoc—Ogechee,	100		
Scioto,	100		
Andræozogin—Schuykill,	150		
Mohawk—Genesee,	140		
Rappahannock,	130		
Houston—Miami,	120		
Patuxent,	110		

LAKE IN THE ORDER OF THEIR SIZE.

AMERICA.		E. CONTINENT.	
Length, Miles.	Area, Sq. Miles.	Length, Miles.	Area, Sq. Miles.
Superior,	400	32,000	900
Michigan,	320	70,224,000	1,000
Huron,	240	80,204,000	1,000
Slave Lake,	270	20,000	
Winnipeg,	240	10,000	
Erie,	240	40,960	84
Ontario,	180	35,630	500
Maracaybo, N. G.,	100	70,500	
Nicaragua, Grant,	130	40,500	120
Titicaca, Bolivia,	160	30,400	3,500
Lake of the Woods,	70	40,250	
Leon, Guatemala,	50	30,120	
Ponchartrain, La.,	45	25,100	16
Ontida, N. Y.,	22	6,656	
Champlain,	120	1-10	500
St. Clair,	30	18	360
Seneca,	40	3	100
Cayuga,	40	3	100
George,	36	2	80
Black Lake,	20	2	25
Crooked Lake,	22	11	30
Canandaigua,	18	11	25
Chautauque,	18	1-3	1,291
Caspian Sea,	760	200	160,000
Tchad, Soudan,	300	150	30,000
Sea of Aral,	250	120	20,000
Baikal, Siberia,	400	60	30,000
Ladoga, Russia,	125	70	6,200
Onega, "	130	45	2,280
Wener, Sweden,	90	36	2,100
Oroonoea, Persia,	80	20	2,000
Dembea or Tzana, Abyss.,	60	30	1,750
Saima, Finland,	100	10	1,600
Van, Armenia,	80	10	1,000
Peipus, Russia,	80	10	840
Wetter, Sweden,	82	16	830
Malar, "	70	2-20	700
Asphaltites of Dead Sea,	50	15	750
Moson, Norway,	80	15	700
Enara, Lapland,	60	10	650
Bielo-Ozero, Russia,	30	20	530
Neusiedler, Austria,	50	10	500
Geneva, Switzerland,	47	9-10	320
Constance, "	40	11-20	290
Imen, Russia,	40	12	275
Ulea, Finland,	38	11	239
Hielmar, Sweden,	38	1-12	200
Garla, Italy,	35	4-12	190
Neagh, Ireland,	17	9	160
Maggiore, Italy,	48	4-7	132
Balaton, Hungary,	50	10	132
Neuchâtel, Switzerland,	23	6	100
Haarlem, Holland,	15	8	100
Erne, Ireland,	40	1	60
Zurich, Switzerland,	24	1-3	60
Lucerne, "	25	43	600
Lononi, Scotland,	24	71	60-240

EASTERN CONTINENT.

Canal	Length, Miles.	Width, Feet.
Imperial Canal, Hang-tschou, to R. Yubo and Pekin,	650	200
Khalis Canal, along R. Tigris,	70	
Nahrwan, " (disused)	400	250
R. Aire at Leeds to R. Mersey and Liverpool,	127	42
Birmingham to R. Mersey and Liverpool,	50	20
R. Trent to R. Mersey and Liverpool,	93	20
Manchester to R. Mersey and Liverpool,	27	
R. Thames at London to Birmingham,	100	
R. Thames and Kennet to R. Avon, and R. Severn,	57	44
Oxford to London and Birmingham Canal,	44	
R. Thames by canal and streams to Portsmouth,	64	
R. Forth to R. Clyde,	39	120
Caledonian C. and Lakes, Murray Firth to Loch Linn,	62	40
Grand Canal from R. Liffey to R. Shannon,	62	40
Royal Canal from R. Liffey to R. Shannon,	68	44
Gottenburg, by canals and lakes, E. to Baltic Sea,	300	
R. Volga to Lakes Imen, Onega and Ladoga,	5,000	
R. Volga to Northern Dwina R. and White Sea,	1,500	
R. Volga to R. Don, and Black Sea,	below	
R. Vistula to Rivers Oder, Spree, Havel, and Elbe,	77	
Kiel, on the Baltic Sea, to R. Eyder,	23	107
Amsterdam to the Helder, for ships,	70	125
R. Meuse to R. Moselle,	178	
R. Garonne to the Mediterranean Sea,	150	64
R. Loire, to R. Seine,	78	32
R. Saone to R. Loire,	72	48
Brest to Nantes,	218	
R. Rhone to R. Rhine (3 sections of 4),	300	
Whole length of Canals,	831	
Imperial Canal along R. Ebro,	66	
Canal of Castile,	77	
Alexandria to R. Nile,	48	200



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For Today's Graduate, Just One Word: Statistics

MOUNTAIN VIEW, Calif. — At Harvard, Carrie Grimes majored in anthropology and archaeology and ventured to places like Honduras, where she studied Mayan settlement patterns by mapping where artifacts were found. But she was drawn to what she calls “all the computer and math stuff” that was part of the job.

[Enlarge This Image](#)



Thor Swift for The New York Times

Carrie Grimes, senior staff engineer at Google, uses statistical analysis of data to help improve the company's search engine.

“People think of field archaeology as Indiana Jones, but much of what you really do is data analysis,” she said.

Now Ms. Grimes does a different kind of digging. She works at [Google](#), where she uses statistical analysis of mounds of data to come up with ways to improve its search engine.

Ms. Grimes is an Internet-age statistician, one of many who are changing the image of the profession as a place for dronish number nerds. They are finding themselves increasingly in demand — and even cool.

“I keep saying that the sexy job in the next 10 years will be statisticians,” said Hal Varian, chief economist at Google. “And I’m not kidding.”

The rising stature of statisticians, who can earn \$125,000 at top companies in their first year after getting a doctorate, is a byproduct of the recent explosion of digital data. In field after field, computing and the Web are

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THE
SESSIONS
COMING SOON

"I keep saying that the sexy job in the next years will be statisticians," says chief economist at Google.

"And I'm not kidding."

Multimedia



PH.D. in computer science with focus on artificial intelligence and text analytics, M.I.T.

CAREER He is a research scientist at I.B.M., who uses computing and modeling to extract knowledge patterns from text, video and audio data.

Jon Kleinberg, 37



EDUCATION Bachelor's degree in computer science, Cornell; Ph.D. in computer science, M.I.T.; a MacArthur Fellow.

CAREER He is a professor of computer science at Cornell who mines huge data sets on the Web to explore social behavior. Recent work includes tracking the "news cycle" — the rise, spread and decline of news stories and issues.

Graphic

Data Sleuths in an Internet Age



“We’ re rapidly entering a world where everything can be monitored and measured. But the big problem is going to be the ability of humans to use, analyze and make sense of the data.”

– Erik Brynjolfsson, MIT



NATE SILVER ON
WHAT OBAMA SHOULD
DO NEXT, P. 44

DON'T MOCK THE
ARTISANAL PICKLE
MAKERS, P. 14

A NANNY'S VIEW
OF THE WORLD,
P. 47

MANAGEMENT
TIPS FROM 'DOWNTON
ABBEY,' P. 52

GREECE CONFRONTS
ITS SPARTAN
FUTURE, P. 38

*"It's the not
doing it
that's scary!"
Sima Arianna,
P. 12*

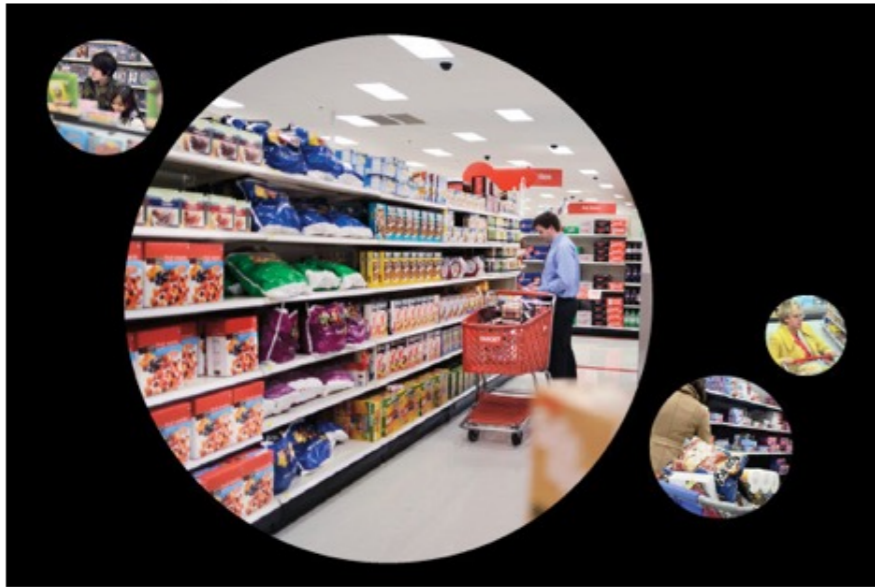
The New York Times Magazine

February 19, 2012



How your shopping habits reveal even the most personal information. By Charles Duhigg

How Companies Learn Your Secrets



Antonio Bolfo/Reportage for The New York Times

Andrew Pole had just started working as a statistician for Target in 2002, when two colleagues from the marketing department stopped by his desk to ask an odd question: "If we wanted to figure out if a customer is pregnant, even if she didn't want us to know, can you do that?"

Pole has a master's degree in statistics and another in economics, and has been obsessed with the intersection of data and human behavior most of his life. His parents were teachers in North Dakota, and while other kids were going to 4-H, Pole was doing algebra and writing computer programs. "The stereotype of a math nerd is true," he told me when I spoke with him last year. "I kind of like going out and evangelizing analytics."

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THE WAY WAY BACK WATCH TRAILER

Multimedia



TimesCast | Retailers' Predictions



About a year after Pole created his pregnancy-prediction model, a man walked into a Target outside Minneapolis and demanded to see the manager. He was clutching coupons that had been sent to his daughter, and he was angry, according to an employee who participated in the conversation.

"My daughter got this in the mail!" he said. "She's still in high school, and you're sending her coupons for baby clothes and cribs? Are you trying to encourage her to get pregnant?"

The manager didn't have any idea what the man was talking about. He looked at the mailer. Sure enough, it was addressed to the man's daughter and contained advertisements for maternity clothing, nursery furniture and pictures of smiling infants. The manager apologized and then called a few days later to apologize again.

On the phone, though, the father was somewhat abashed. "I had a talk with my daughter," he said. "It turns out there's been some activities in my house I haven't been completely aware of. She's due in August. I owe you an apology."

Anbefalingssystemer

Hvilken film skal
vi se?

Hvilken bok?

Hvilken sang?



Statistisk maskinoversettelse

Maskinoversettelse

- Maskinoversettelse er automatisk oversettelse av tekst fra et språk til et annet
- Første forsøk på 1950-tallet, mellom engelsk og russisk
 - ▶ De første systemene var regelbaserte, og ganske dårlige
- På 1990-tallet begynte særlig IBM å forske på statistiske rammeverk
 - ▶ De siste årene har dette arbeidet ført til systemer som fungerer (særlig pga Google)
- før: mennesker prøvde å hardkode regler for alle mulige språk og variasjoner
- nå: maskiner prøver å lære sammenhenger mellom språk av seg selv

Parallell tekst

- 1 Resumption of the session
 - 2 I declare resumed the session of the European Parliament adjourned on Friday 17 December 1999, and I would like once again to wish you a happy new year in the hope that you enjoyed a pleasant festive period .
 - 3 Although , as you will have seen , the dreaded ' millennium bug ' failed to materialise , still the people in a number of countries suffered a series of natural disasters that truly were dreadful .
 - 4 You have requested a debate on this subject in the course of the next few days , during this part - session .
 - 5 In the meantime , I should like to observe a minute ' s silence , as a number of Members have requested , on behalf of all the victims concerned , particularly those of the terrible storms , in the various countries of the European Union .
 - 6 Please rise , then , for this minute ' s silence .
 - 7 (The House rose and observed a minute ' s silence)
 - 8 Madam President , on a point of order .
 - 9 You will be aware from the press and television that there have been a number of bomb explosions and killings in Sri Lanka .
 - 10 One of the people assassinated very recently in Sri Lanka was Mr Kumar Ponnambalam , who had visited the European Parliament just a few months ago .
 - 11 Would it be appropriate for you , Madam President , to write a letter to the Sri Lankan President expressing Parliament 's regret at his and the other violent deaths in Sri Lanka and urging her to do everything she possibly can to seek a peaceful reconciliation to a very difficult situation ?
 - 12 Yes , Mr Evans , I feel an initiative of the type you have just suggested would be entirely appropriate .
- 1 Återupptagande av sessionen
 - 2 Jag förklarar Europaparlamentets session återupptagen efter avbrottet den 17 december . Jag vill på nytt önska er ett gott nytt år och jag hoppas att ni haft en trevlig semester .
 - 3 Som ni kunnat konstatera ägde " _den_stora_är_2000_-_buggen_" aldrig rum . Däremot har invånarna i ett antal av våra medlemsländer drabbats av naturkatastrofer som verkligen varit förskräckliga .
 - 4 Ni har begärt en debatt i ämnet under sammanträdesperiodens kommande dagar .
 - 5 Till dess vill jag att vi , som ett antal kolleger begärt , håller en tyst minut för offren för bl.a. stormarna i de länder i Europeiska unionen som drabbats .
 - 6 Jag ber er resa er för en tyst minut .
 - 7 (Parlamentet höll en tyst minut) .
 - 8 Fru talman ! Det gäller en ordningsfråga .
 - 9 Ni känner till från media att det skett en rad bombexplosioner och mord i Sri Lanka .
 - 10 En av de personer som mycket nyligen mördades i Sri Lanka var Kumar Ponnambalam , som besökte Europaparlamentet för bara några månader sedan .
 - 11 Skulle det vara möjligt för er , fru talman , att skriva ett brev till den srilankesiska presidenten i vilket parlamentets beklagande uttrycks över hans och de övriga brutala dödsfallen i Sri Lanka och uppmanar henne att göra allt som står i hennes makt för att få en fredlig lösning på en mycket komplicerad situation ?
 - 12 Ja , herr Evans , jag tror att ett initiativ i den riktning ni just föreslagit skulle vara mycket lämpligt .

Parallell tekst

Om ni vill .
If you wish .

Det skall jag gärna göra .
I shall do so gladly .

Vi ser ennu en gång att de europeiska länderna er oeniga .
We see once again that the European countries disagree , however .

Oversettelse ved Bayes regel

$$p(e|f) = \frac{p(f|e)p(e)}{p(f)}$$

Deler opp et vanskelig problem i to lettere deler:

- $P(f|e)$ korrekthet (mening) : **oversettelsesmodellen**
- $P(e)$ velformethet (grammatikk) : **språkmodellen**

Mye data og bedre statistiske metoder gjør
dette mye bedre enn før!





WARNING

THE "UNICO" TICKET IS NOT ISSUED ON THE TRAIN AND PASSENGERS ARE NOT ALLOWED ON TRAIN WHITHOUT IT. WHEN THE TICKET OFFICE IS CLOSE, PASSENGERS CAN BUY THE TICKET FROM ANOTHER OUTLET.

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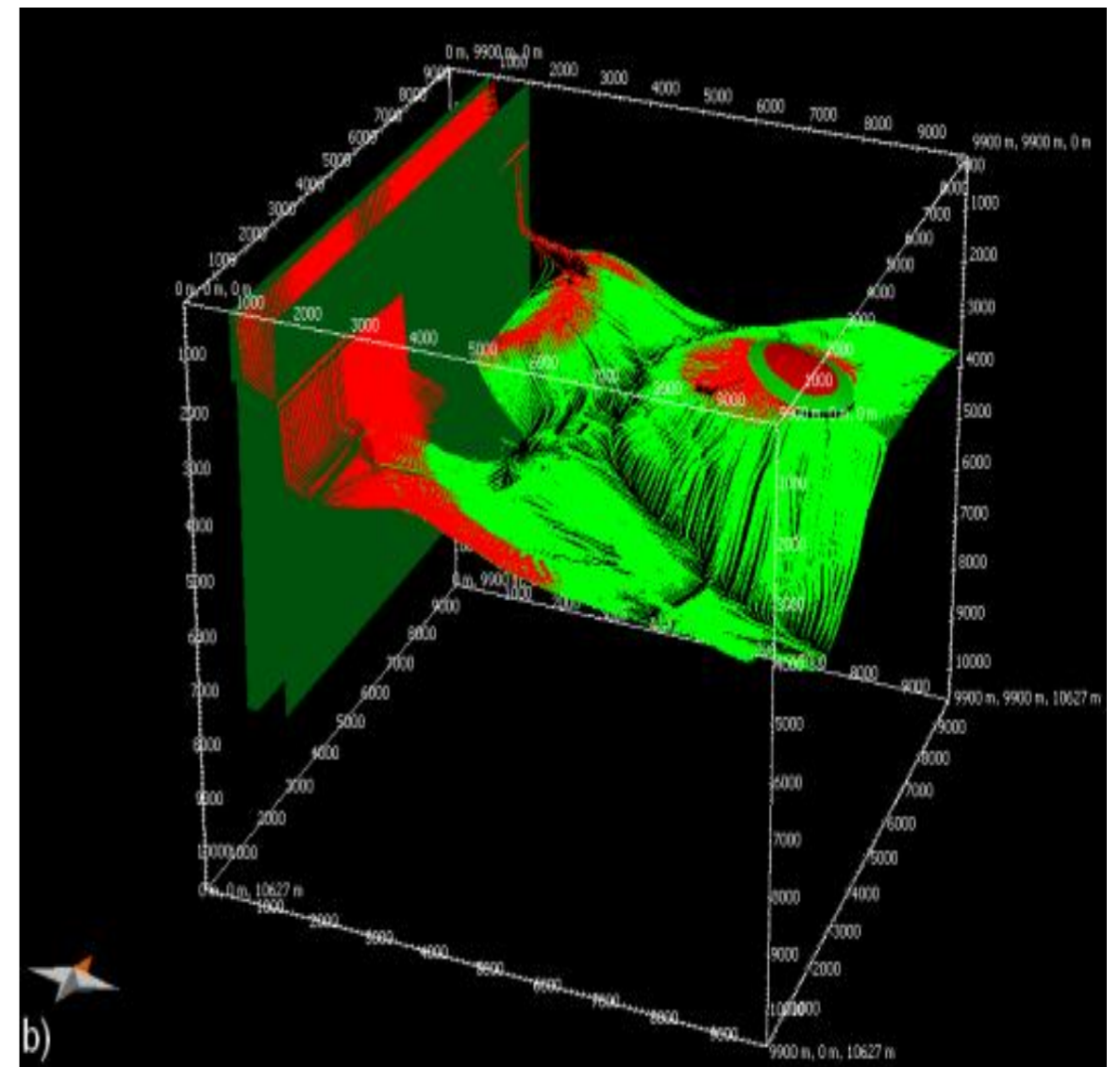
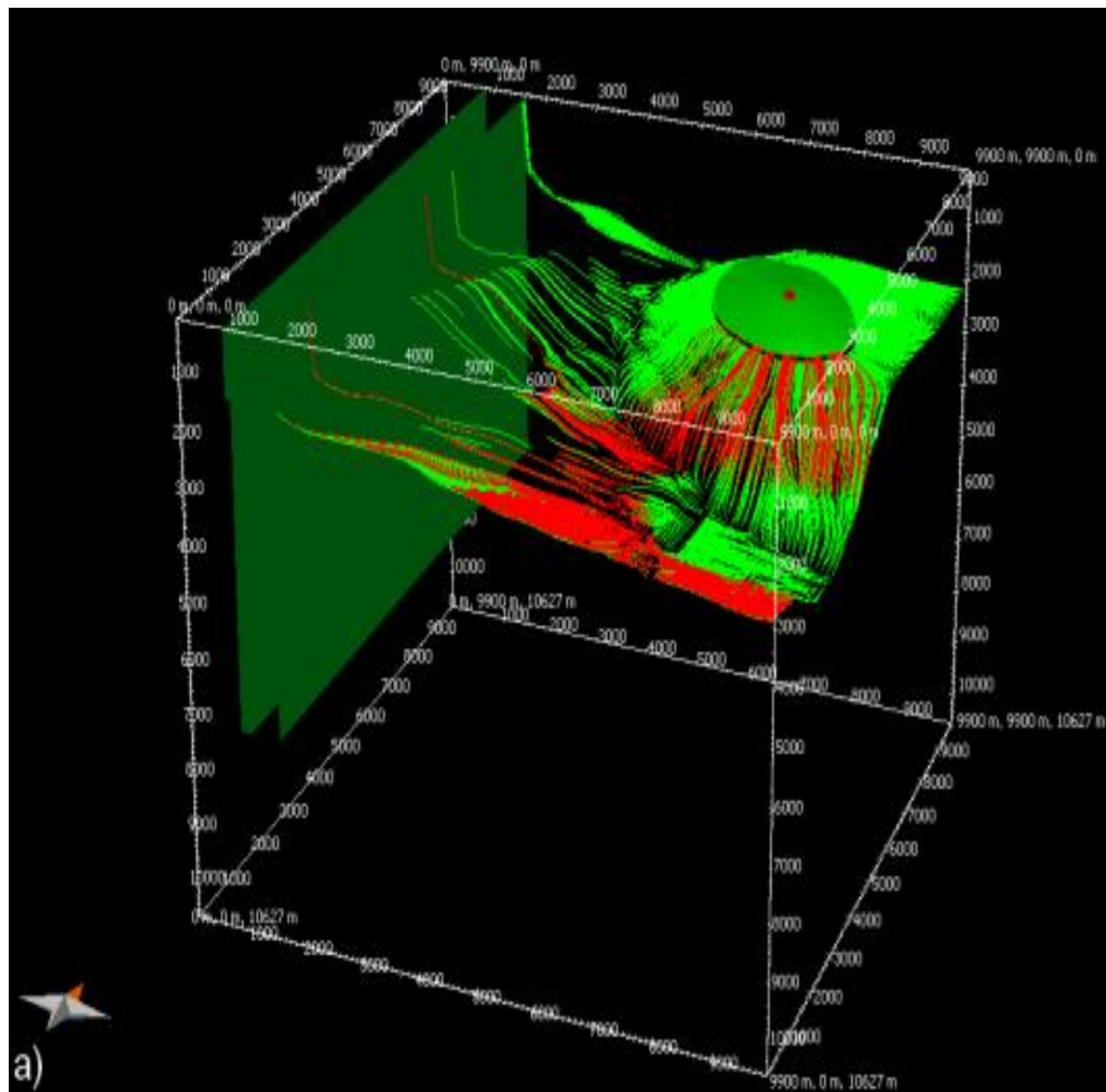
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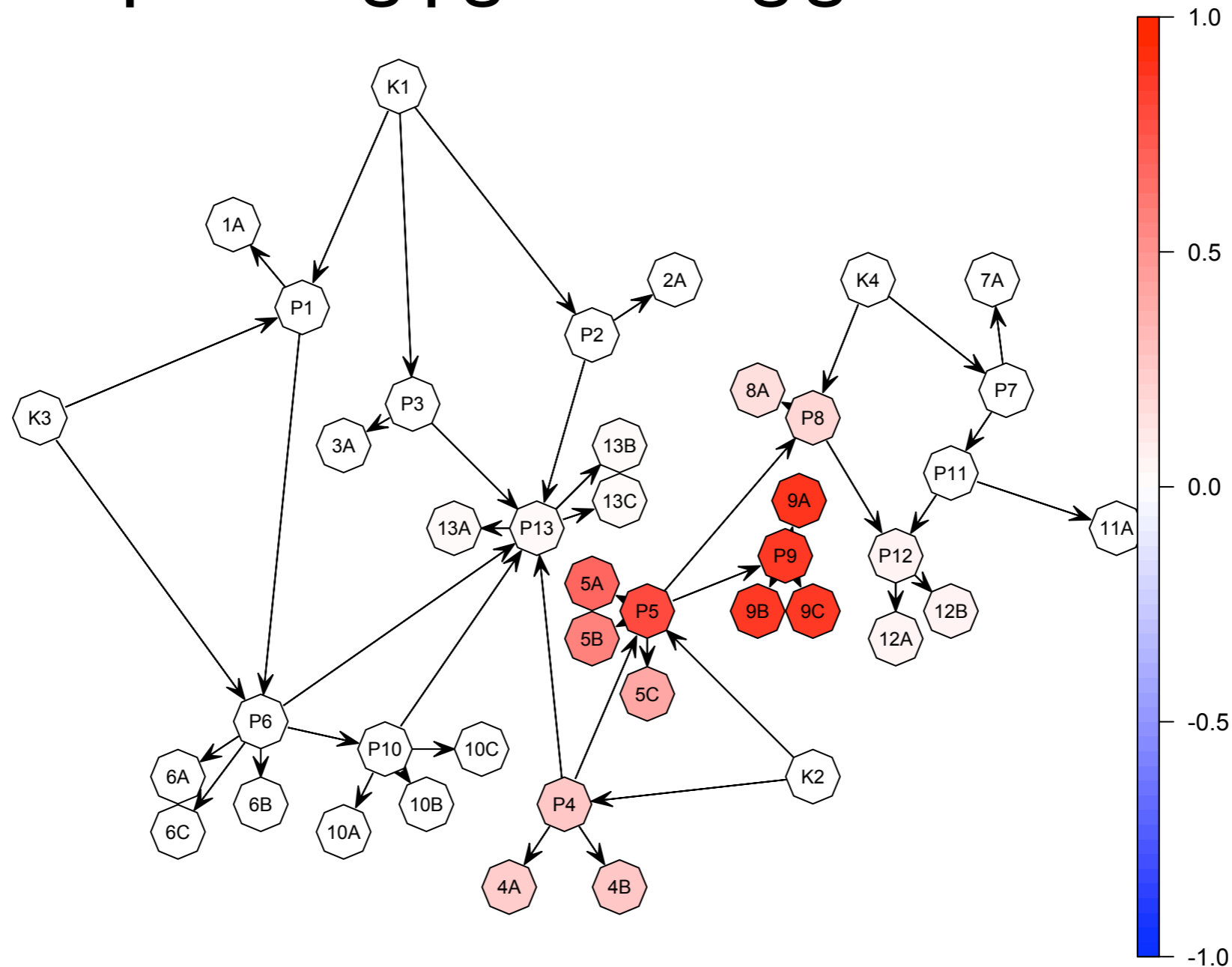
Modellering og prediksjon av
kompliserte systemer:
olje og gassprospekter

Kvantifisering av usikkerhet:

Modeller bygd på geologi og fysikk. Med store usikkerheter: risiko og mange penger på spill.



Hva om? Graf viser effekten av en positiv observasjon (betinging) i en av nodene i en graf. Effekt sprer seg pga avhengigheter i modell.



Statistikk er mellom matematikk og data/informasjonsteknologi

Typiske jobbmuligheter / bruk

- Data scientist / programmerer
- Industri (olje, havbruk, andre naturressurser, risiko, etc.)
- Forsikring
- Vei, bane, transport
- Finans
- Medisin, farmasi
- Forskning, undervisning
- ...