Innov8 2.0 (Part-2)

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Data Points

1. Net Worth of Soldier + Average Xernian Net Worth in Surrounding Residence + Average Net Worth of Close Connections + Average Phrygians Net Worth (4 Data Points)

The amount of money and assets the soldier has a relation with the tendency of betrayal, this along with the Average Xernian Net Worth in the Surrounding Location, Average Net Worth of Close Connections and Average Phrygians Net Worth have close relation with each other and increases model accuracy.

For Example: A Xernian with a low net worth as compared to Average Phrygians, from a poor neighborhood and poor in its family is much more likely to betray to improve its economic conditions.

2. Number of Operations done during the tenure:
The number of operations-basically means the number of projects and missions the particular officer has done for the Xernians.

For example: If an officer has done more operations for his team, then he is comparatively unlikely to betray and has loyalty and commitment.

3. Number of deaths of Xernian soldiers in the same regiment due to failure in the logistics and total number of deaths (2 Data Points):

Failure events like deaths due to faulty weapons, lack of funds or lack of planning could train the model for prediction of future events.

For example: If a soldier has had several acquaintances killed because of a failure event of logistics, then he is more likely to form a feeling of disconnect towards Xernia thus causing a betrayal.

4. Number of Close Relations

The number of close relations a soldier has includes family and close friends the soldier has. This parameter represents the Xernian community.

For Example: If a Xernian has a lot of close relations, it has a sense of belonging and thus has a lower chance of betraying. On the other side an isolated Xernian does not have loyalty towards its community and has a higher chance of betraying.

5. Culture

Even though this is not a quantitative metric, it is still possible for the model to use this to classify based on statistics.

For Example: If the model trains on this data and it finds that 80% of the betrayals come from culture A and 20% come from B, and there is no population discrepancy among these cultures. Culture A can be considered relatively more likely to betray.

6. Age

As we are not aware of Xernian Biology, we don't know how their body reacts as time passes, but it is valid to assume that, as in humans, a younger Xernian might be more power-hungry and driven or the opposite might be true. Thus, age is also a valid datapoint.

7. Duration of Service

The Xernian's Duration of Service also gives a strong relation with betrayal tendencies as a soldier with more time in army has created more bonds and has a sense of trust which a fresh Xernian lacks.

8. Place of Origin (Xernia, Phyrigian, Others)

It is not a leap to assume that some of Xernian's ancestors were from Phrygia and vice versa. Assuming that the place of origin is Xernia, the soldier might have nationalistic (planetistic?) tendencies which a soldier from Phyrigian or Others might lack. On top of that, if the soldier's origin was Phyrigia, then it might sympathize with Phyrigia.

9. No. of Close relations with Phrygian soldiers:
The number of close relations,the Xernian soldiers have with Phrygians can train the model for predicting future events.

For Example: If a Xernian soldier has close friends in the Phyrgian territory, then the chances of him doing a betrayal are very high.

10. Variation in the rank of soldiers over the time:
Final-initial rank value of the soldier as a data point will help increase the accuracy of the model.

For Example: A soldier whose rank is stagnant or decreasing is more likely to get frustrated and thus betray the Xernians.

A Neural Network can use all these data points to flag soldiers.

All the data points other than close relations can be gathered extremely quickly and is very scalable. Data points like Age, Culture, Net Worth, Ranks, etc are easily gatherable. If Xernian communication (Internet) can be tracked on their planet, then the connection data can also be found.

Given that all of the data is either numerical or a classification a simple Neural Network using **Keras** will get the job done.

A preliminary model would look something like this :

```
model = Sequential()
model.add(Dense(100, activation='sigmoid',input_dim=14))
model.add(Dense(1, activation='sigmoid'))
model.compile(loss='mean_squared_error', optimizer='adam', metrics=['accuracy'])

```

Where our 14 data points are used as input in the neural network, Depending on the complexity of the data, multiple hidden layers can also be used.