4.1- research database

Monday, 31 August 2020 11:38 AM

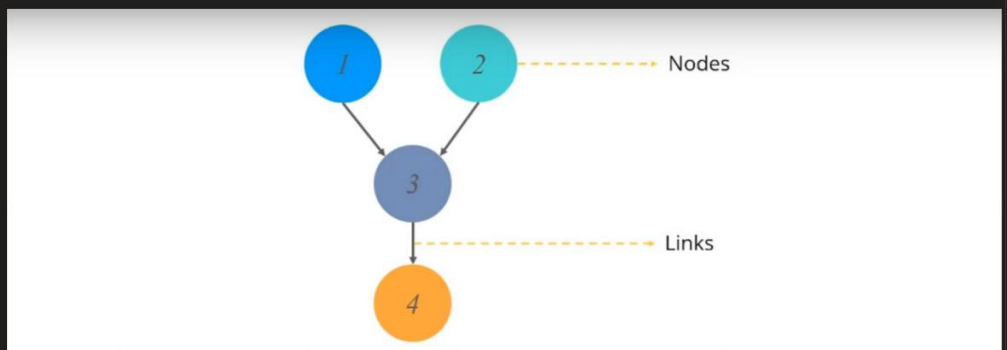
Generative Bayesian network → A probabilistic network (predict probability outcomes)

A machine learning model which generate an output considering the prior distribution of some objects

- So generate n^{th} object base on n-1

[Introduction to Bayesian Networks | Implement Bayesian Networks In Python | Edureka]

Directed Acyclic Graph used to represent Bayesian Network



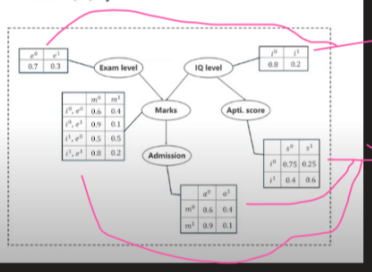
A DAG models the uncertainty of an event occurring based on the Conditional Probability Distribution (CDP) of each random variable

BAYESIAN NETWORKS EXAMPLE

Create a Bayesian Network that will model the marks (m) of a student on his examination.

The marks will depend on:

- ***Exam level** (e): (difficult, easy)*
- ***IQ** of the student (i): (high, low)*
- *Marks -> **admitted (a)** to a university*
- *The IQ -> **aptitude score (s)** of the student*



Just basic probability

The table is the conditional probability table of each of these nodes

The probability of a random variable depends on his parents. Therefore, we can formulate Bayesian Networks as:

$$P(X_1, \dots, X_n) = \Pi_{i=1}^{n}\, p(X_i \mid Parents(X_i))$$

https://github.com/jmschrei/pomegranate → Python lib of bayesian network

Camera finally here.

- Tested with SDK and RGBD working.
- My usb port is 3.2 but there is only 1 on the right.

To Do List:

1) Try out cubemos skeleton tracking
2) Test out response time?
3) Learn about the beysian network

4.2

Tuesday, 1 September 2020 2:36 PM

1) Setting up camera
2) Install RealSense SDK [SDK 2.0 (v2.38.1)]
3) Try out nuitrack and cubemos skeleton tracking
4) Get the sample working
   - Cannot get the python wrapper working
   - ~~need to learn how to use Cmake to compile~~
   https://www.intel.com/content/dam/support/us/en/documents/emerging-technologies/intel-realsense-technology/Intel-RealSense-SDK2-Github-Guide.pdf
   - pdf on cmake with realsense
   https://dev.classmethod.jp/articles/skeleton-tracking-with-intel-realsense-d435i/
   - Need to translate to see what he doing
5) Get data from skeleton tracking
   - Python version doesn't work on video streams. Only for individual images.
   - C# one can stream vid
6) Single-person pose estimation?
   - To recognise the exercise using the skeleton data.
   - https://towardsdatascience.com/human-pose-estimation-simplified-6cfd88542ab3#:~:text=Single%2Dperson%20pose%20estimation%20(SPPE,problem%20of%20inter%2Dperson%20occlusion. (good basic tut)
   - https://ukdiss.com/examples/3d-skeleton-based-action-classification.php (need to read through properly, seems related?)
   - https://github.com/niais/Awesome-Skeleton-based-Action-Recognition (ranks the different SBAR throughout the years, dk if can use my input to get a pose output though)

Not working

Feedback
1) Add visualisation of numbers even during testing - for demo / presentation purpose
2) Splitting of task not in the slide
3) Have a 1-1 comparison of Nuitrack and Cubemos
4) More clear headings of the slides