Dating PGM

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A PERSON IS A PATTERN OF BEHAVIOUR, OF A LARGER AWARENESS
-DEEPAK CHOPRA

- Testing existing theories about people's social behavior's on a large scale.

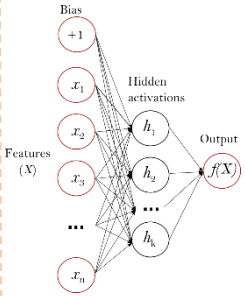
DATA SOURCE:

- Dating Experiment compiled by Columbia business school professors Raymond Fisman and Sheena Iyengar.

VARIABLES:

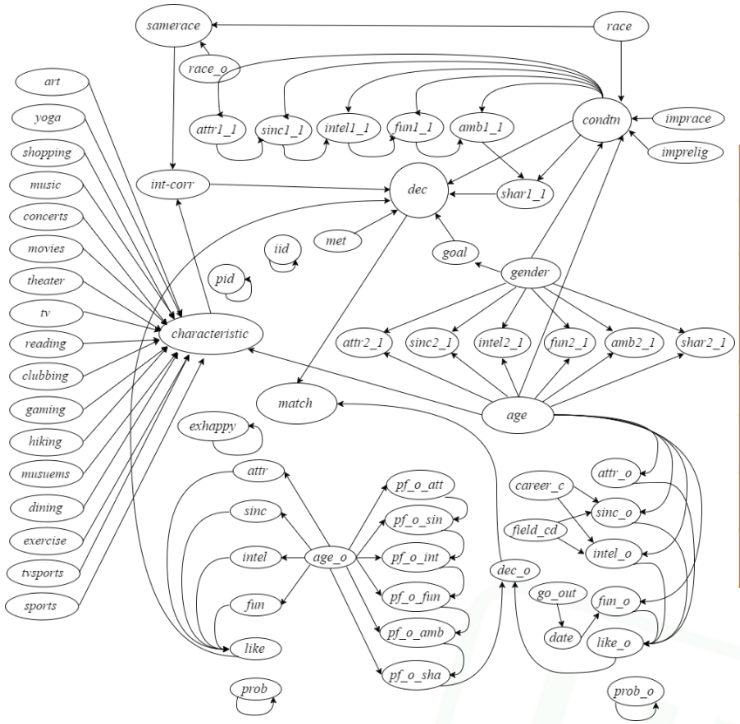
- DEMOGRAPHICS
- DATING HABITS
- LIFESTYLE
- SELF PERCEPTION
- BELEIFS
- KEY ATTRIBUTES

why?



Neural Network	
#Inputs	17
#Label	1

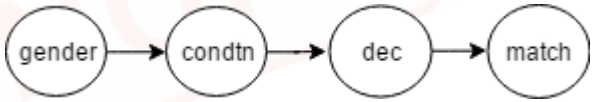
what?



#Variables	70
#Links	123
#cpd's	48
#max. cpd	300000
#samples	6000
#cont. Var	23
#Disc. Var	47
#max Par.	10

how?

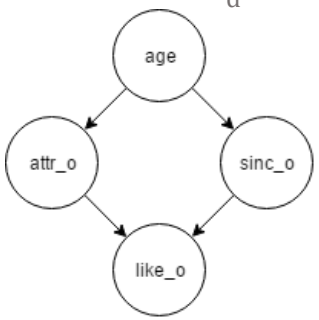
VARIABLE ELIMINATION



$$P(m) = \sum_d P(m|d) \sum_c P(d|c) \sum_g P(c|g) P(g)$$

$$P(m) = \sum_d P(m|d) \sum_c P(d|c) f_1(c)$$

$$P(m) = \sum_d P(m|d) f_2(d)$$



SAMPLING:
- Approximate Estimation
- Saving exponential calculations.
- More the samples higher accuracy

CREATING BAYESIAN NETWORK
- Finding correlation
- Causality on intuition

GENERATING CPD's
- Frequentist approach
- Tabular CPD's
- Neural Network

Multi-Processing

INFERENCE
- Exact Inference - Variable Elimination Algorithm
- Approximate Inference - Sampling

inference

- **PROBABILITY QUERIES**

PREFERENCES, RATING → BN → **PROBABILITY DISTRIBUTION** FOR DECISION

- **MOST PROBABLE EXPLANATION**

MY PREEFRENCES, MY RATING, PATNER's RATING, PATNER's PREFERENCES → BN → **MOST LIKELY VALUES** OF REMAINING VARIABLES

- **MARGINAL MAP QUERIES**

AGE, GENDER, PREFERENCES → BN → **MOST LIKELY COMBINATION** AGE, GENDER & PREFRENCES

- **PYTHON EXPERIMENTAION**

GIVEN: PREFERENCES, RATING, AGE, GENDER, CHARACTERISTICS

dec	phi(dec)
dec_0	0.6124
dec_1	0.3876

dec_o	phi(dec_o)
dec_o_0	0.9722
dec_o_1	0.0278

match	phi(match)
match_0	0.8916
match_1	0.1084