FORECASTING SURVIVAL RATE USING KAGGEL TITANIC DATASET

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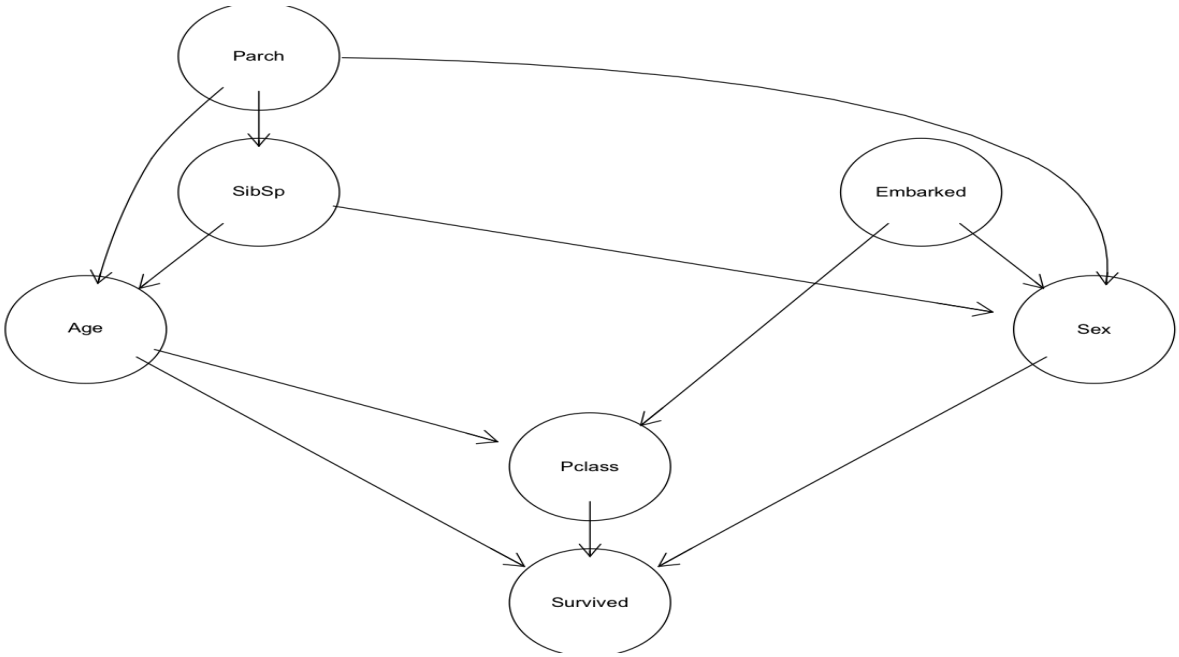
BAYESIAN NETWORK FOR FORECASTING SURVIVAL RATES:

To find the optimal Bayesian network, I've have used Max-min Hill climbing algorithm with "k2" as the score.

Optimal DAG:



CONCLUSIONS:

1. Female and adult's belonging to pclass-1 and pclass-2 survived with the probability of 0.97 and 0.90 respectively. While, Female adults pclass-3 did not survive

```
, , Sex = female, Age = Adult

                Pclass
Survived                 1         2        3
  Not Survived 0.02428147 0.09427828 0.513751
  Survived     0.97571853 0.90572172 0.486249
```

2. Most of the children and females seated in the pclass1, pclass2 and pclass3 survived with the probability of 0.87,0.99,0.54 respectively. While, the probability of child and male in pclass1 and pclass2 survived with probability of 0.98 and 0.81 respectively, while children who are male belonging to pclass 3 did not survive.

```
, , Sex = female, Age = Child

                Pclass
Survived                1           2           3
  Not Survived 0.128866 0.003448276 0.4572447
  Survived     0.871134 0.996551724 0.5427553


, , Sex = male, Age = Child

                Pclass
Survived                1           2           3
  Not Survived 0.01020408 0.1842105 0.7669246
  Survived     0.98979592 0.8157895 0.2330754
```

3. The results also shows that Adult males did not survive as their probability of being dead is high for all the three classes:
   - pclass1 death rate - 65.7%
   - pclass2 death rate - 91.7%
   - pclass3 death rate - 87.8%

   Overall, most of the adult male did not survive.

```
, , Sex = male, Age = Adult

                Pclass
Survived                1           2           3
  Not Survived 0.6524347 0.91716738 0.8781858
  Survived     0.3475653 0.08283262 0.1218142
```

4. All the above findings gives an intuition that most of the Women and children were evacuated first. Although, child(male) and adult(female) belonging to pclass did not survive.
5. Female adult belonging to pclass1 - SURVIVED
6. Male adult belonging to pclass3- DID NOT SURVIVE.