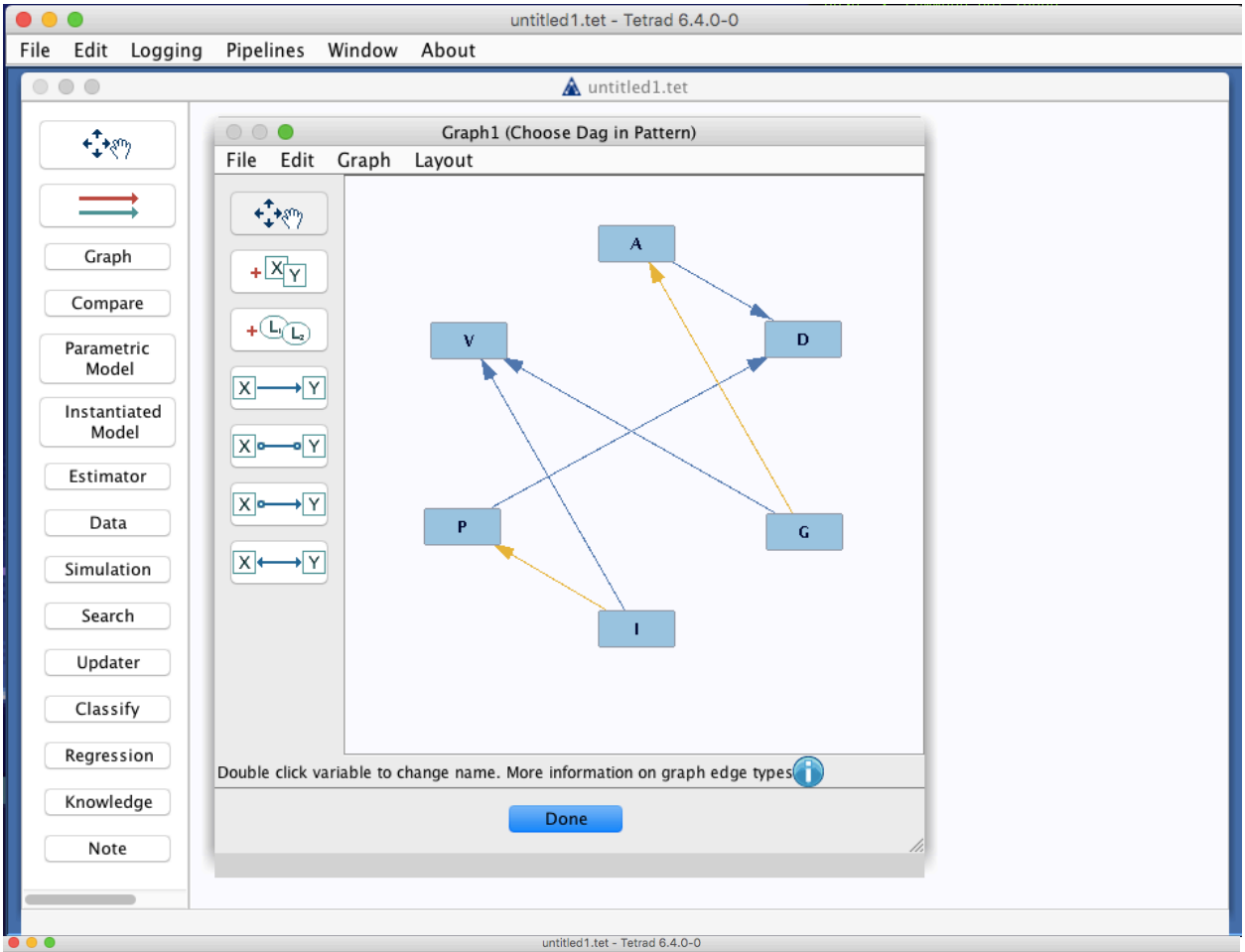
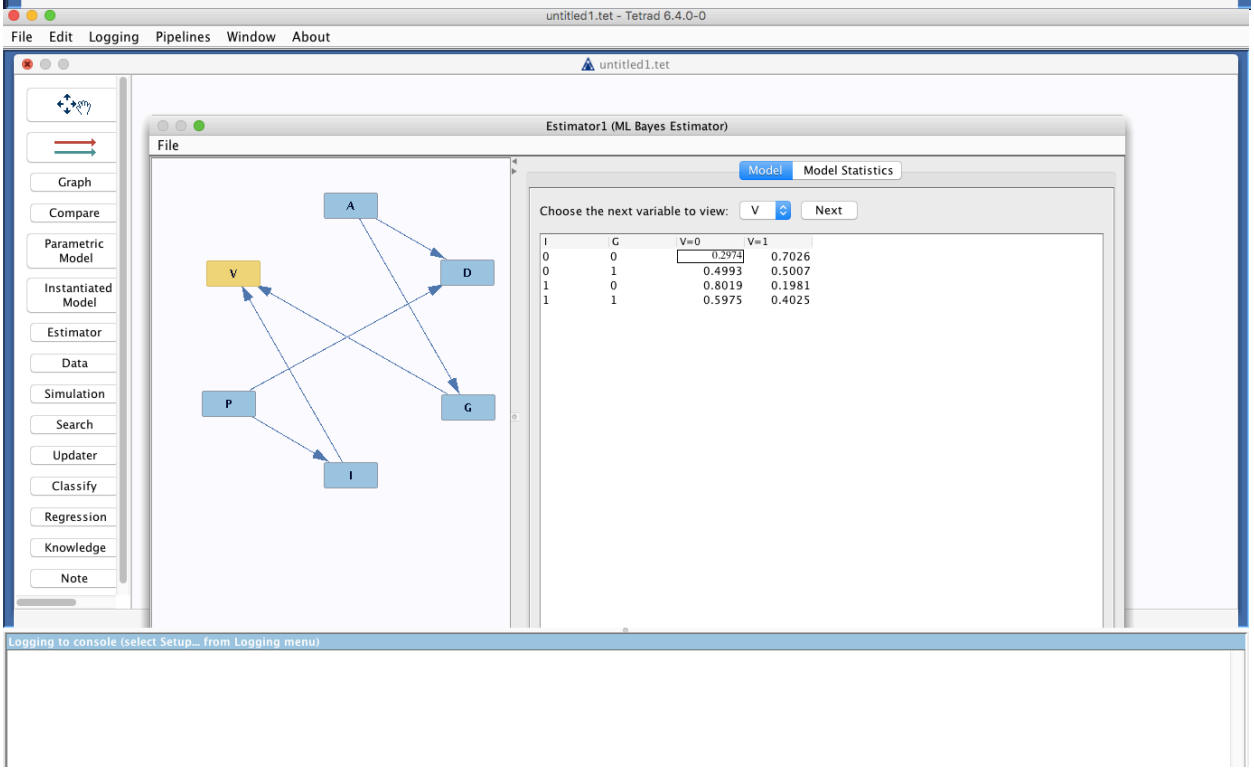

untitled1.tet - Tetrad 6.4.0-0
File Edit Logging Pipelines Window About
untitled1.tet
Graph
Compare
Parametric Model
Instantiated Model
Estimator
Data
Simulation
Search
Updater
Classify
Regression
Knowledge
Note
Graph1 (Choose Dag in Pattern)
File Edit Graph Layout
A
V
D
P
G
I
Double click variable to change name. More information on graph edge types
Done


untitled1.tet - Tetrad 6.4.0-0
File Edit Logging Pipelines Window About
untitled1.tet
Graph
Compare
Parametric Model
Instantiated Model
Estimator
Data
Simulation
Search
Updater
Classify
Regression
Knowledge
Note
Estimator1 (ML Bayes Estimator)
File
Model
Model Statistics
Choose the next variable to view:
V
Next
I G V=0 V=1
0 0 0.2974 0.7026
0 1 0.4993 0.5007
1 0 0.8019 0.1981
1 1 0.5975 0.4025
A
V
D
P
G
I
Logging to console (select Setup... from Logging menu)

```
keckadmins-iMac-2:hw4 keckuser$ python3 hw4-bnet.py
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
        {
            "1" :0.3565000000000001,
            "0" :0.6435
        }
    ],
    "frozen" :false
}
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
        {
            "1" :0.31250000000000017,
            "0" :0.6875
        }
    ],
    "frozen" :false
}
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
        {
            "1" :0.6999999999999998,
            "0" :0.3000000000000001
        }
    ],
    "frozen" :false
}
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
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            "1" :0.5,
            "0" :0.5
        }
    ],
    "frozen" :false
}
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
        {
            "1" :0.6999999999999998,
            "0" :0.3000000000000001
        }
    ],
    "frozen" :false
}
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
        {
            "1" :0.20000000000000015,
            "0" :0.7999999999999999
        }
    ],
    "frozen" :false
}
{
    "class" :"Distribution",
    "name" :"DiscreteDistribution",
    "parameters" :[
        {
            "1" :0.5,
            "0" :0.5
        }
    ],
    "frozen" :false
}
keckadmins-iMac-2:hw4 keckuser$
```

1.1 Drawing references from our example SolicitorBot, directional edges were determined by human intuition. For machines, their learning is based on data. The assumption is that as more data is given, the machine's mapping function, f, will be closer to the true function F.
So, that is why some edges are ambiguous. If there was more data, then maybe those edges would be correctly fixed.

1.2 I drew an edge from P to I, because knowing Political Leaning tells you something about Immigration restrictions. It is likely for conservatives to be against it, and liberals to be for it. I also drew an edge from A to G. It is likely for millennials to be for gun control whereas baby boomers are likely to disregard gun control. Ultimately, I used human intuition.

2.1. I think data scraping from social media posts is fine. Whoever uses social media should know what they are signing up for. A person is choosing to show whatever they want to whomever they want and that audience can be billions. However, I will admit that it is disconcerting that humans are essentially classified as zeroes and ones. So, I do not think data mining for voting preferences is unethical, but the ethics of data mining varies for every situation.

3.1 Yes, between my BN and NBC, the last three queries for each did not map entirely the same. They were slightly different. A Bayesian Network would be more accurate for inference queries because it can answer general ones. For an NBC, all of its features are independent from one another given the output class.