

# EDI times AI Equals?

Bridging theory and practice in mathematical problem-solving



**PROFESSOR DR NIRA CHAMBERLAIN OBE**  
**FIMA FORS CSci PhD HonDSc DUniv**  
Professor in Mathematics

Diversity and Decolonisation in Mathematics conference (D&D'26)

# DEDICATED TO DR GLADYS WEST

## A MATHEMATICAL MODELLER WHO PIONEERED GPS





five billion **people** used  
her



AtkinsRéalis - Baseline / Référence

# TURNING COMPLEX PROBLEMS INTO PRACTICAL SOLUTIONS USING MATHEMATICS

With a unique ability to connect theory to real-world impact, Professor Chamberlain will explore how mathematical thinking shapes critical decisions across industry, policy, and society.

Expect a compelling talk that bridges mathematics, modelling, and the human element of problem-solving.



# EQUALITY DIVERSITY AND INCLUSION?



THERE ARE SO MANY.....

# Equality, Diversity & Inclusion Awards



Step Forward

**CIOB**  
Awards

## Equality, Diversity & Inclusion Awards

The Equality, Diversity and Inclusion (EDI) Awards seek to recognise both an individual and an organisation that has demonstrated exceptional commitment to the promotion of EDI.



THERE ARE SO MANY.....

# Equality, Diversity & Inclusion Awards

# HOWEVER!



Step Forward **CIOB Awards**

## Equality, Diversity & Inclusion Awards

The Equality, Diversity and Inclusion (EDI) Awards seek to recognise both an individual and an organisation that has demonstrated exceptional commitment to the promotion of EDI.

# TODAY, EQUALITY, DIVERSITY AND INCLUSION ARE UNDER ATTACK



Daily **Mail**

**Nearly a quarter of the public think diversity schemes are bad for white people, survey shows**

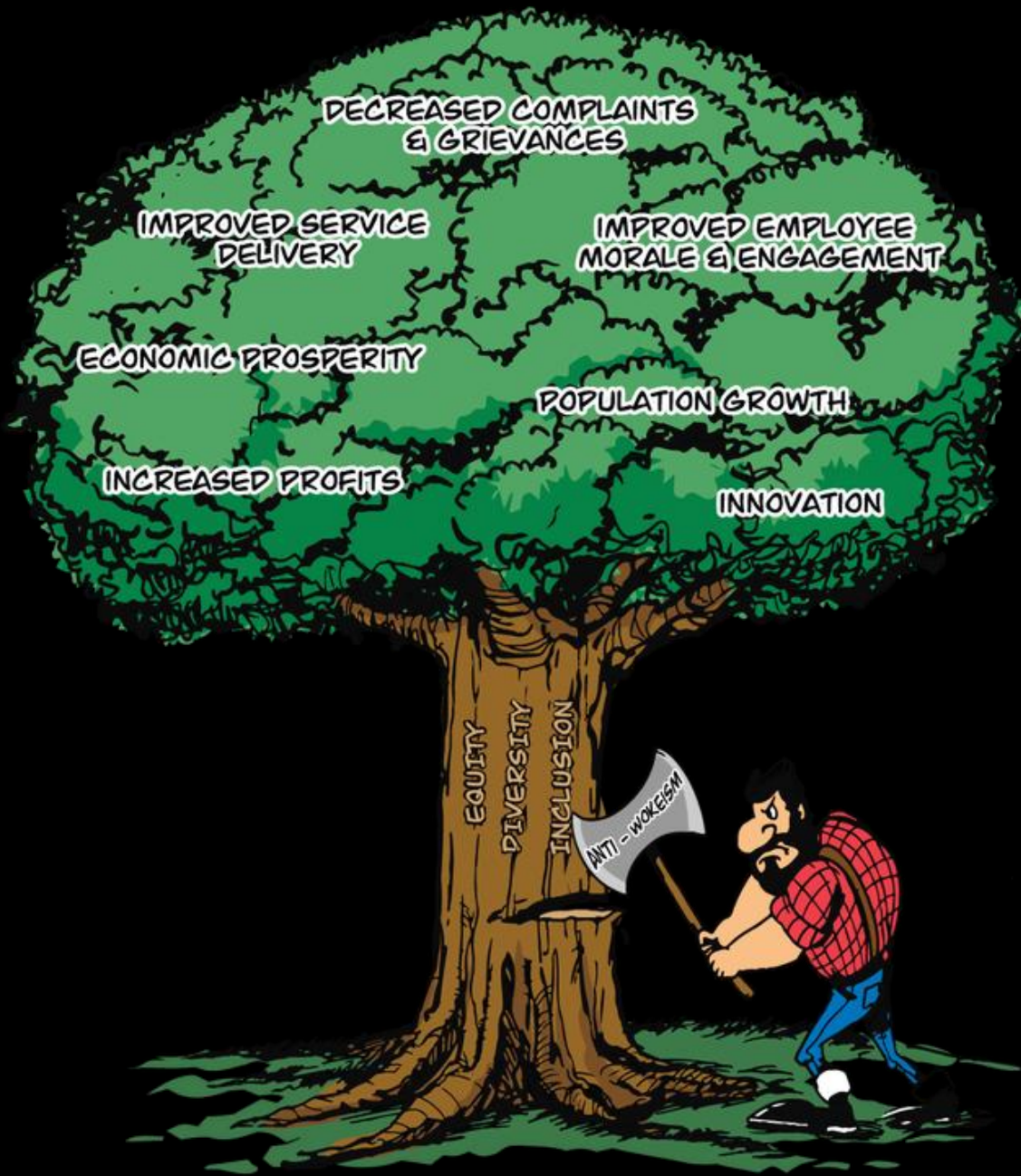
By [ELIZABETH HAIGH](#), SENIOR NEWS REPORTER

PUBLISHED: 10:13, 25 September 2025 | UPDATED: 12:51, 25 September 2025



EDI

# THE LINES OF ATTACK



- Equality, Diversity and Inclusion do not have a standard coherent definition
- There is not a standard way of measuring Equality, Diversity and Inclusion.

# THE VIEW OF A FORMER DIRECTOR OF EXECUTIVE RECRUITING AT GOOGLE

Virginia "Ginny" Clarke

MBA - Northwestern University -  
Kellogg School of Management

CEO - Fifth Dimensional Leadership





...GINNY

CLARKE

So,

# How 60 Years of DEI Got Dismantled This Fast

...IF YOU TRULY BELIEVE IN A MERITOCRACY -PROVE IT AND  
DEVELOP A GENUINE EVALUATION SYSTEM.



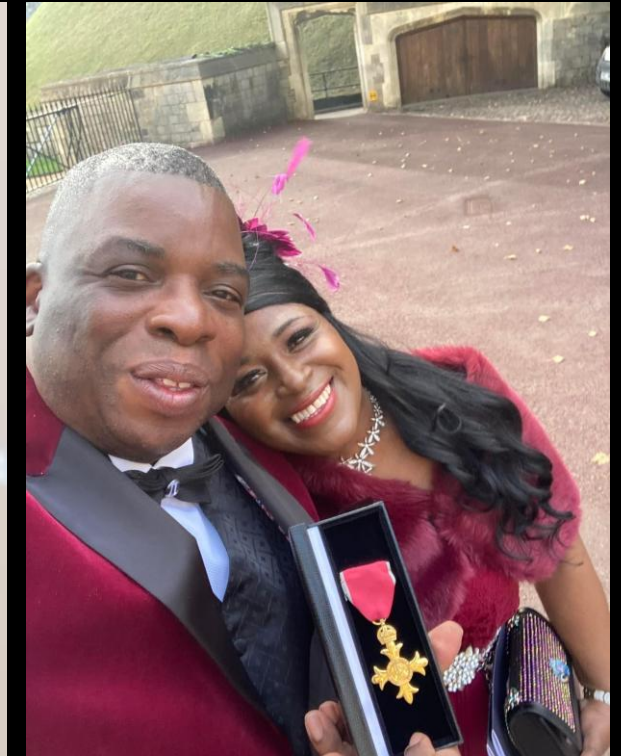
The essence of mathematics  
is not to make simple things  
complicated, but to make  
complicated things simple.

S Gudder

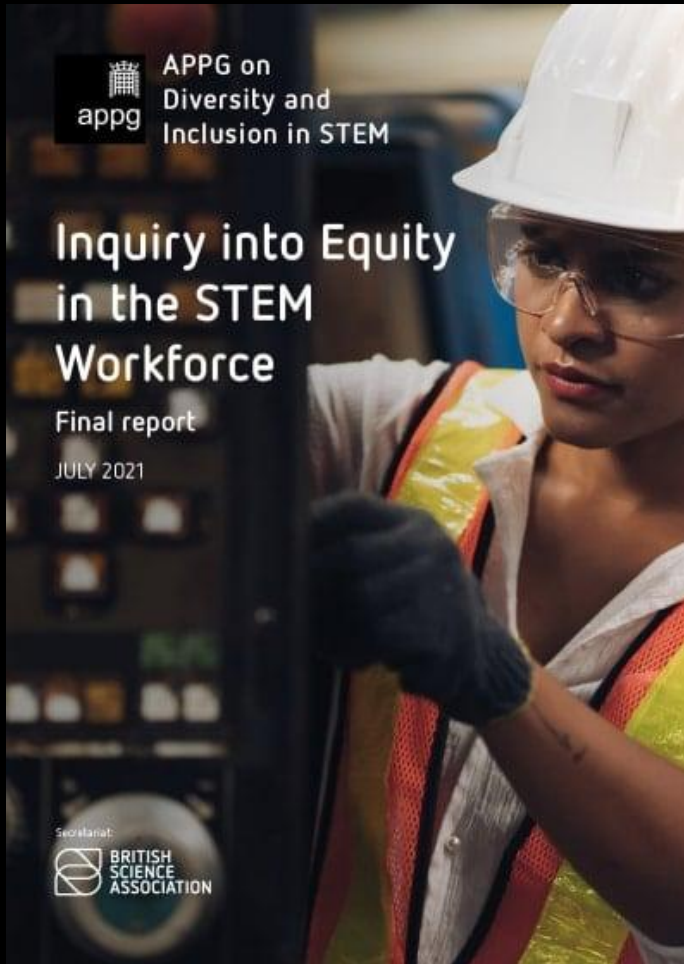
  
[www.idlehearts.com](http://www.idlehearts.com)

# MY NAME IS ... AND THIS IS MY STORY .....

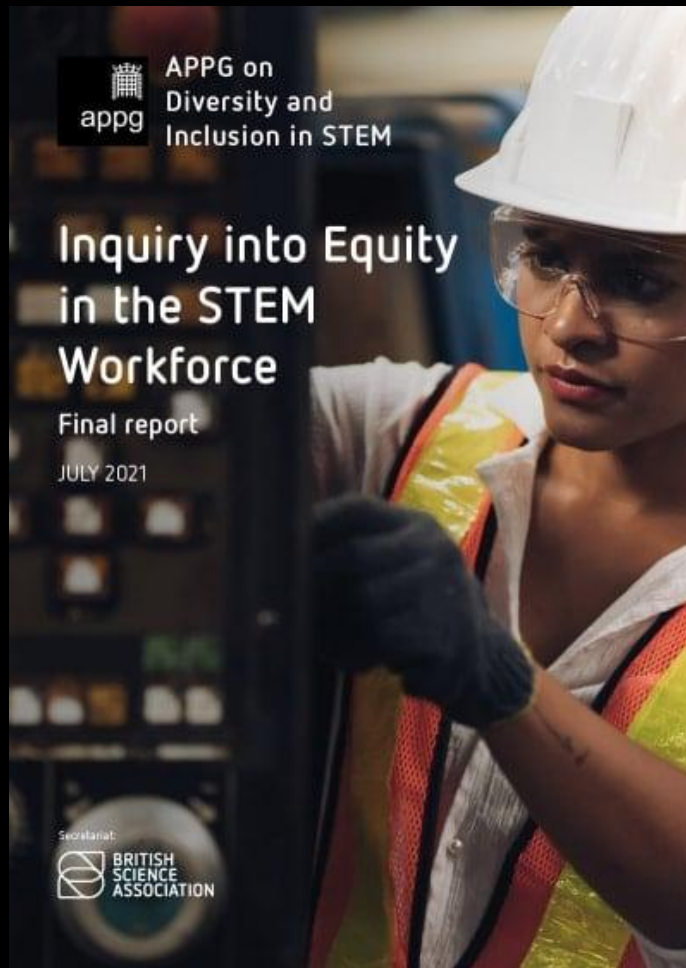
Mathematical Modelling Consultant  
Solving Real World Problems all over Europe



# ALL PARTY PARLIAMENTARY GROUP FOR DIVERSITY IN STEM

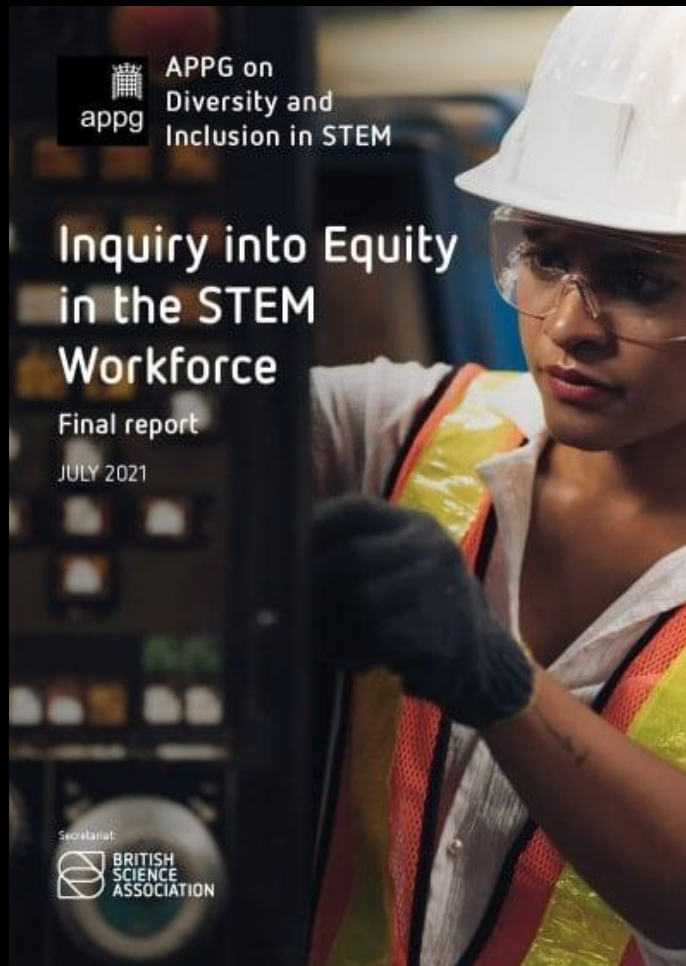


# ALL PARTY PARLIAMENTARY GROUP FOR DIVERSITY IN STEM



One of the points raised by the expert witnesses was the way the EDI statistical KPI's produced by corporations etc....

# ALL PARTY PARLIAMENTARY GROUP FOR DIVERSITY IN STEM

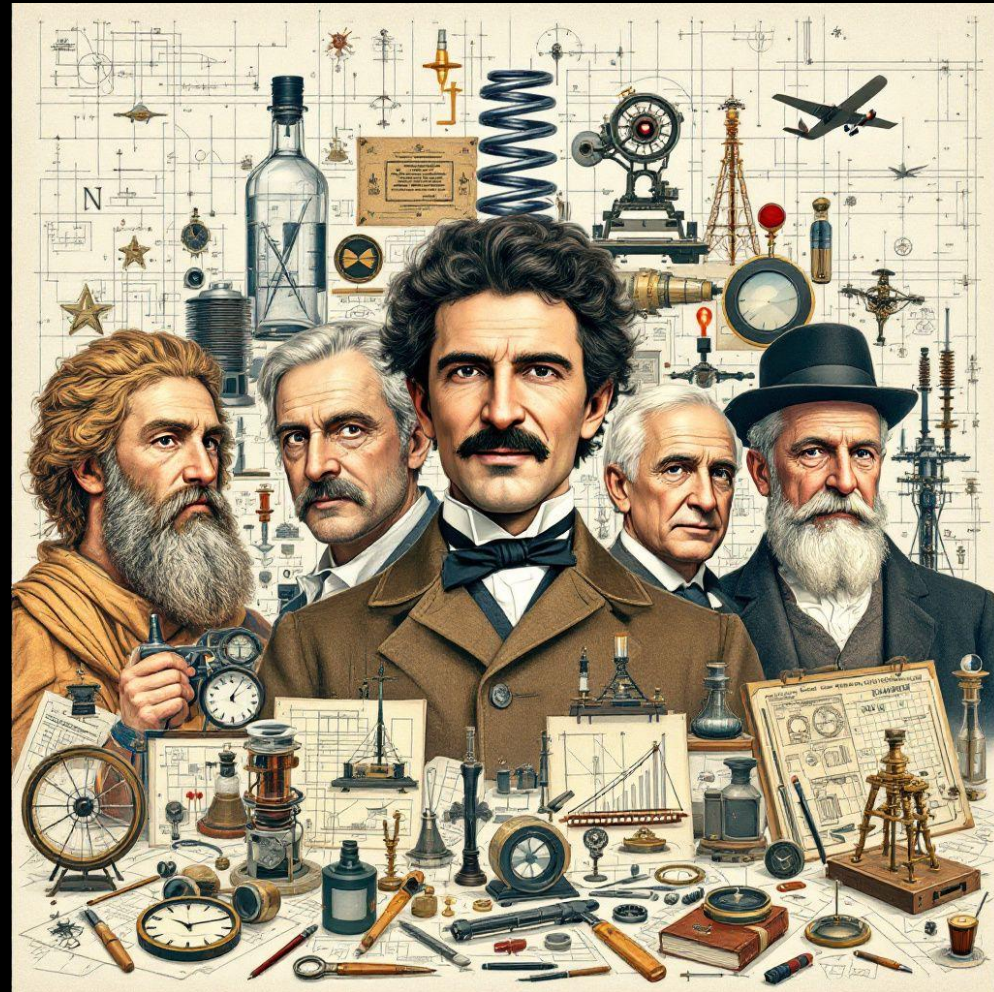


One of the points raised by the expert witnesses was the way the EDI statistical KPI's produced by corporations etc **do not reflect the lived experience of the underrepresented groups.**

# ALL PARTY PARLIAMENTARY GROUP FOR DIVERSITY IN STEM

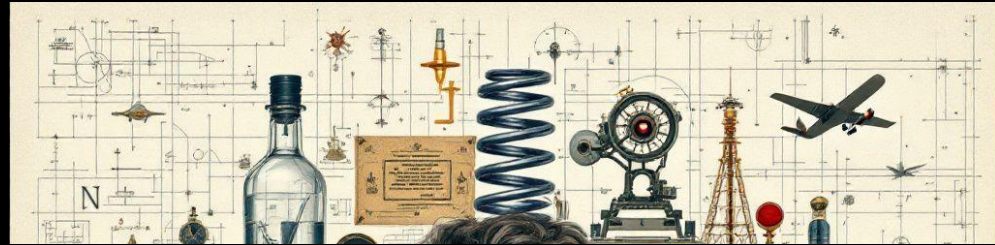
So, I am in a virtual room  
with some of the UK's Top  
Scientists, Engineers and  
Mathematicians:

And they are using  
subjectivity, questionnaires  
and pseudo equations to  
solve EDI !



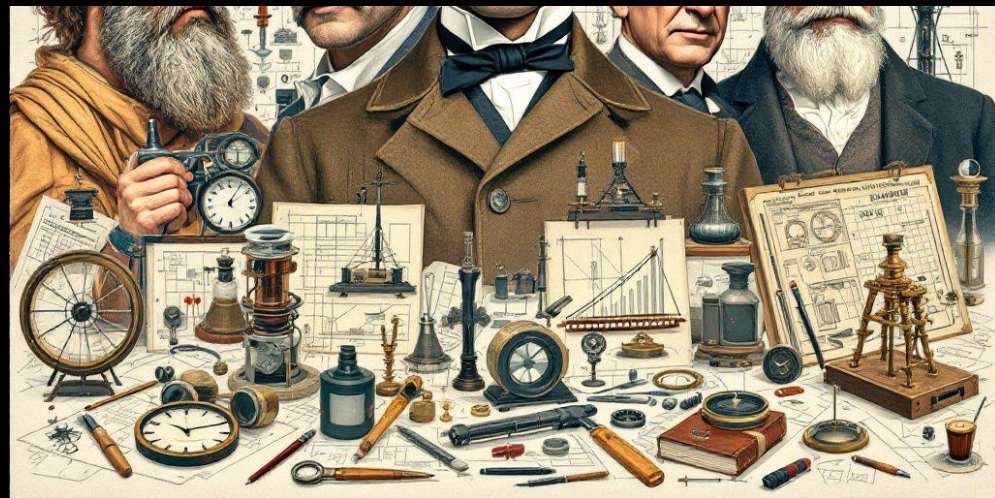
# ALL PARTY PARLIAMENTARY GROUP FOR DIVERSITY IN STEM

So, I am in a virtual room  
with some of the UK's Top



## What about Treating EDI as a Science Problem?

And they are using  
subjectivity, questionnaires  
and pseudo equations to  
solve EDI !



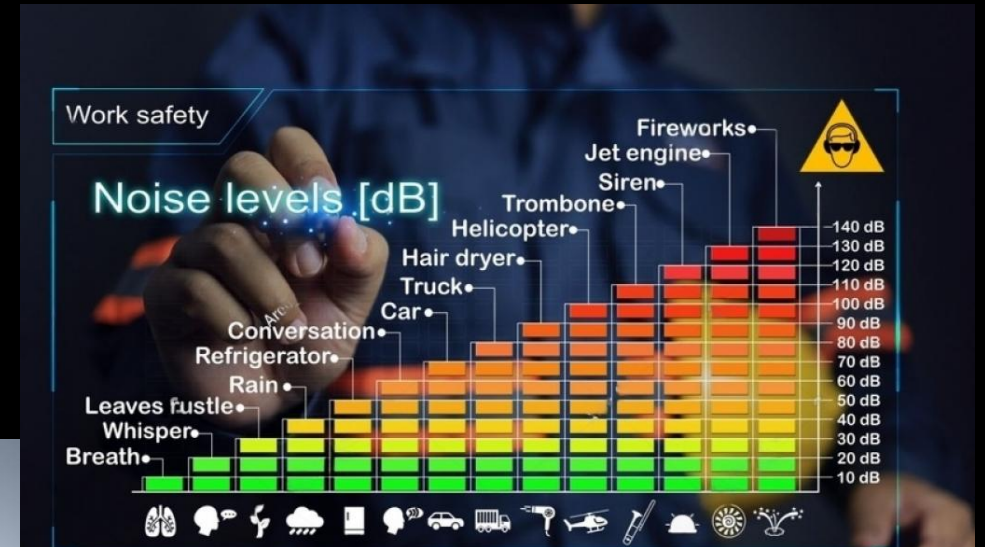
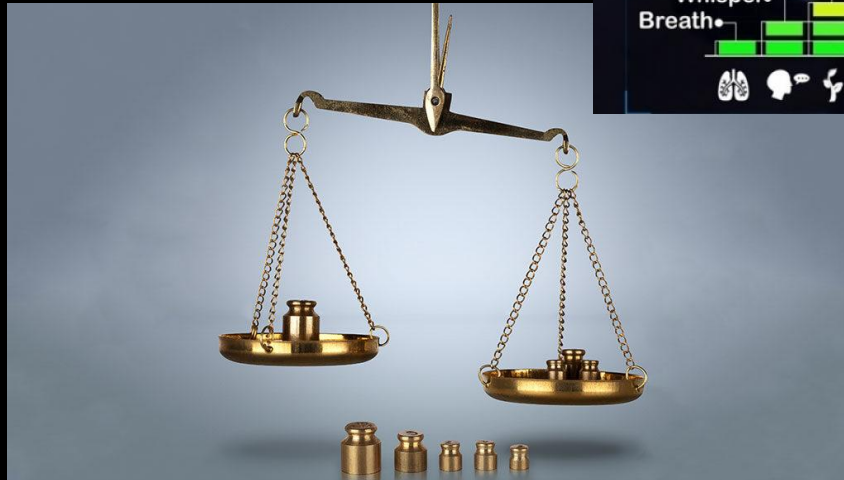
# EDI AS A SCIENCE PROBLEM

Every Science problem has a  
baseline



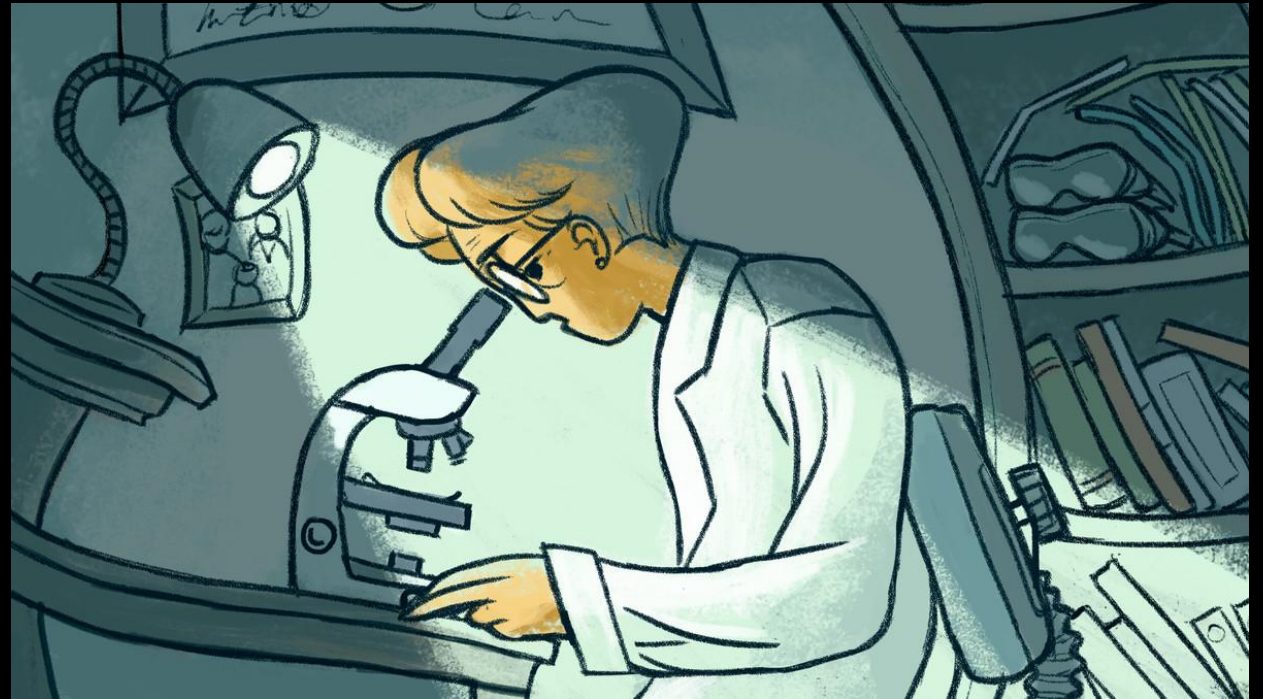
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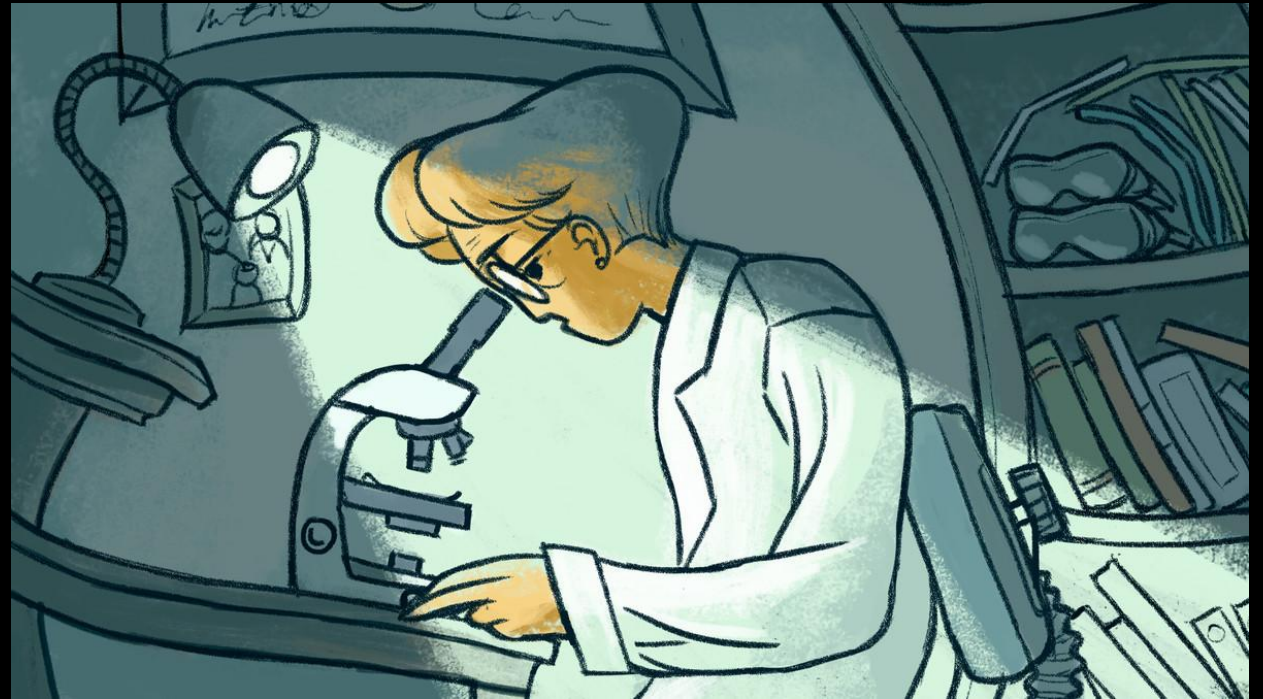
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# EDI AS A SCIENCE PROBLEM

Every Science problem has a  
baseline

**EDI Scientific baseline would  
be this statement**

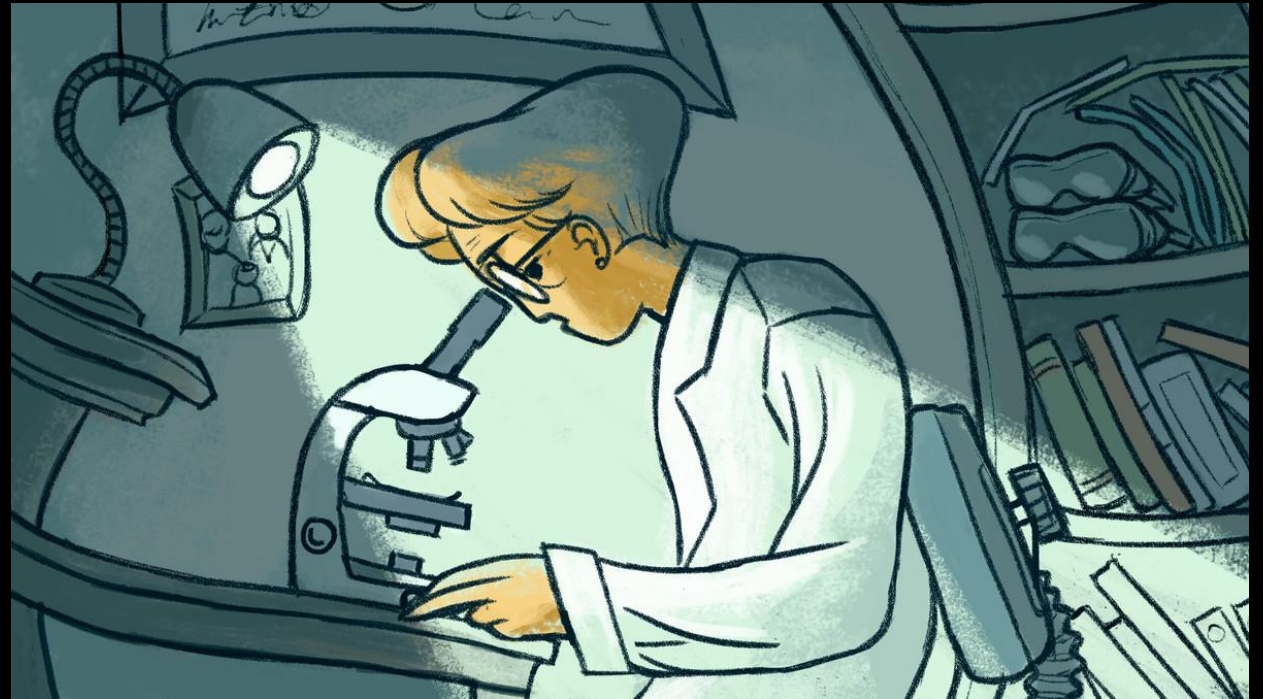


# EDI AS A SCIENCE PROBLEM

Every Science problem has a baseline

EDI Scientific baseline would be this statement

“If all things are equal, what numbers do we expect to see”



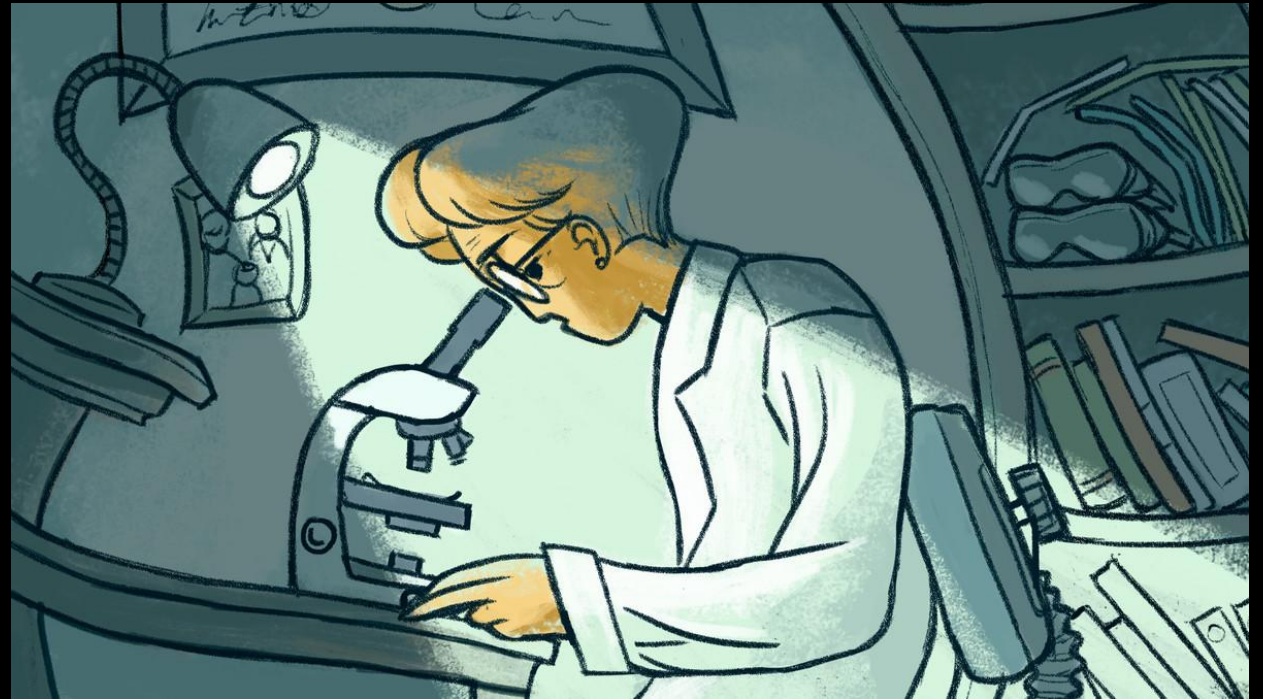
# EDI AS A SCIENCE PROBLEM

Every Science problem has a baseline

EDI Scientific baseline would be this statement

“If all things are equal, what numbers do we expect to see”

Consider the Coin Thought Experiment



# The Coin Thought Experiment



# The Coin Thought Experiment



HEADS

TAILS

# The Coin Thought Experiment



HEADS

TAILS



# The Coin Thought Experiment



HEADS

TAILS



# The Coin Thought Experiment



We all know that this is off  
because of the laws of probability

We know what we expect to see!

The higher you go  
up



The higher you go  
up



The less women  
and people of  
colour you see.



# THE LAW OF PROBABILITY

- Using the laws of probability, we can measure the effectiveness of EDI Strategies

## Expected Value or Mean

$$E(X) = \mu = \sum_{i=1}^n x_i P(x_i)$$

$E(X)$  is the Expected Value

$\mu$  is the mean

$x_i$  is an outcome

$P(x_i)$  is the probability of the outcome

# THE LAW OF PROBABILITY

- Using the laws of probability, we can measure the effectiveness of EDI Strategies
- Based on this statement

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# THE LAW OF PROBABILITY

- Using the laws of probability, we can measure the effectiveness of EDI Strategies
- Based on this statement

**If all things are equal what are the numbers do we expect to see?**

**(Chamberlain's Law)**

## Expected Value or Mean

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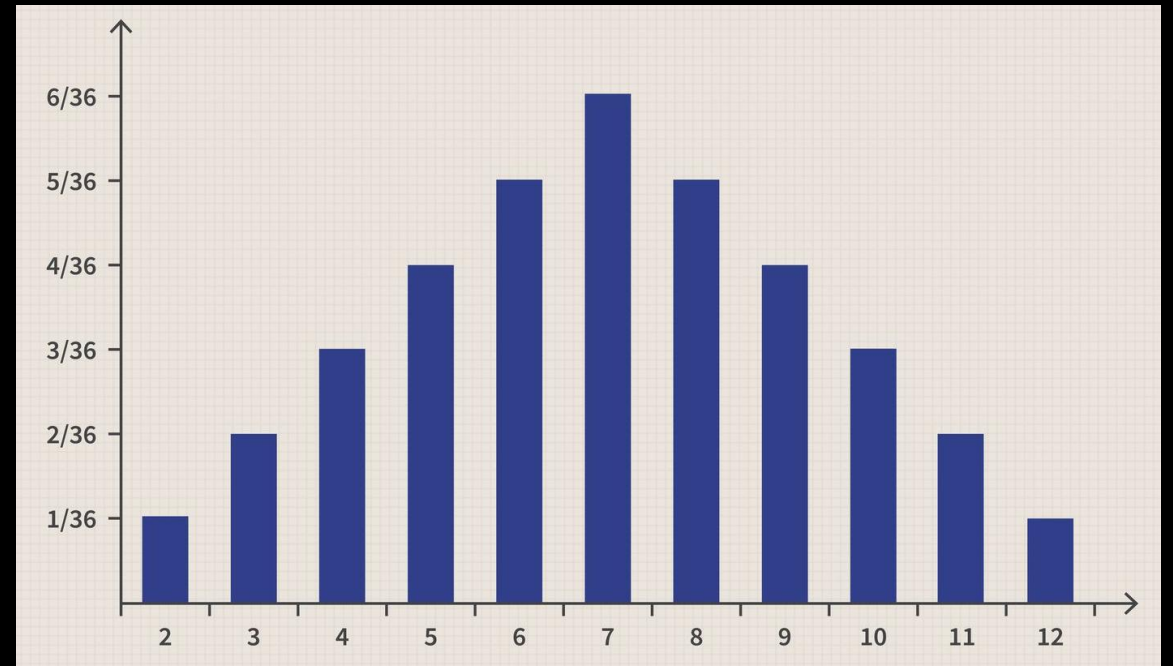
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# CHAMBERLAIN'S LAWS - WHAT DOES THIS MEAN?

**If all things are equal, what numbers do we expect to see?**

- **The probability distribution of an outsider group across the company's grades should have the same probability distribution as the insider group across the same grades**



# BBC BAME



BBC's Commitment to  
Diversity: Aiming for  
20% BAME  
Representation by 2025

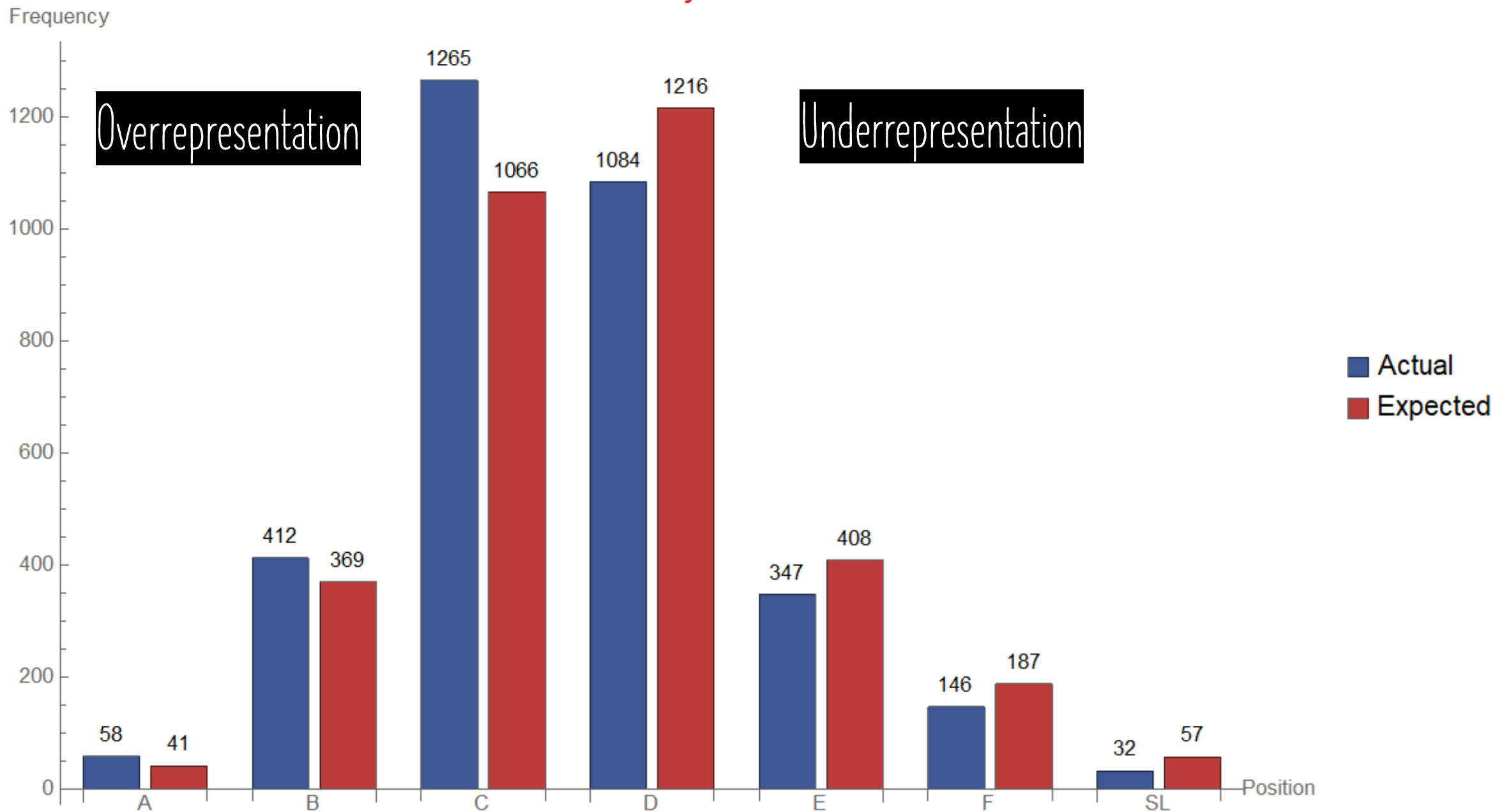
**BBC**

**Diversity & Inclusion**  
Creating an inclusive workforce

[diversejobsmatter.co.uk](https://diversejobsmatter.co.uk)

**DM**  
DIVERSEJOBSMATTER

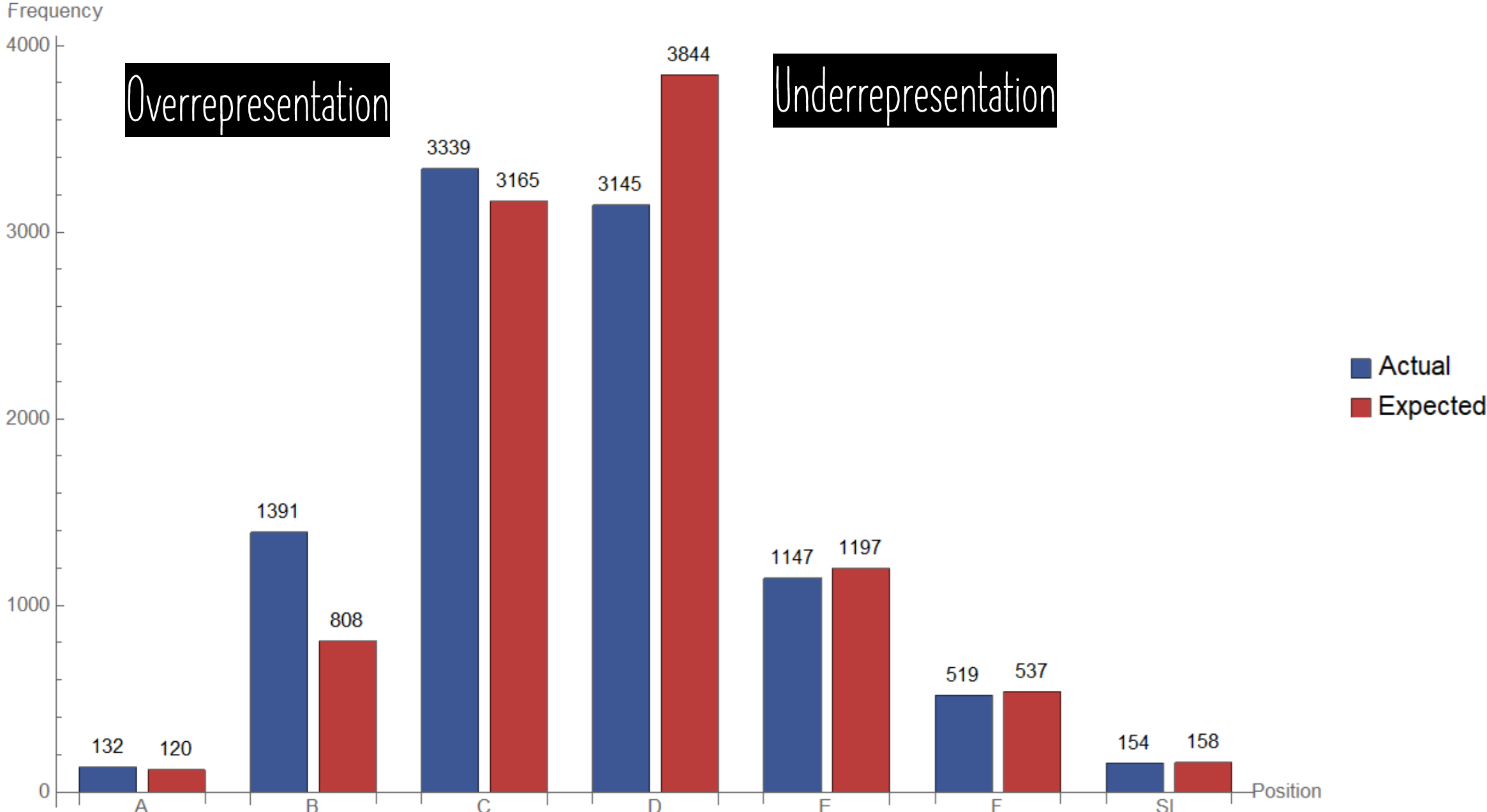
# BAME BBC Pay Grades



# BBC FEMALE

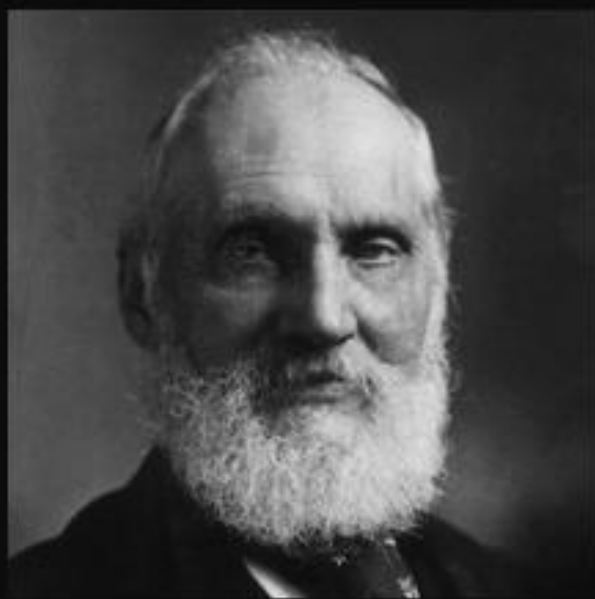


# Gender BBC Pay Grades



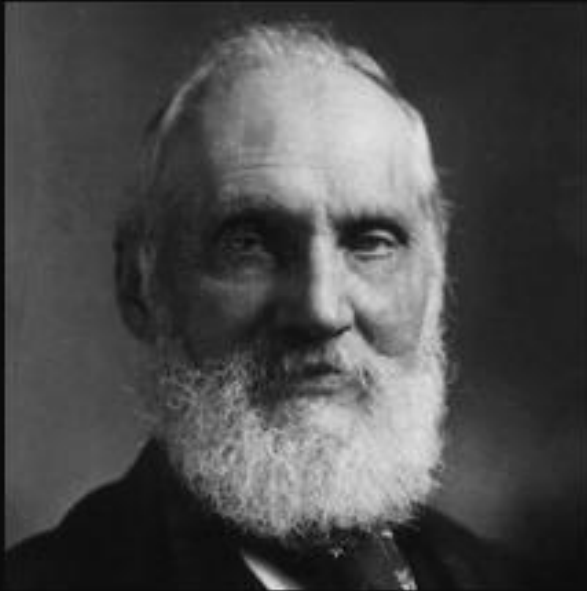
# BUT SURELY CREATING DIVERSITY TARGETS ARE GOOD ENOUGH?





If you can not measure it, you  
can not improve it.

~ Lord Kelvin



If you can not measure it, you  
can not improve it.

~ Lord Kelvin

AZ QUOTES

**Diversity Targets may be interesting, but it is the wrong measure!**

# RUNNING OUT OF FUEL WHILE DRIVING AT 30 MPH



# LESSONS FROM THE MEDICAL FIELD - RELATIVE RISK

Group of Men



Group of Women



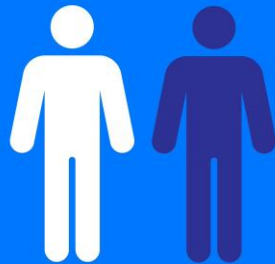
# LESSONS FROM THE MEDICAL FIELD - RELATIVE RISK

Group of Men

Group of Women



**CANCER AMONG  
MEN AND WOMEN  
IN THE U.S.**



**1 of every 2 men and  
1 of every 3 women**  
in the U.S. will develop cancer  
during their lifetime.



[cdc.gov/cancer](https://www.cdc.gov/cancer)

# LESSONS FROM THE MEDICAL FIELD - DIVERSITY STATISTIC

Group of Men

Group of Women



66% of Cancer cases  
are men



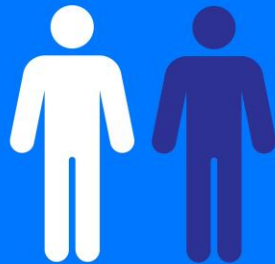
# LESSONS FROM THE MEDICAL FIELD - THE RISK PROBABILITY

Group of Men

Group of Women



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**1 of every 2 men and  
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# COMPANY XYZ

---

Company XYZ	Group 1	Group 2	Total	% Group 2
Upper Grades	70	30	100	30%

# COMPANY XYZ

---

Company XYZ	Group 1	Group 2	Total	% Group 2
Upper Grades	70	30	100	30%
Lower Grades	280			
Total Employees	350			

# COMPANY XYZ

---

Company XYZ	Group 1	Group 2	Total	% Group 2
Upper Grades	70	30	100	30%
Lower Grades	280	330		
Total Employees	350	360		

# COMPANY XYZ

---

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Measure of Diversity

Measure of Equality

# THE OPPORTUNITY PROBABILITIES

---

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Measure of Diversity

Measure of Equality

# THE RELATIVE OPPORTUNITY

- $Relative_{opportunity} = 8.3\% \div 20.0\% \approx 0.415$

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Measure of Diversity

Measure of Equality

# WHEN THE OPPORTUNITY PROBABILITIES ARE EQUAL . IT IS CALLED... ..

---

•  $Relative_{opportunity} = 8.3\% \div 20.0\% \approx 0.415$

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Measure of Diversity

Measure of Equality

**EQUAL OPPORTUNITY**



# EQUAL OPPORTUNITY



We have a scientific definition!

# EQUAL OPPORTUNITY



We have a scientific definition!

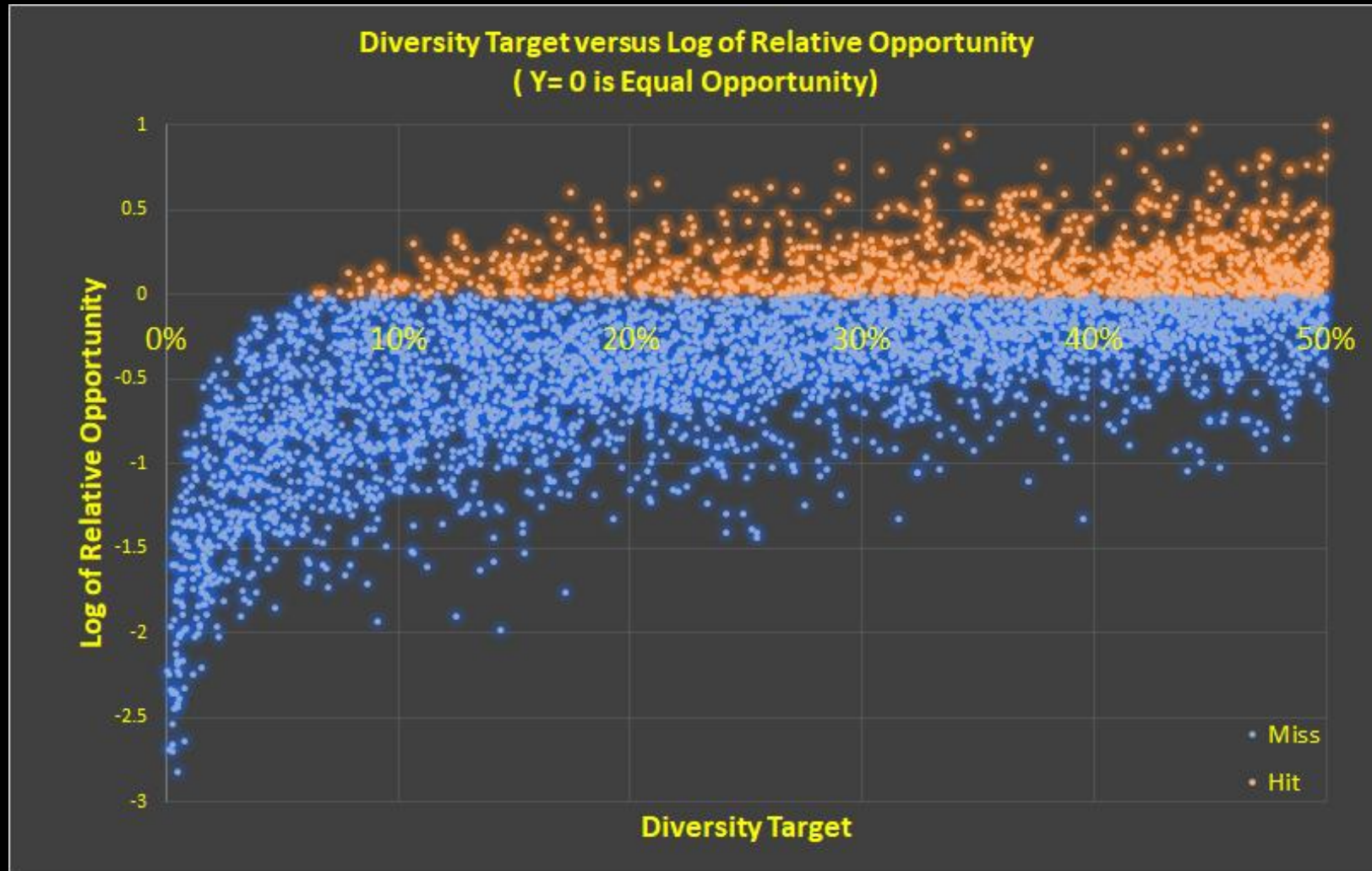
When the opportunity probabilities are equal

# EQUAL OPPORTUNITY

A hand holding a blue marker is shown underlining the text 'EQUAL OPPORTUNITY' written in a bold, black, hand-drawn font on a white background. The hand is positioned on the right side of the frame, with the marker tip touching the end of the blue underline.

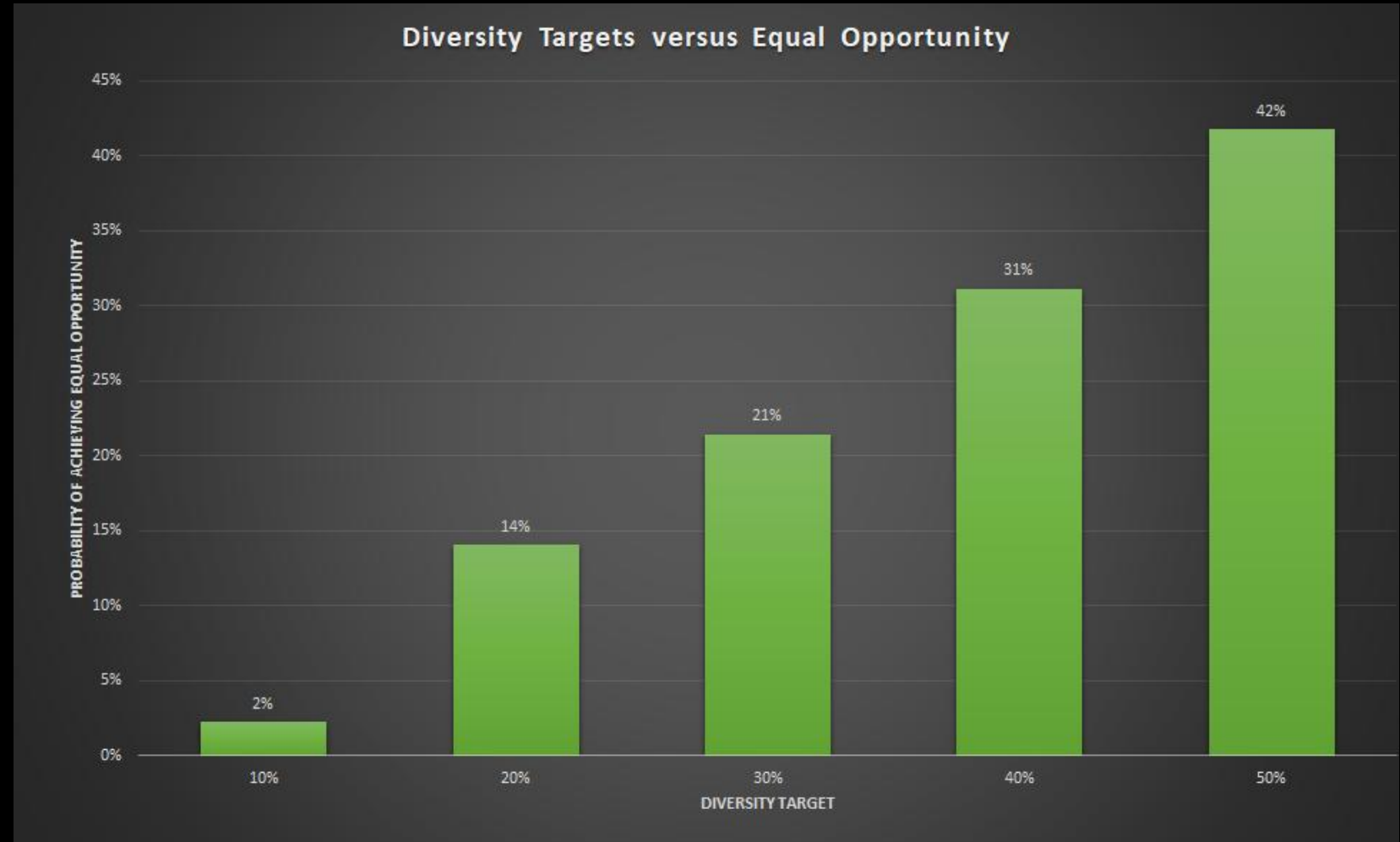
But how does the Scientific Measurements relate to  
**Diversity Targets?**

# SIMULATION OF RELATIVE OPPORTUNITY VS DIVERSITY TARGETS



# Diversity/ Diversity Targets do not guarantee you Equal Opportunity

**From the monte-carlo simulation**

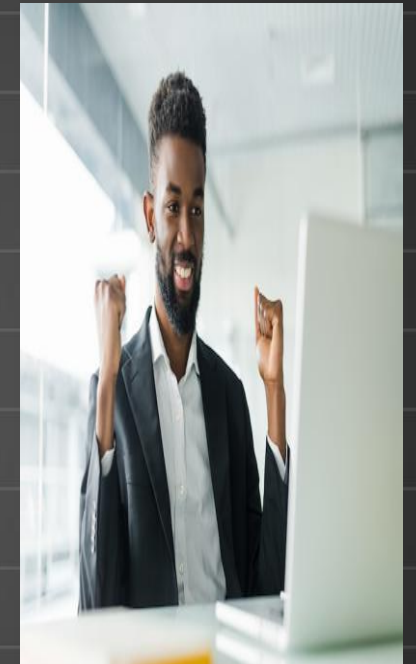
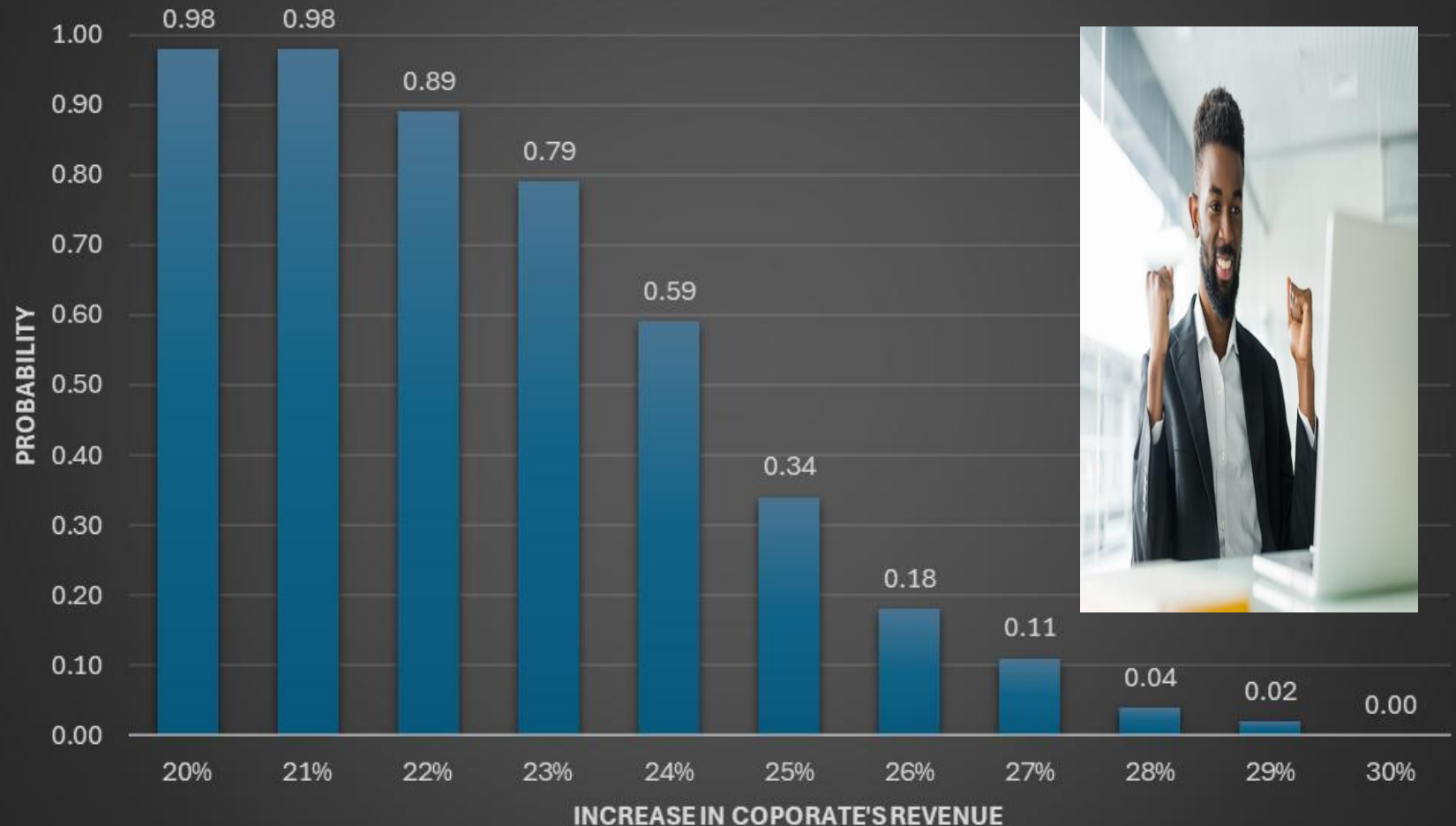


# What are the benefits of Equal Opportunity?

## Doing another monte-carlo simulation



### A Corporate's Simulated Growth in Revenue when Equal Opportunity is achieved



But we are an equal  
opportunities employer

WHAT I SAY IS  
ONE THING....  
WHAT THE  
SCIENCE SAY....



But we are an equal  
opportunities employer

WHAT I SAY IS  
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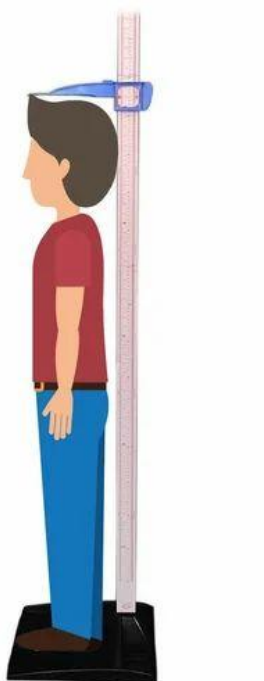


I am 10 feet tall  
and  
Weight 5 stones

But we are an equal opportunities employer

WHAT I SAY IS  
ONE THING....

WHAT THE  
SCIENCE SAY....



SAY THIS OUT LOUD!

---

*Diversity ≠ Equality*

*Diversity ≠ Equality*

*Diversity ≠ Equality*

Companies: "We're committed to diversity."

The diversity:



# SOUTH AFRICA DURING APARTHEID ERA

---

*Diversity ≠ Equality*



A portrait of Peter Drucker, an elderly man with glasses, wearing a dark suit and tie. He is resting his chin on his hand in a thoughtful pose. The background of the entire image is a dark, moody landscape with two waterfalls cascading over rocky terrain under a cloudy sky.

*You Can't Manage What You  
Don't Measure.*

*~ PETER DRUCKER ~*

*Statustown.com*

A portrait of Peter Drucker, an elderly man with glasses, wearing a dark suit and tie. He is resting his chin on his hand in a thoughtful pose. The background is a dark, textured blue.

*You Can't Manage What You  
Don't Measure.*

*~ PETER DRUCKER ~*

Do we measure and report opportunity probabilities?

*Statustown.com*

This will show  
how close you are  
to  
Equal  
Opportunity

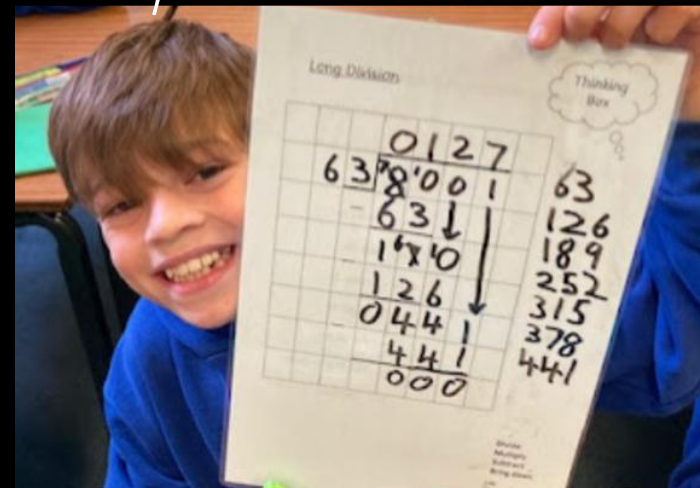
IT IS SIMPLE DIVISION, AND THE DATA IS ALREADY COLLECTED

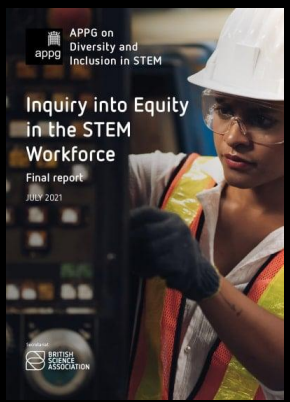
$$\bullet \text{Relative}_{\text{Opportunity}} = 8.3\% \div 20.0\% \approx 0.415$$

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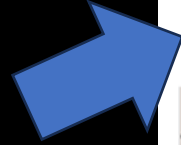
 Measure of Diversity  
 Measure of Equality

A 10-year-old could do it





Unlike other  
EDI KPI's



This reflects the  
lived experience  
of  
underrepresented  
groups

IT IS SIMPLE DIVISION, AND THE DATA IS ALREADY COLLECTED

$$\bullet \text{Relative Opportunity} = 8.3\% \div 20.0\% \approx 0.415$$

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 Measure of Diversity  
 Measure of Equality

*HIGH Diversity but LOW Equality*



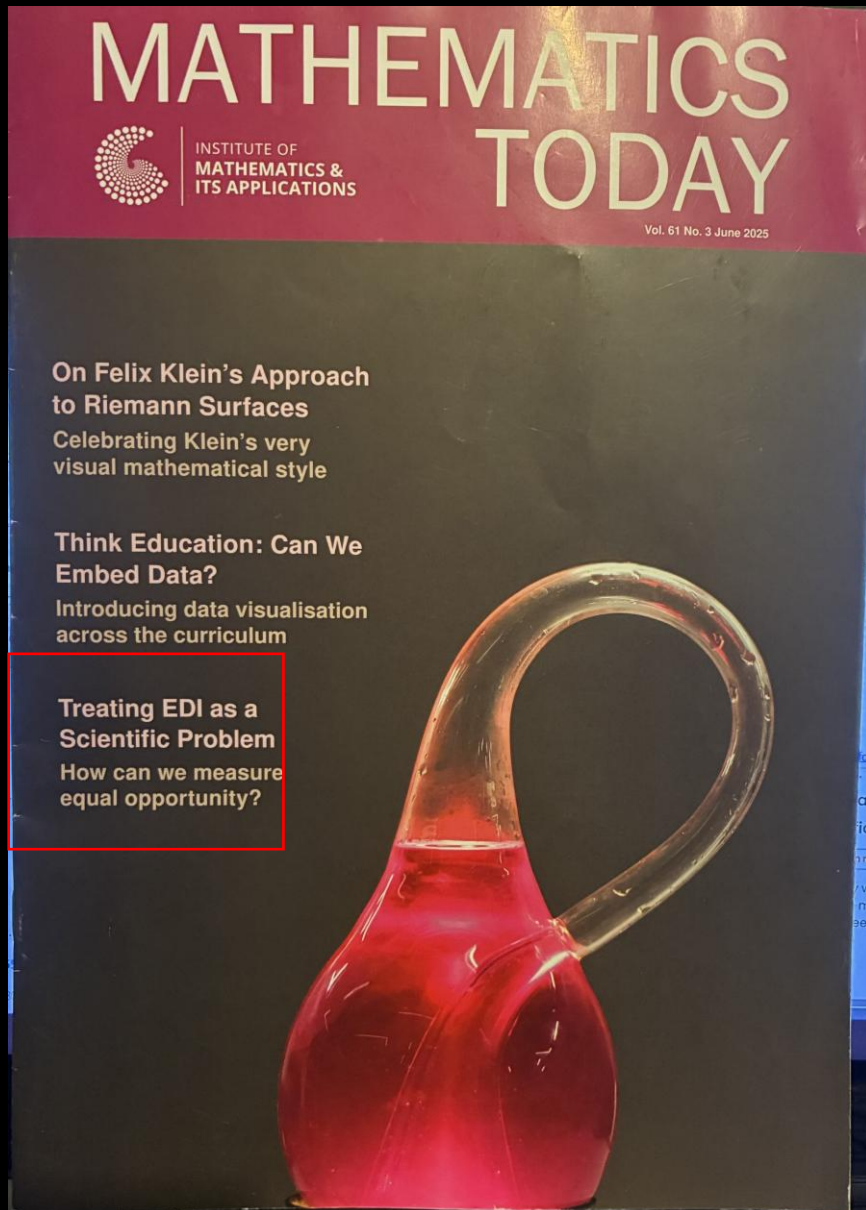
# GAVE EVIDENCE TO THE UK PARLIAMENT 2025 (TWICE)

## Bringing back 'equality of opportunity'

Mathematician **Professor Nira Chamberlain** was a guest at the event and invited to speak. He quoted Victorian mathematician and engineer Lord Kelvin, who said that "if you can't measure it, you can't improve it".



# PAPER PUBLISHED IN 2025



## Treating EDI as a Scientific Problem

Nira Chamberlain OBE CMath CSci FIMA, Loughborough University

*This is an extended version of a talk given at the British Applied Mathematics Colloquium 2024 at Newcastle University.*

### Introduction

**A**ccording to the Chartered Institute of Personnel and Development (CIPD) [1], promoting and delivering Equality, Diversity and Inclusion (EDI) in the workplace is an essential aspect of good people management. It is about creating working environments and cultures where every individual can feel safe, has a sense of belonging and is empowered to achieve their full potential. However, although organisations may be increasing the Diversity of their workforces, they may not have policies that ensure that all employees have access to opportunities to progress their careers [2].

Moreover, the CIPD claims that an effective EDI strategy is essential to an organisation's business objectives [1]. But how can we assess the effectiveness of an EDI strategy? The usual way is by subjective questionnaires and the resulting metrics [5]. These approaches are well meaning but have their challenges.

In this article, we will explore this by treating EDI as a scientific problem.

### Equality, Diversity and Inclusion

A definition of EDI according to [3] is

- *Equality* means offering the same rights and opportunities

subjective questionnaires do not accurately reflect the lived experience of the under-represented groups. There was also general agreement that there was confusion between the terms Diversity (the percentages of people from different backgrounds at the table) and Equality (offering the same rights and opportunities to all people). This meeting led me to research whether there is a more scientific way to measure the effectiveness of EDI strategies.

### Thought experiment

So, how do we measure the effectiveness of an EDI strategy? According to the late Leila Janah, an American businesswoman and daughter of Indian immigrants who founded and served as CEO of Samasource, an efficient EDI approach can tap into the talent in under-represented communities. She was known for the quote [7]:

Talent is equally distributed, opportunity is not.

So, how can we demonstrate the above statement about talent? Let's consider the following thought experiment.

A coin has two sides: heads and tails. If it is a British coin, no matter whether it is a penny or a pound, the probability of tossing a coin and it landing on a head will always be a half.

Now consider a foreign coin. It will have the equivalent of heads and tails. No matter its country of origin, size, colour or weight, the probability of tossing any coin and it landing on its equivalent of a head will always be a half.

# Association for Black and Minority Ethnic Engineers (AFBE) Live 24



# Prof David Olusoga – AFBE Live 2024



# Prof David Olusoga – AFBE Live 2024



## The Coin Thought Experiment



HEADS

TAILS



**“ Stop normalising the statistical abnormal”**

# STATEMENTS ABOUT EDI

- This was **never** about **subjectivity** (i.e. abandoning the numbers and replacing it with **questionnaires/pseudo equations**)
- It was **always** about the **Laws of Probability!**
- **Diversity** does not equal **Equality**
- **Equal Opportunity** is a **scientific term** that can be measured **scientifically**



# PROFESSOR STEPHEN HAWKING



*From an interview with the BBC, December 2014*



- The development of full artificial intelligence could spell the end of the human race.

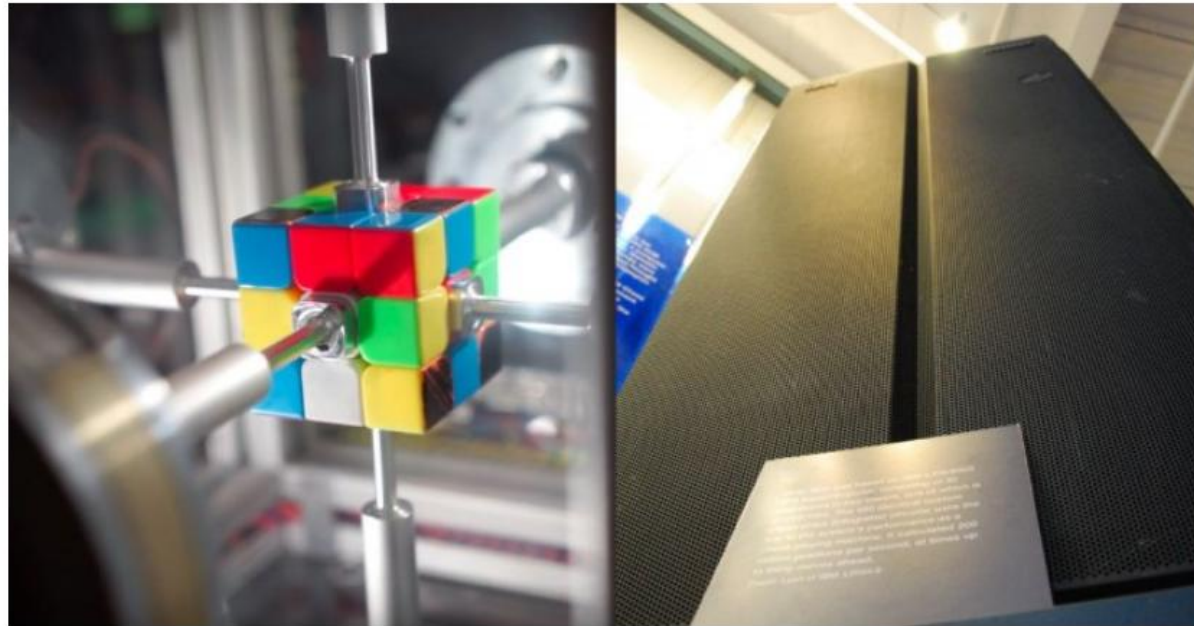
# 11 Times AI Beat Humans at Games, Art, Law and Everything in Between

AI is simply better than humans at lots of tasks, from the obvious of data analysis to the unexpected of music making.



By Jessica Miley

March 12, 2018



# EXAM QUESTIONS: HOW CAN WE COMPETE AGAINST A BAD ACTOR THAT USES ADVANCE AI FOR BUSINESS STRATEGIES



IF THAT COMPETITOR BECOMES A MONOPOLY COULD AI END UP  
RUNNING THE WORLD ECONOMY?



# WOULD AI MAKE DECISIONS CONDUCIVE TO SOCIAL COHESION?



## THE CHALLENGE:

FIND THE HIDDEN LOGIC TO BEAT AI BAD ACTOR IN A BUSINESS ENVIRONMENT?



**Nira Chamberlain**  
Mathematical Solidification

Nira can turn math into an object. He does need to stay in physical contact with the object created



# The Mathematics of Competition

## THE GAMBLER'S RUIN PROBLEM (1657)

*Let two players each have a finite number of coins (say,  $n$  for player one and  $m$  for player two). Now, flip one of the coins (from either player), with each player having a probability of winning, and transfer a coin from the loser to the winner. Now repeat the process until one player has all the coins. What are the probabilities of each player winning and how long will the game last for?*



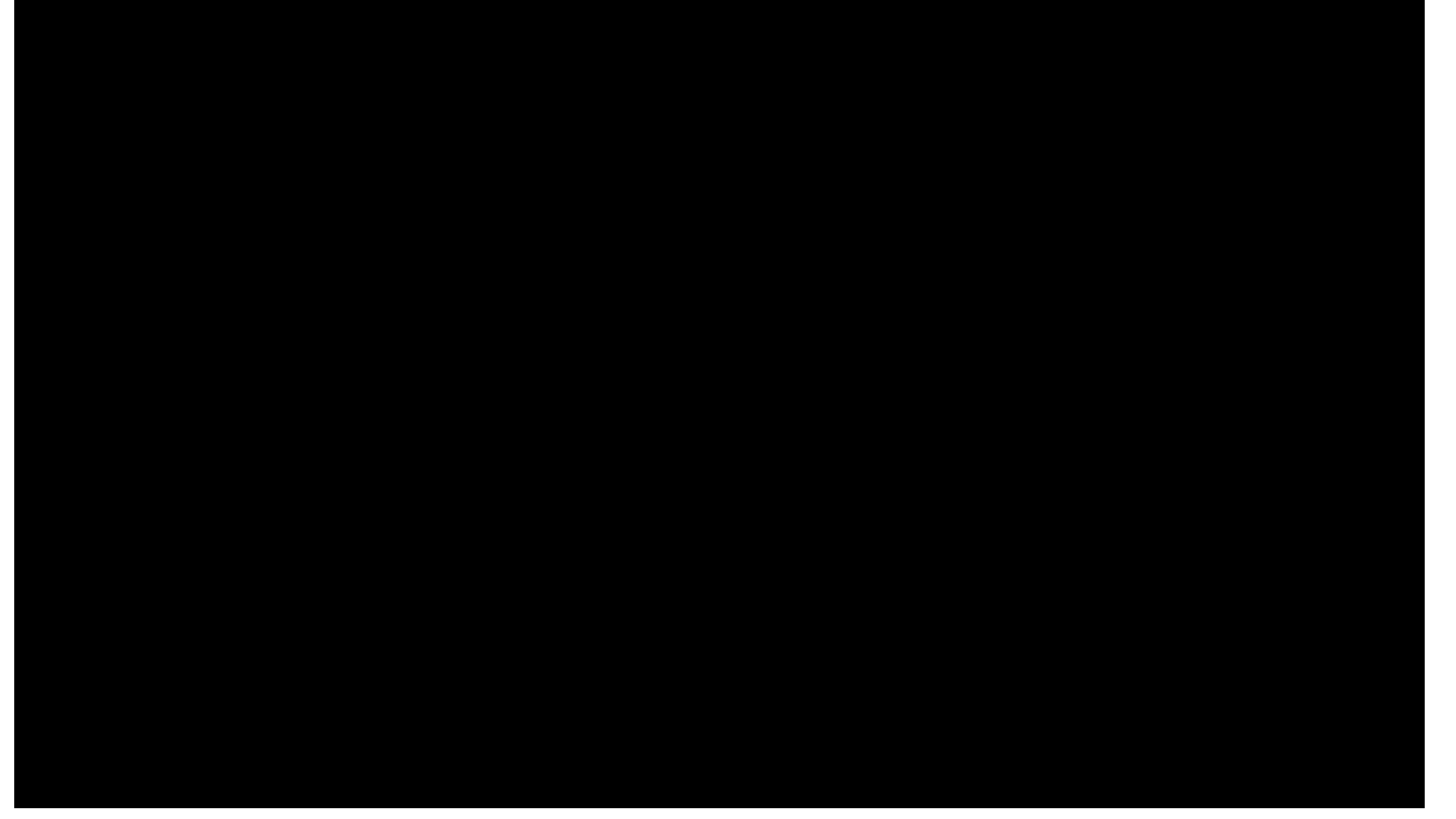
Pierre de Fermat



Blaise Pascal



Christiaan Huygens



# HOW CAN WE TRANSFORM THE CLASSICAL GAMBLER'S RUIN PROBLEM SIMULATE AN ACTUAL AI TAKEOVER?

Nira Chamberlain and the Gambler's Ruin Problem



EXTENSION OF THE GAMBLER'S RUIN  
PROBLEM PLAYED OVER NETWORKS

THE THESIS IS SUBMITTED IN PARTIAL FULFILMENT OF  
THE REQUIREMENTS  
FOR THE AWARD OF THE DEGREE DOCTOR OF  
PHILOSOPHY  
OF THE UNIVERSITY OF PORTSMOUTH.

December 30, 2013

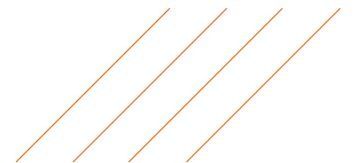
By  
Nira Chamberlain

Department of Mathematics



What do we do?

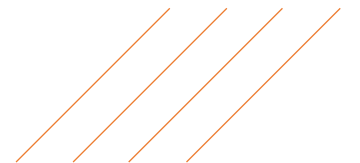
# THE EXTENDED GAMBLER'S RUIN PROBLEM



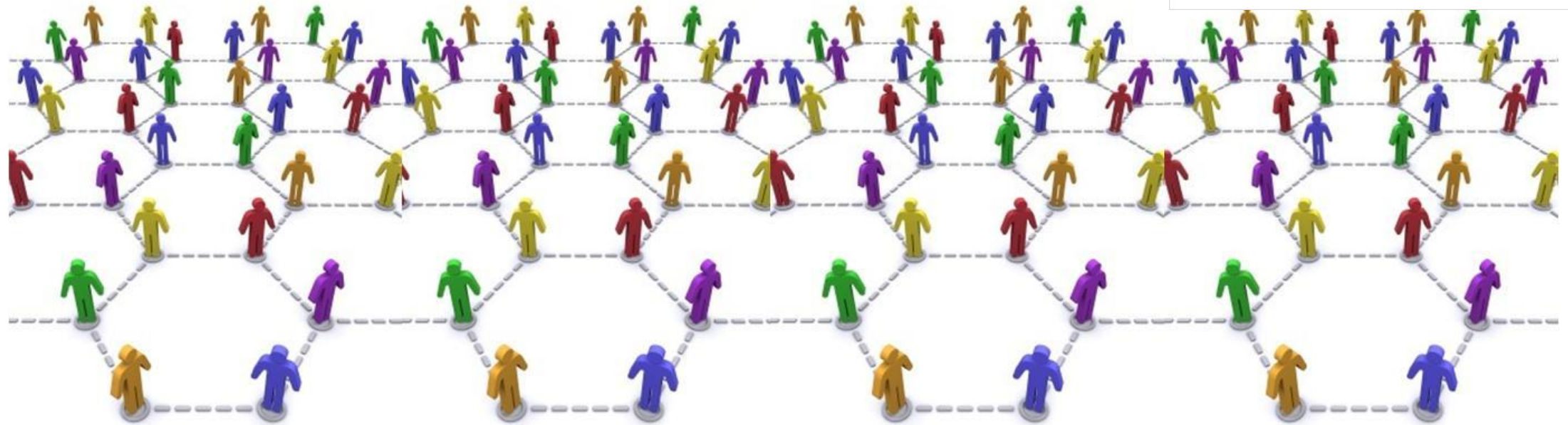
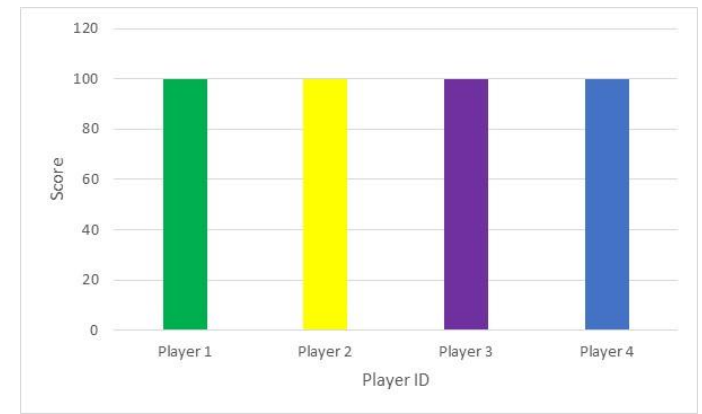
# THE EXTENDED GAMBLER'S RUIN PROBLEM



Each player is given an initial resource and a target



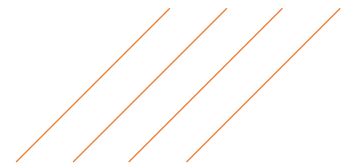
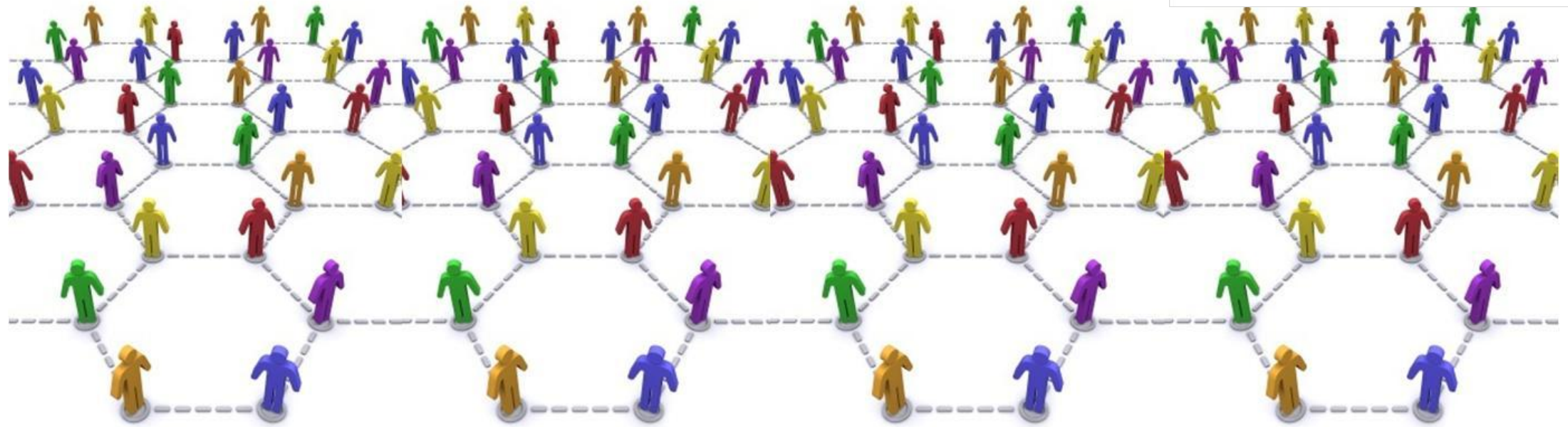
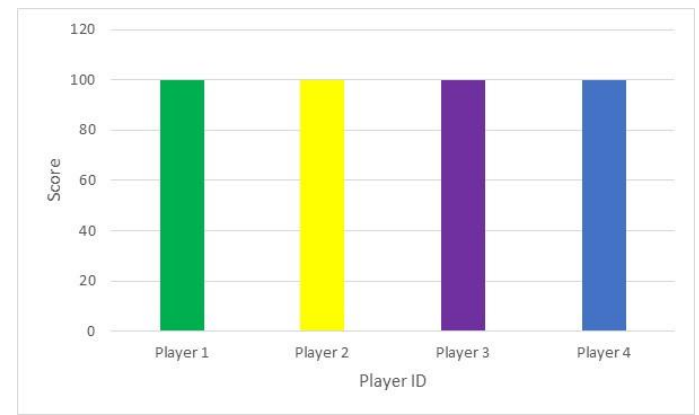
# ALLOCATION OF SCORE



In every round, a player will be given an individual random score between 0 and 100



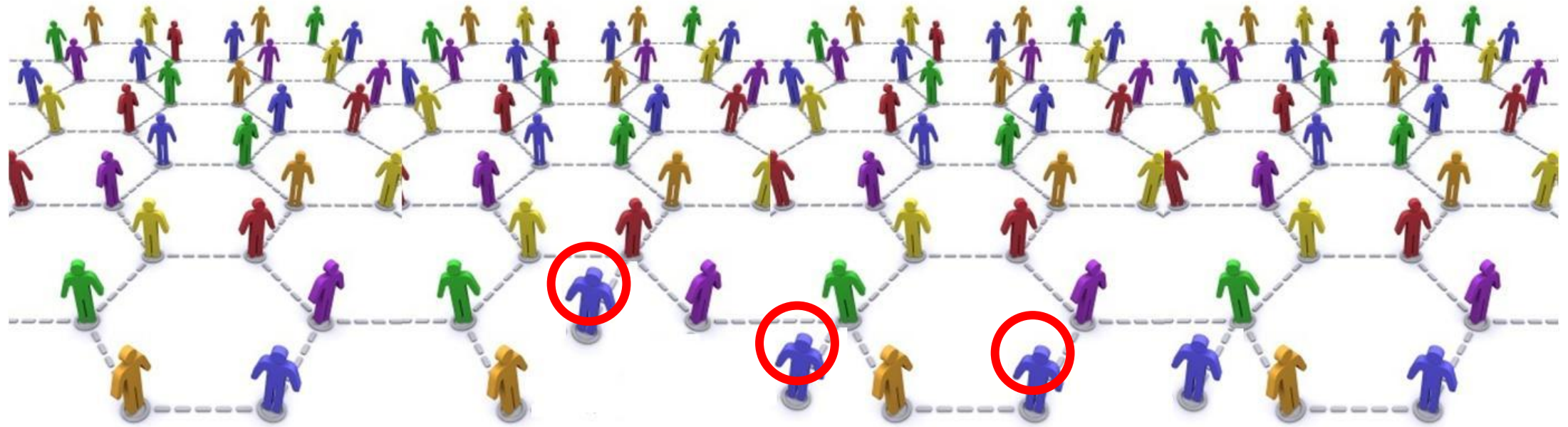
# PLAY THE GAME



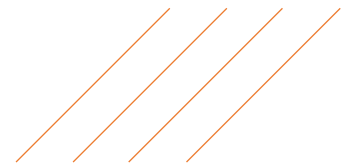
# A PLAYER IS ABOUT TO ACHIEVE THEIR TARGET



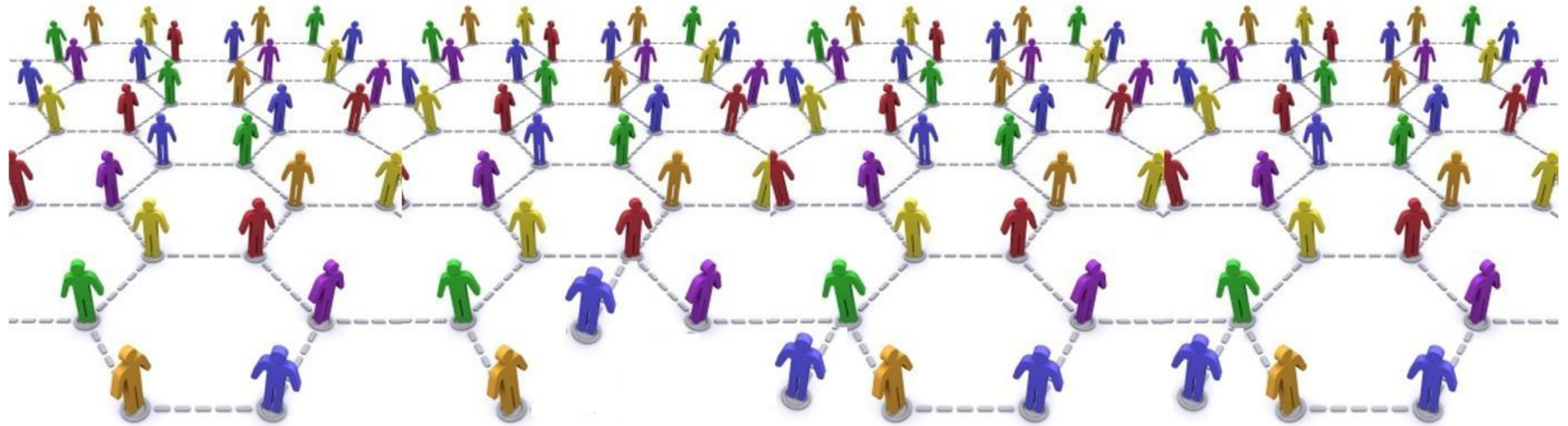
# THE ACHIEVER'S OFFSPRING



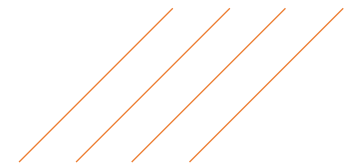
If a player achieve its target they leave the game but have offspring.



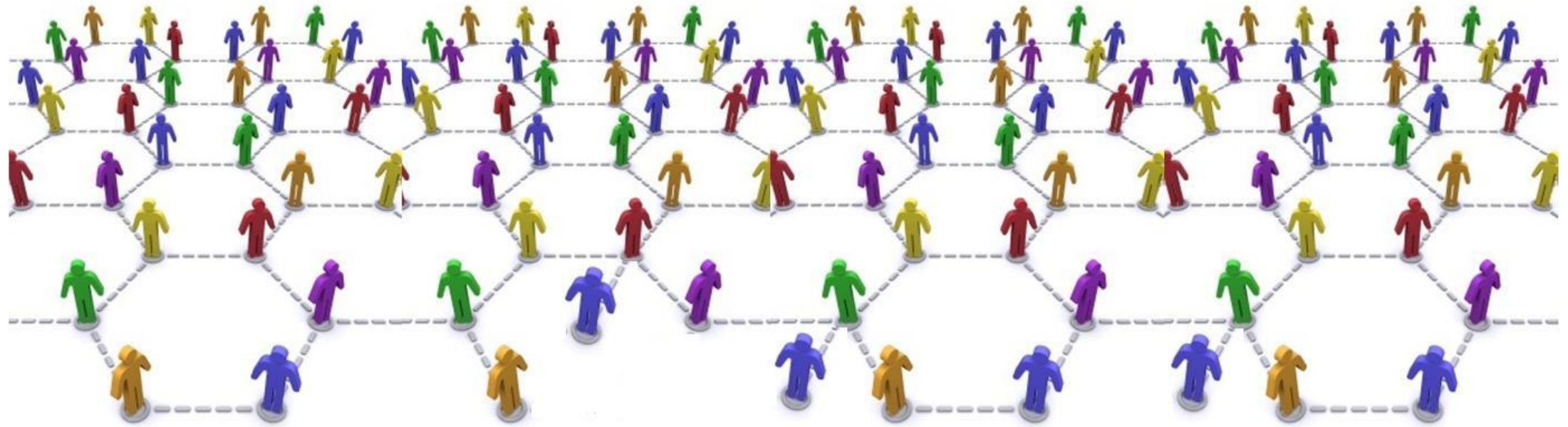
# THE ACHIEVER'S OFFSPRING



The offspring initial resource is the parents final resources divided by it siblings. Its target is the same as its parents



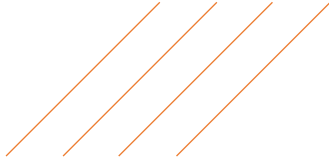
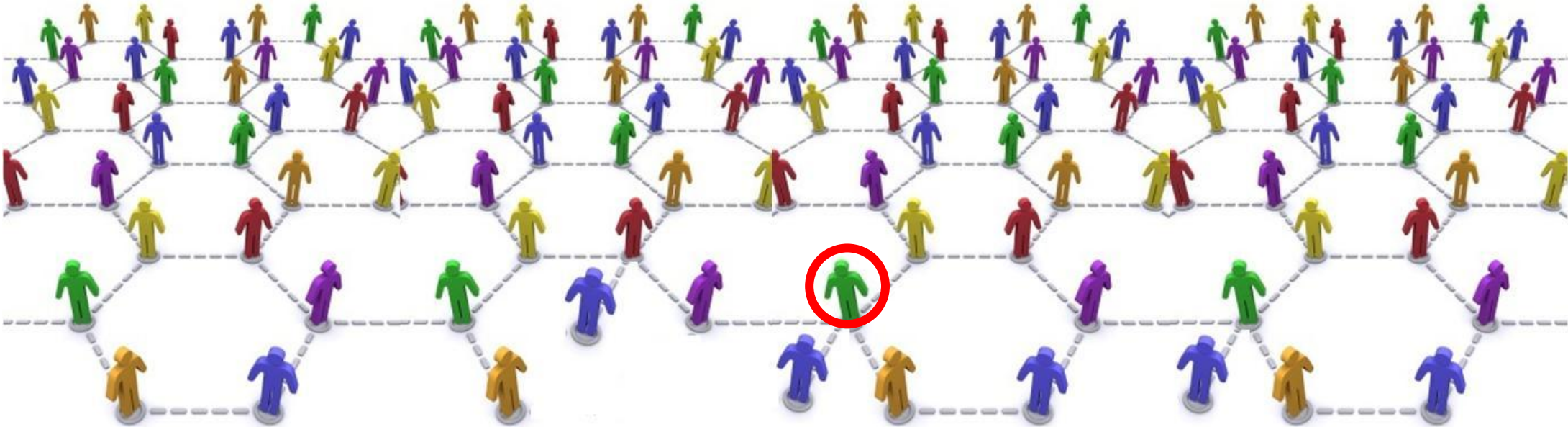
# THE ACHIEVER'S OFFSPRING



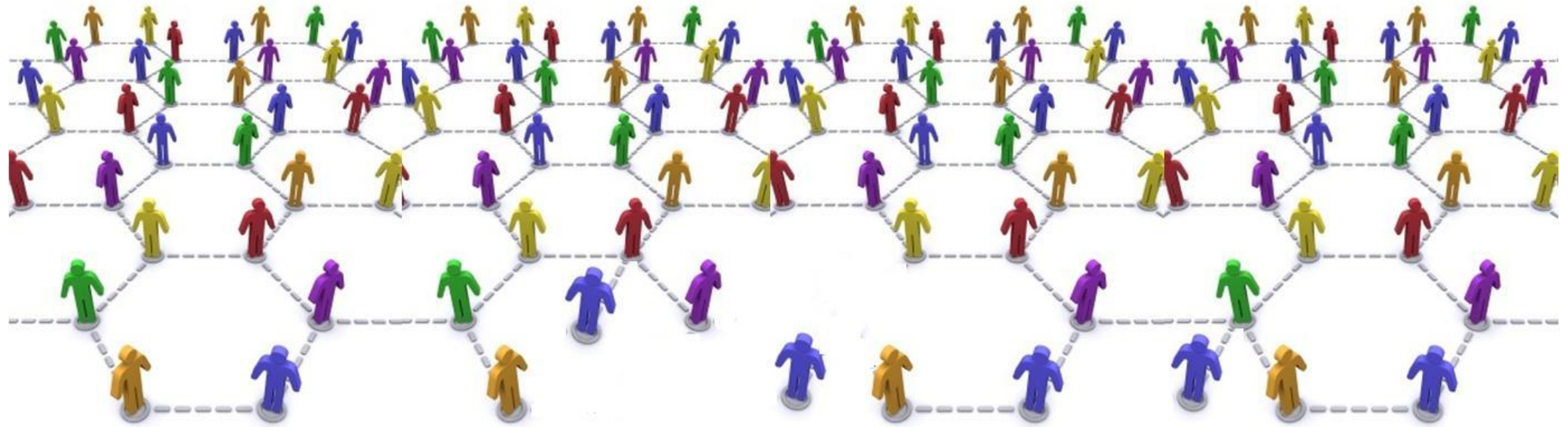
The offspring strength (highest maximum score) will be the same as it's parent.



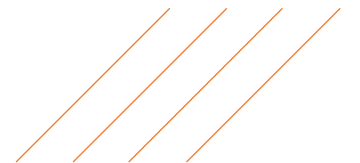
# THIS PLAYER IS ABOUT TO BECOME BANKRUPT



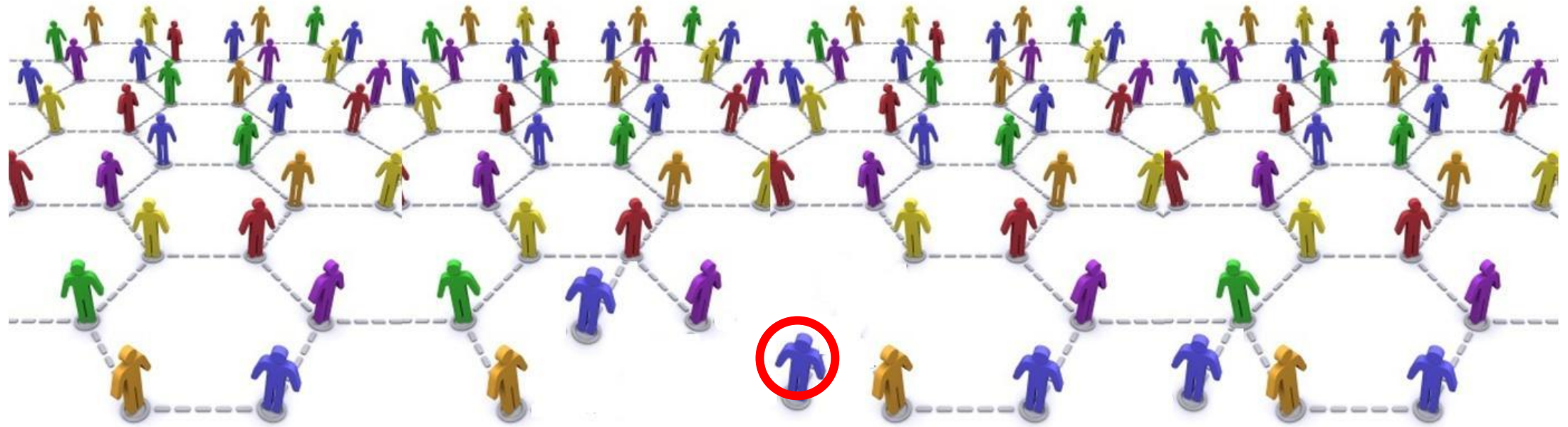
# WHEN A PLAYER BECOME BANKRUPT



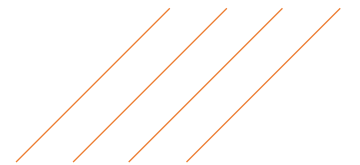
They leave the game



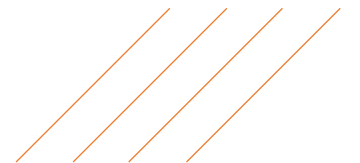
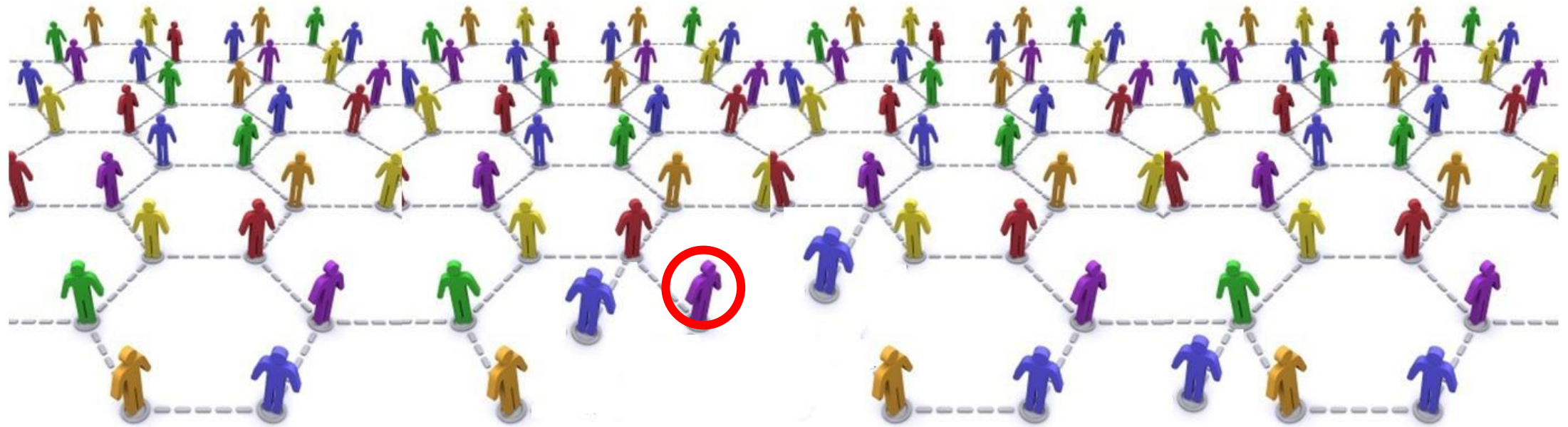
# IF A PLAYER BECOMES ISOLATED



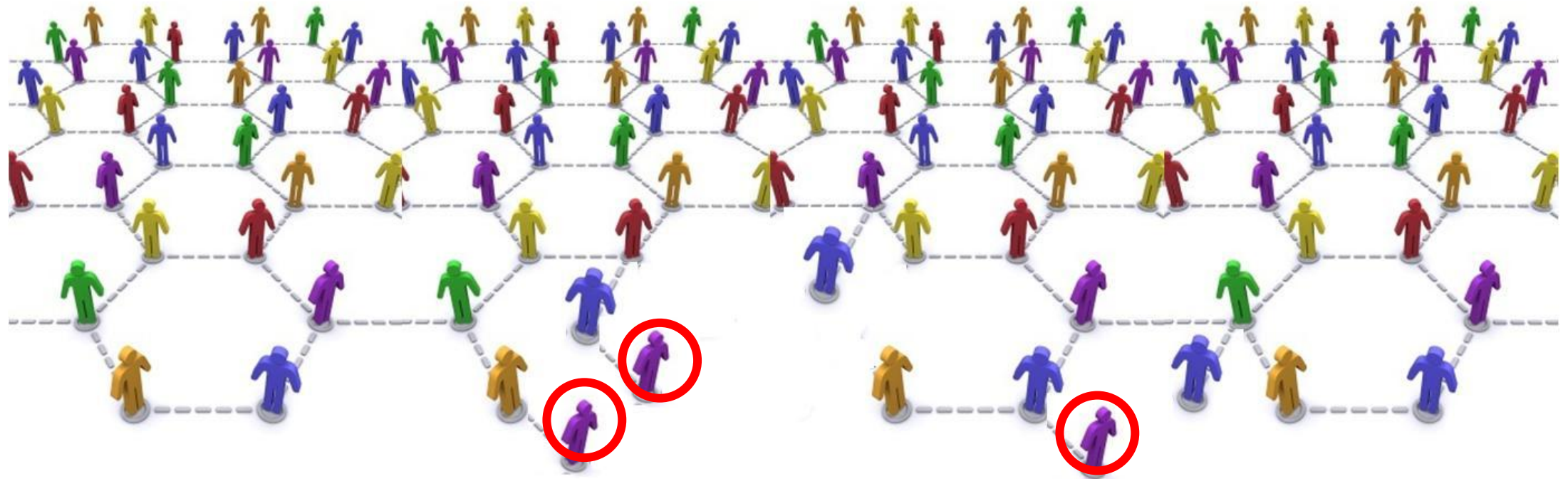
# THEY RECONNECTS



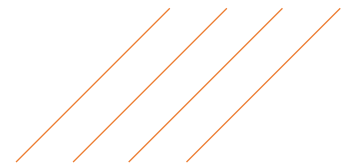
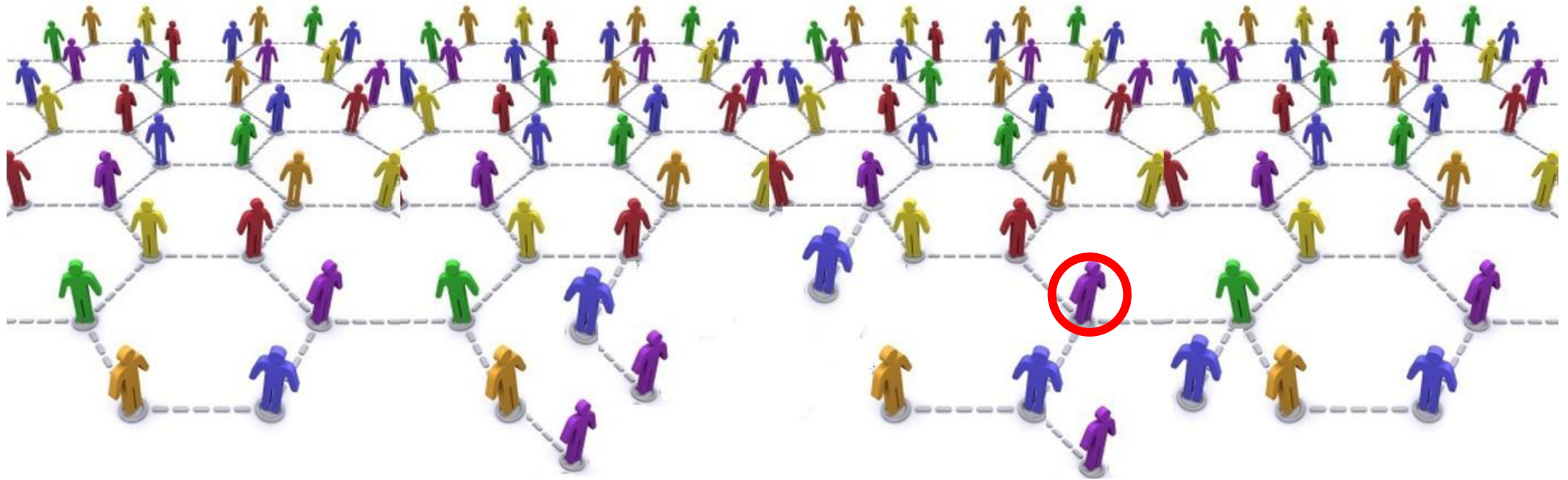
# ANOTHER PLAYER ABOUT TO ACHIEVE



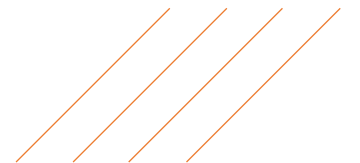
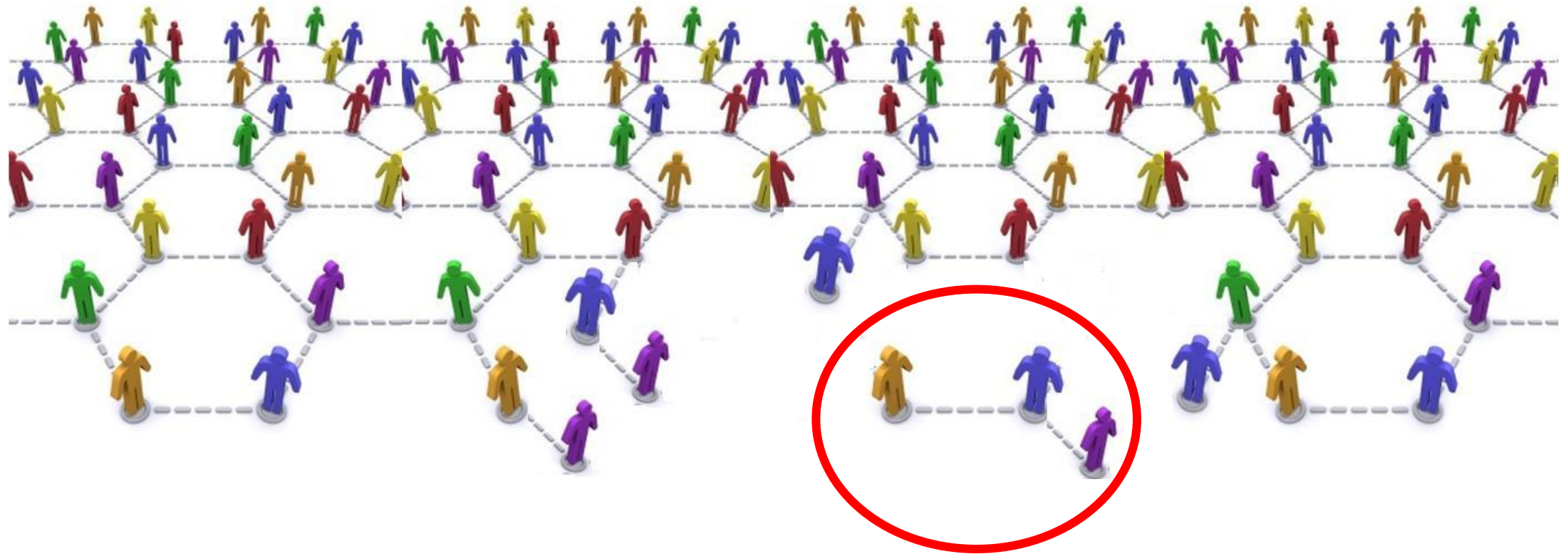
# HAVE OFFSPRING



# BANKRUPTCY CAN CAUSE THE NETWORK TO FRAGMENT



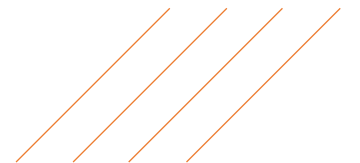
# LIKE THIS



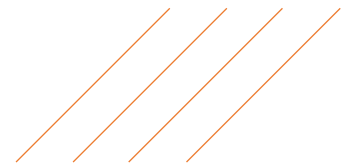
# BUT BANKRUPTCY CAN ALSO CAUSE UNIFICATION OF THE NETWORK



LIKE THIS.. STEP ONE

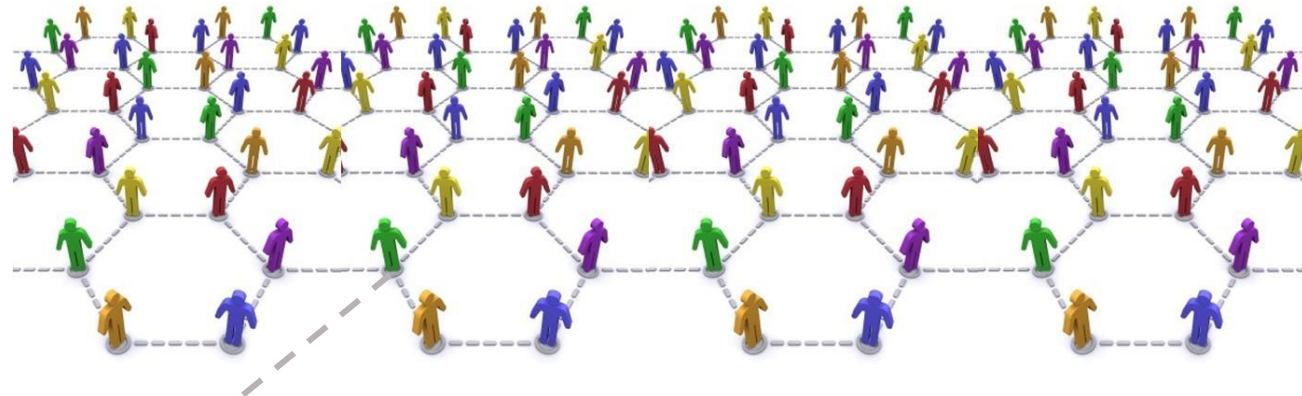
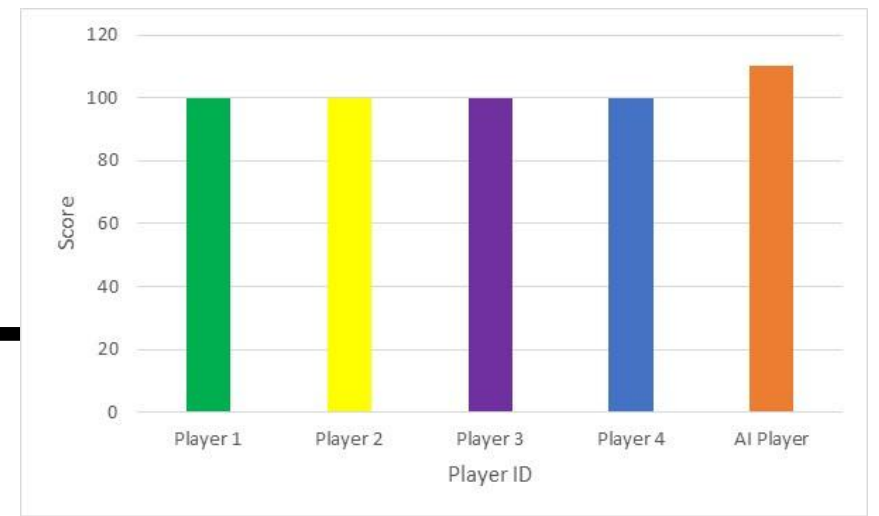


# STEP TWO



# INTRODUCE ONE AI PLAYER

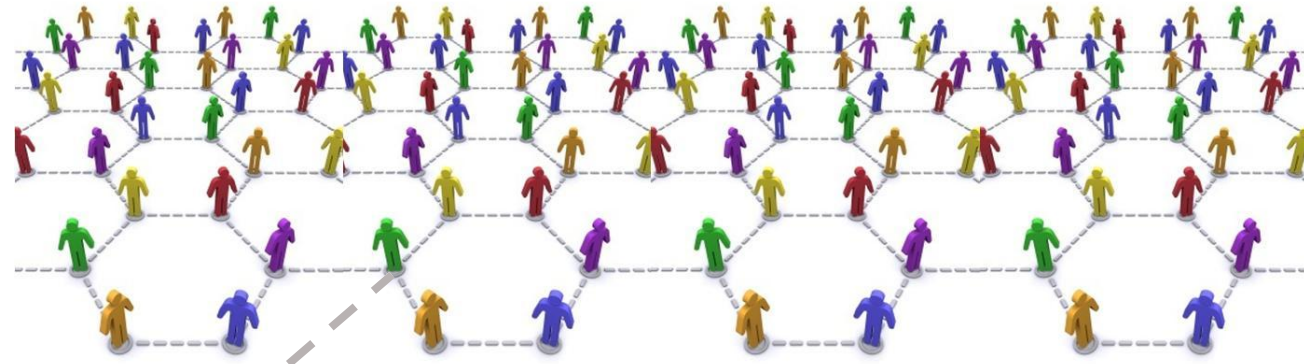
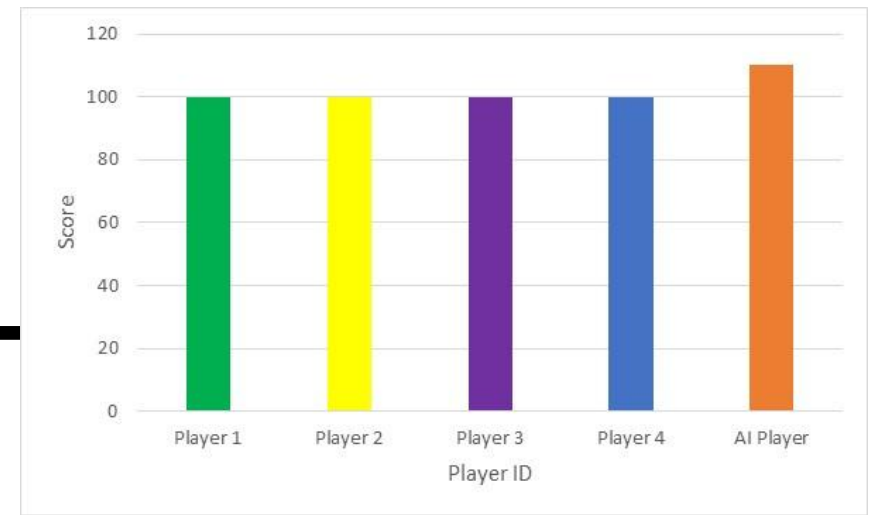
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Same rules but it is stronger  
As they can score up to 110 as oppose to 100

# INTRODUCE ONE AI PLAYER

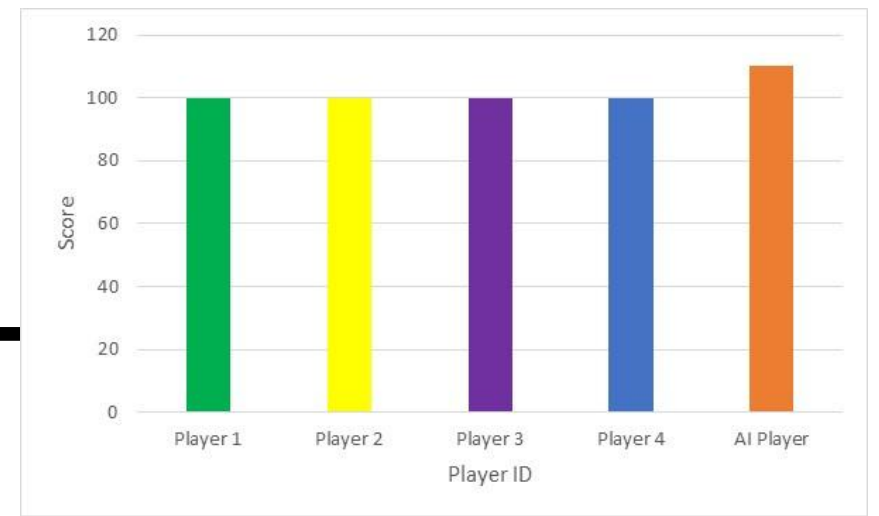
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If it has offspring, then the offspring's strength will be as strong as its parent

# BY INTRODUCING ONE AI PLAYER

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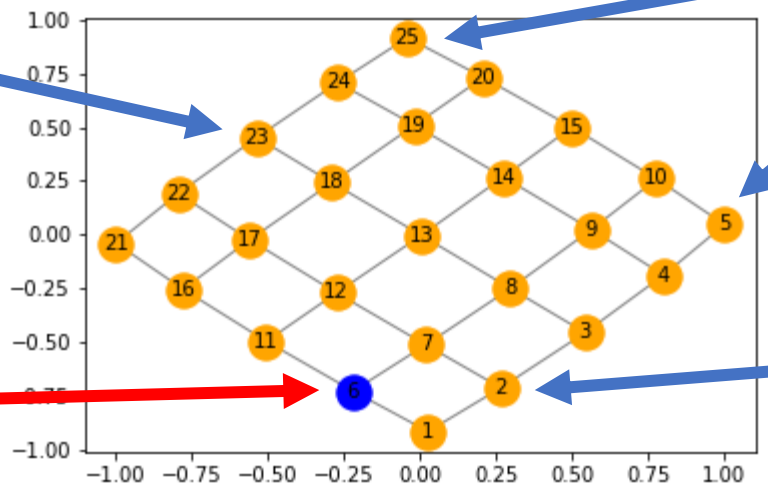
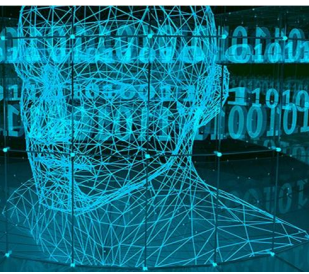
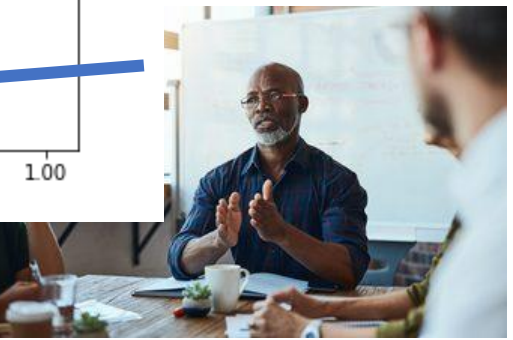
Does an AI Takeover emerge?

# LET'S DO AN ACTUAL SIMULATION

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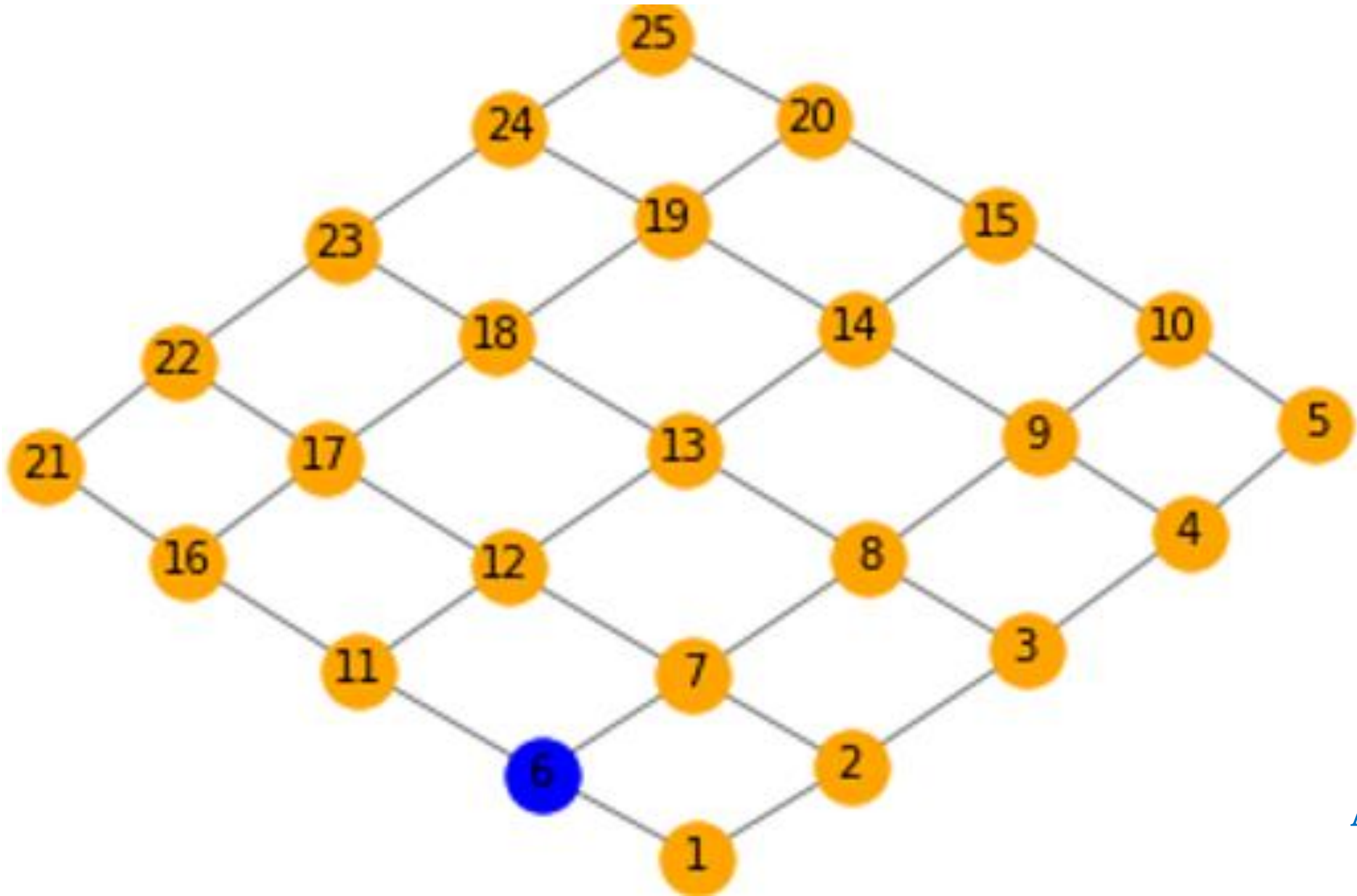
# AI VERSUS HUMAN BUSINESSES



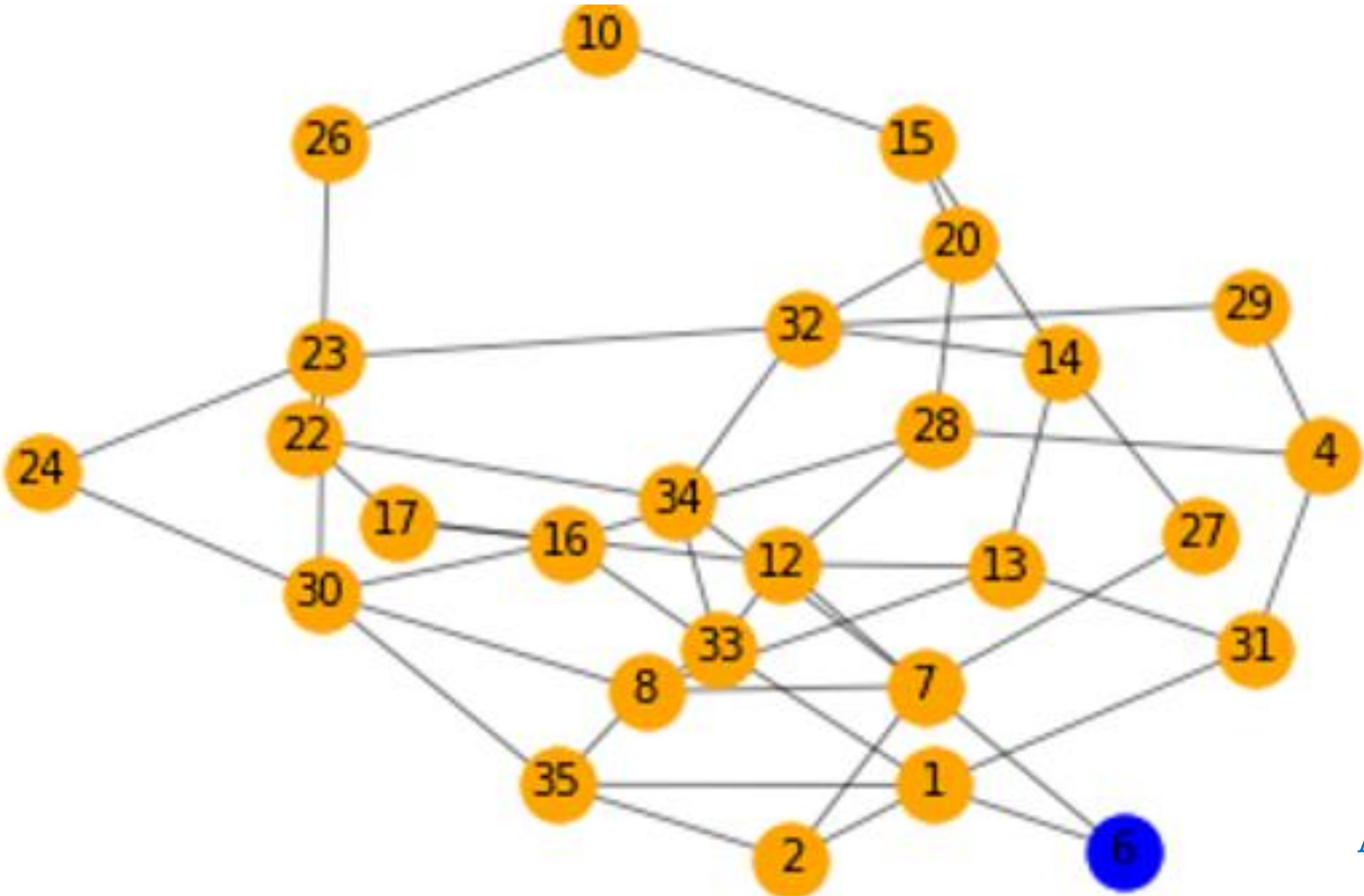
# LOADING AI VERSUS HUMAN SIMULATION

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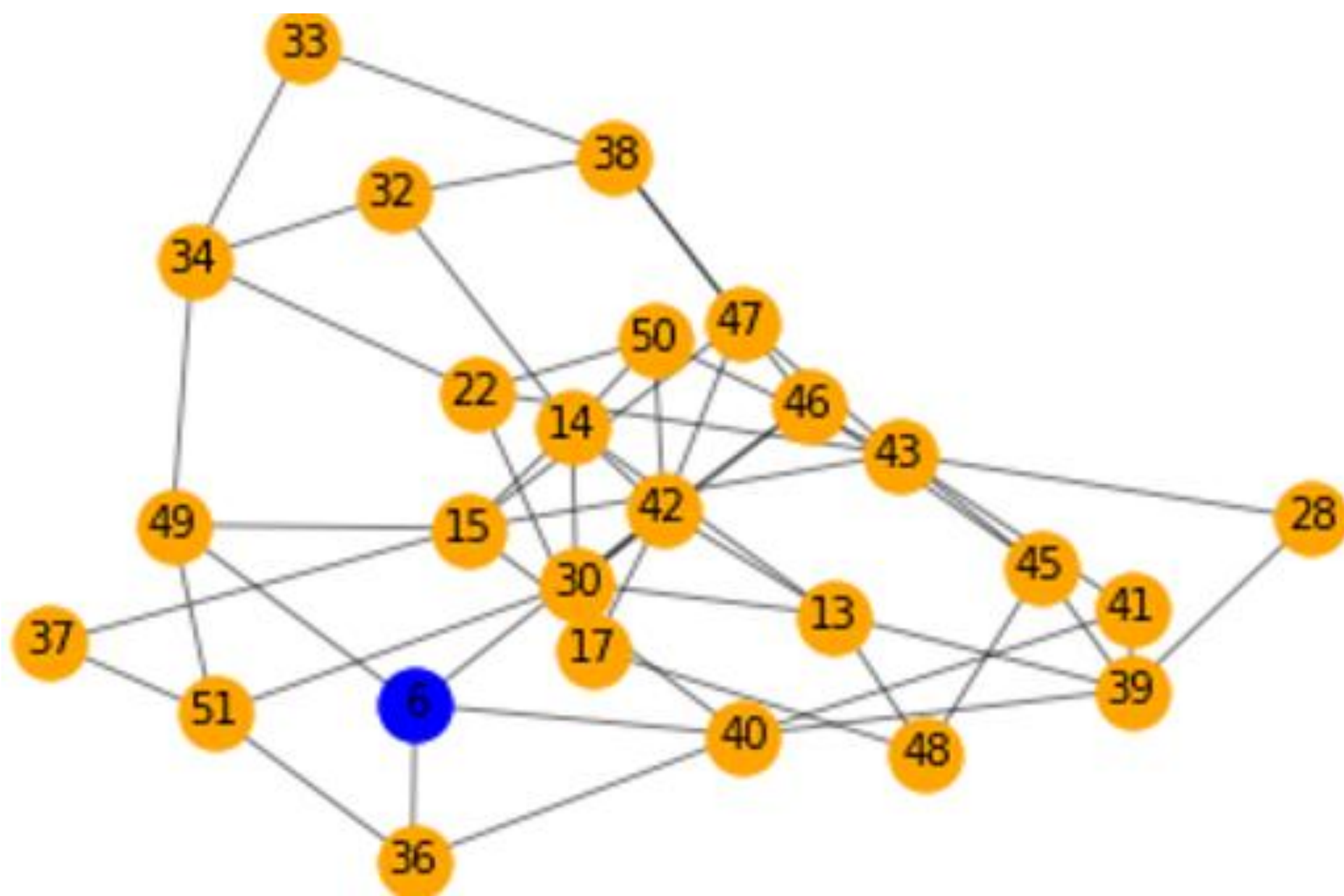


AI Population  
4.00%



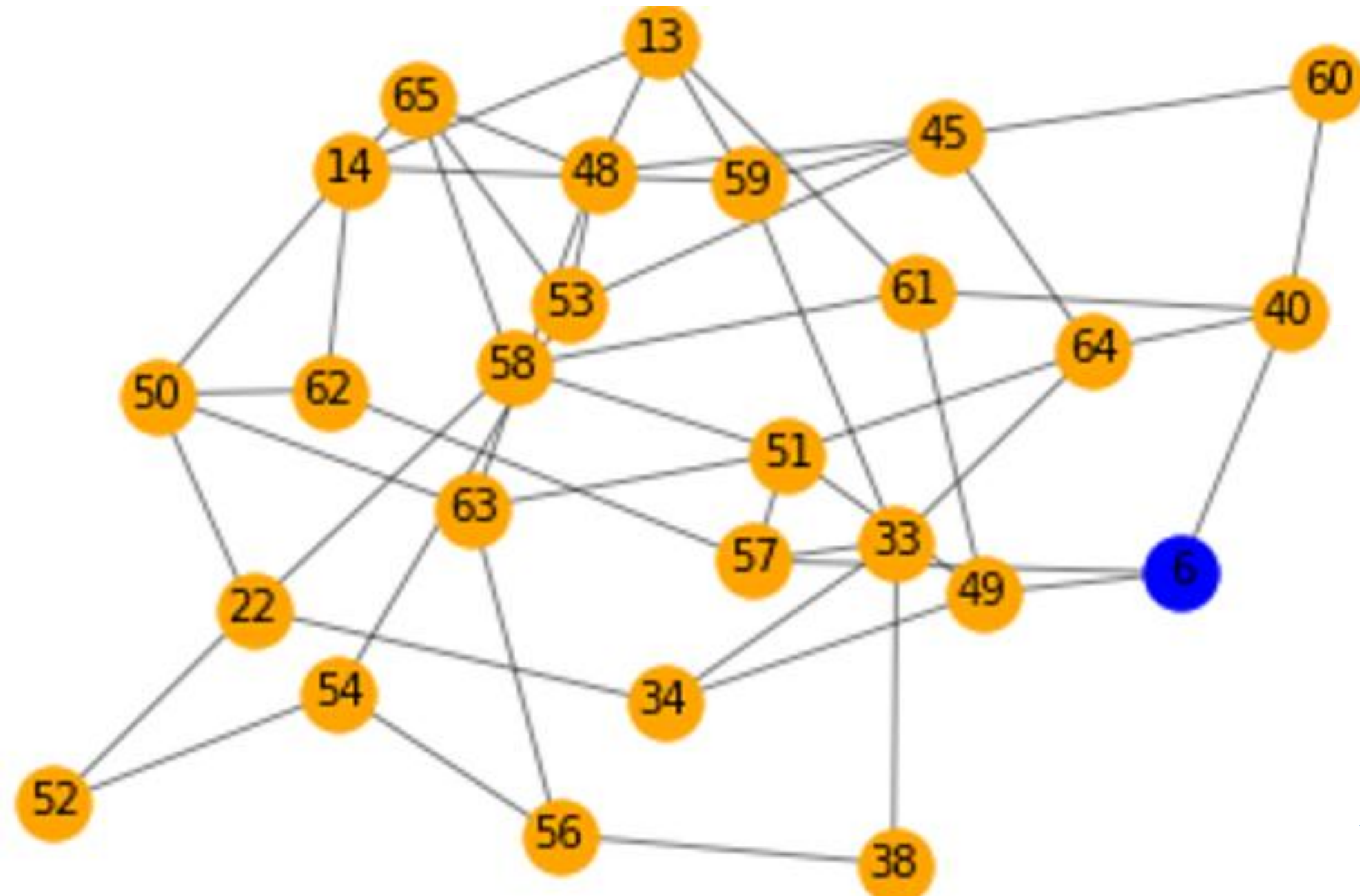
AI Population  
3.70%





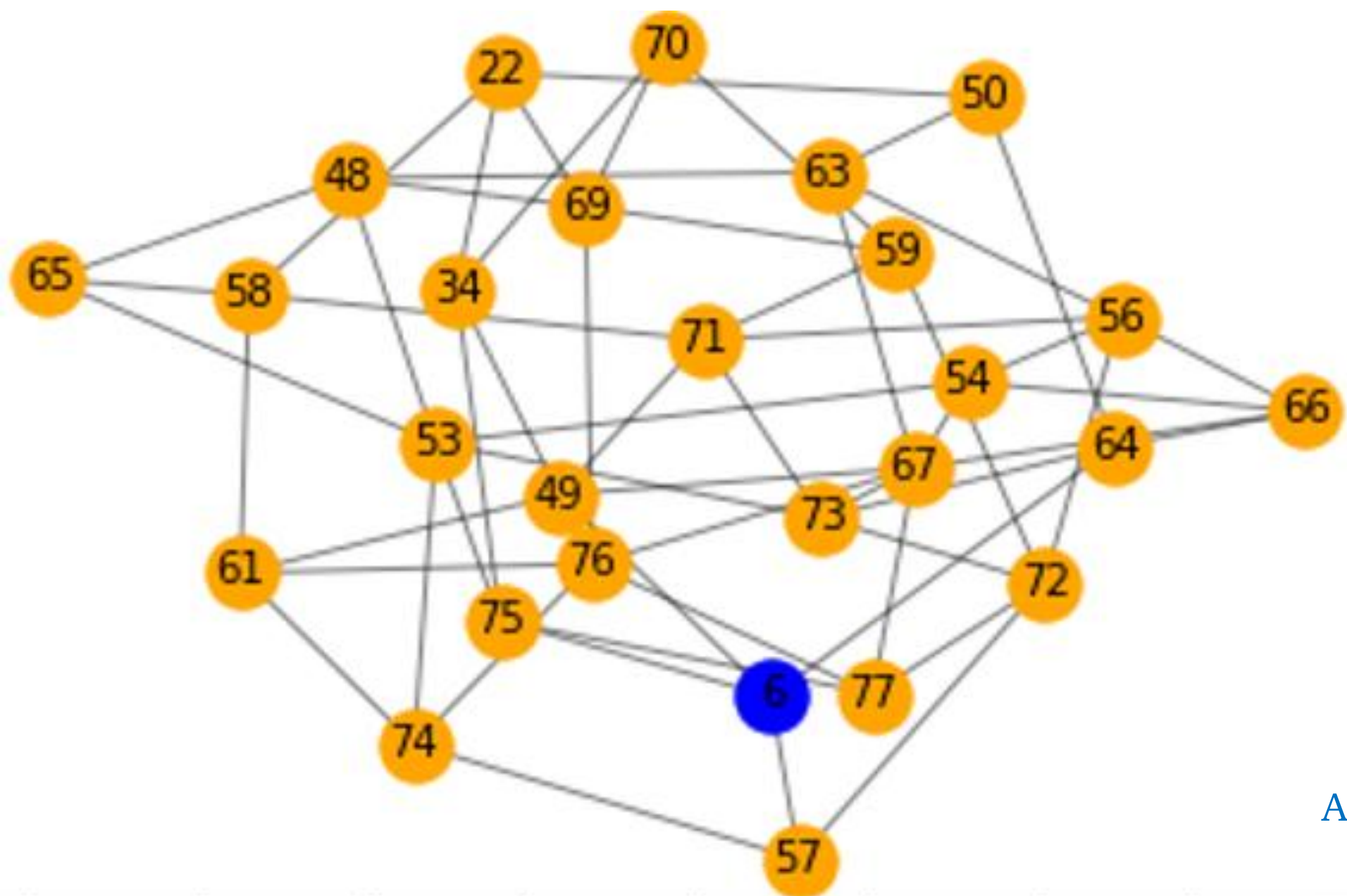
AI Population  
3.84%

2030

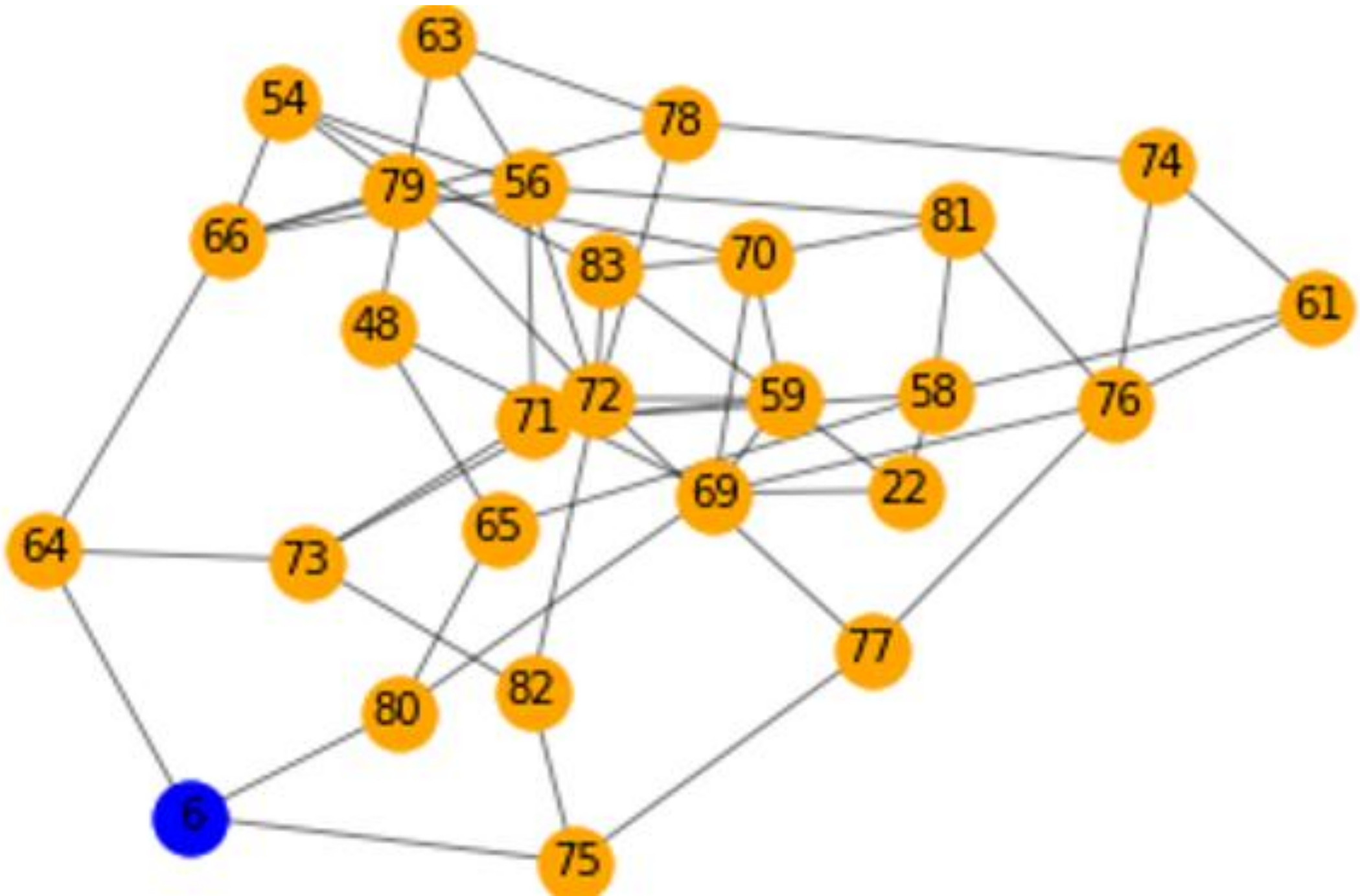


AI Population  
3.84%

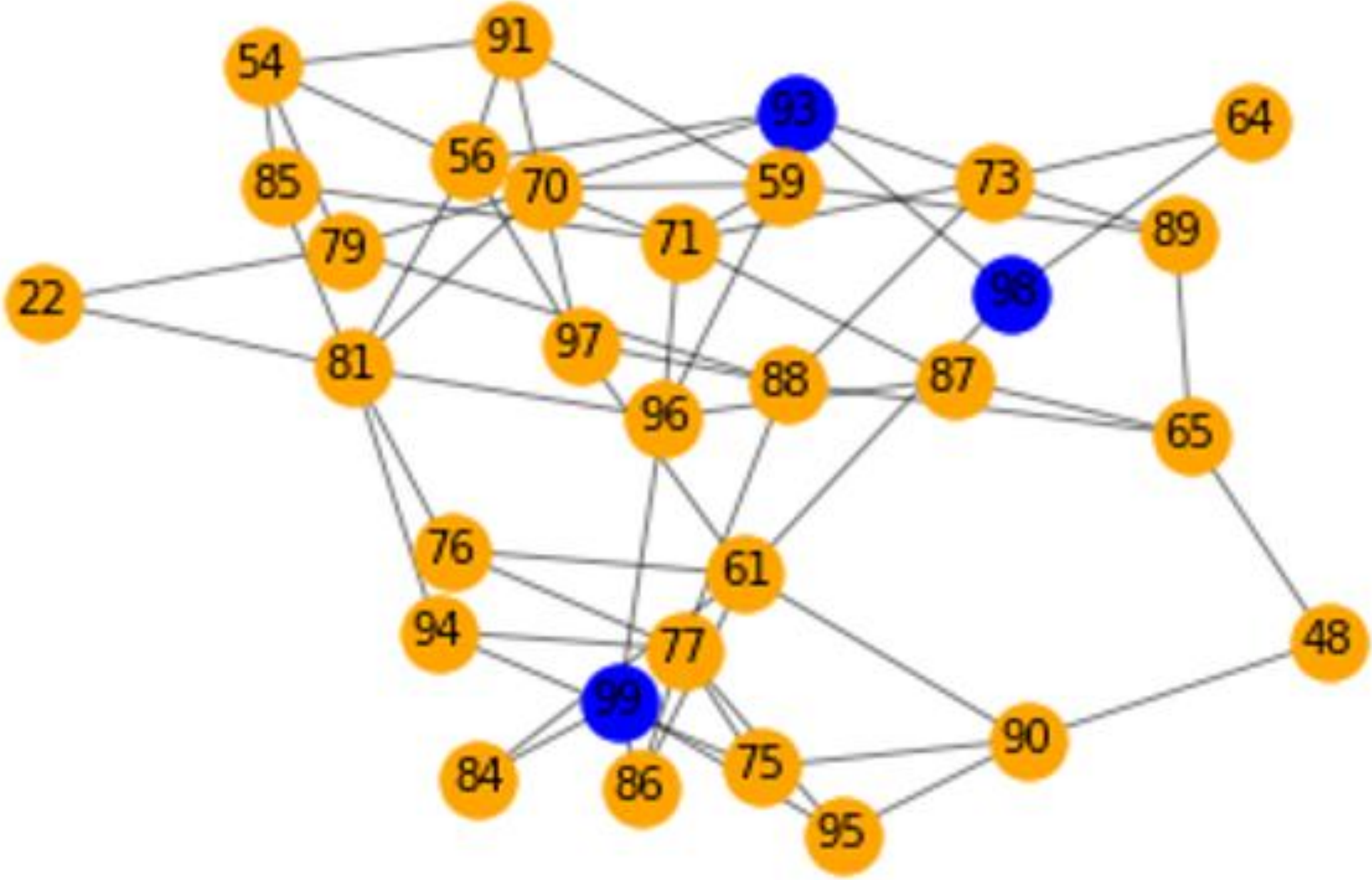




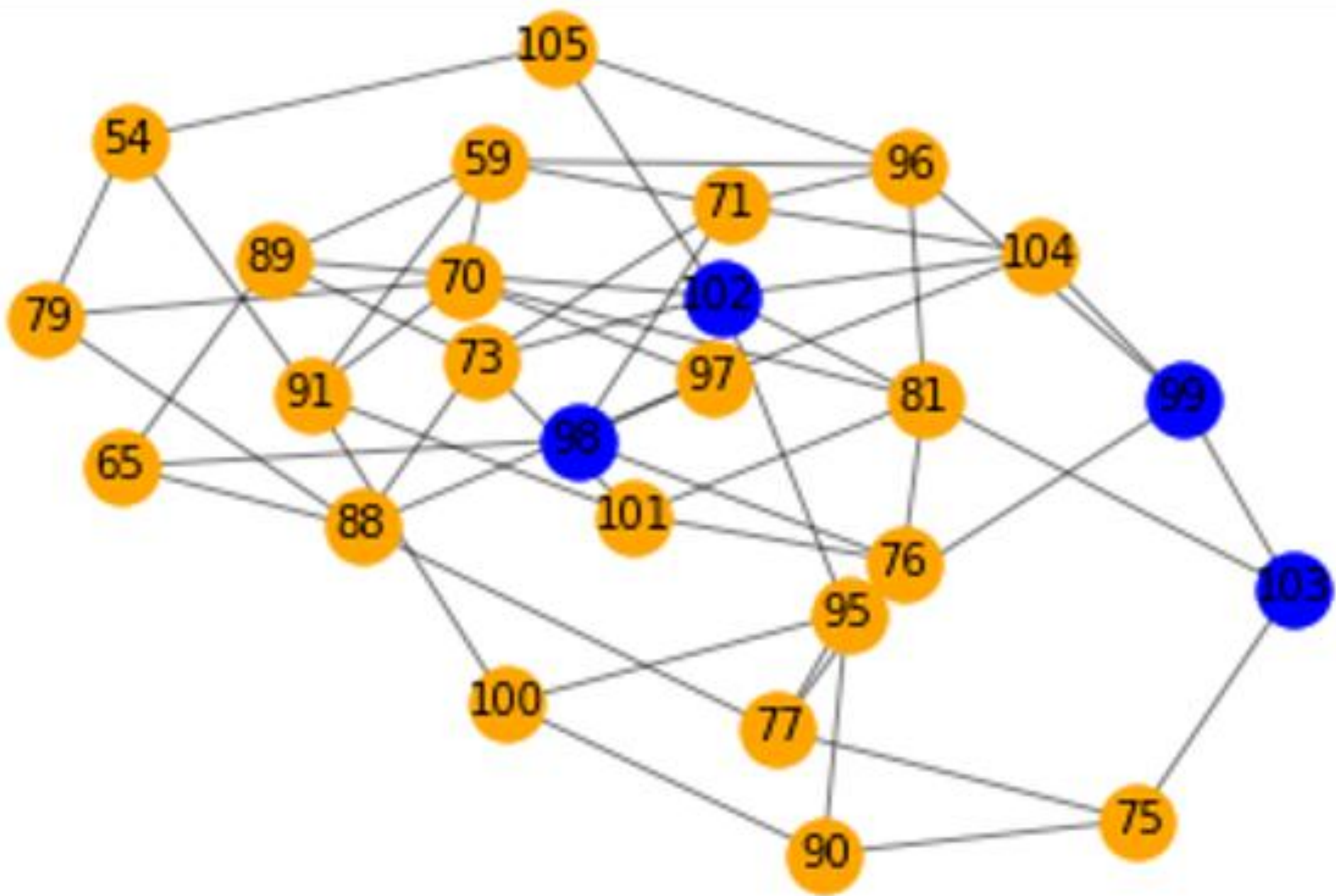
AI Population  
3.70%



AI Population  
3.70%

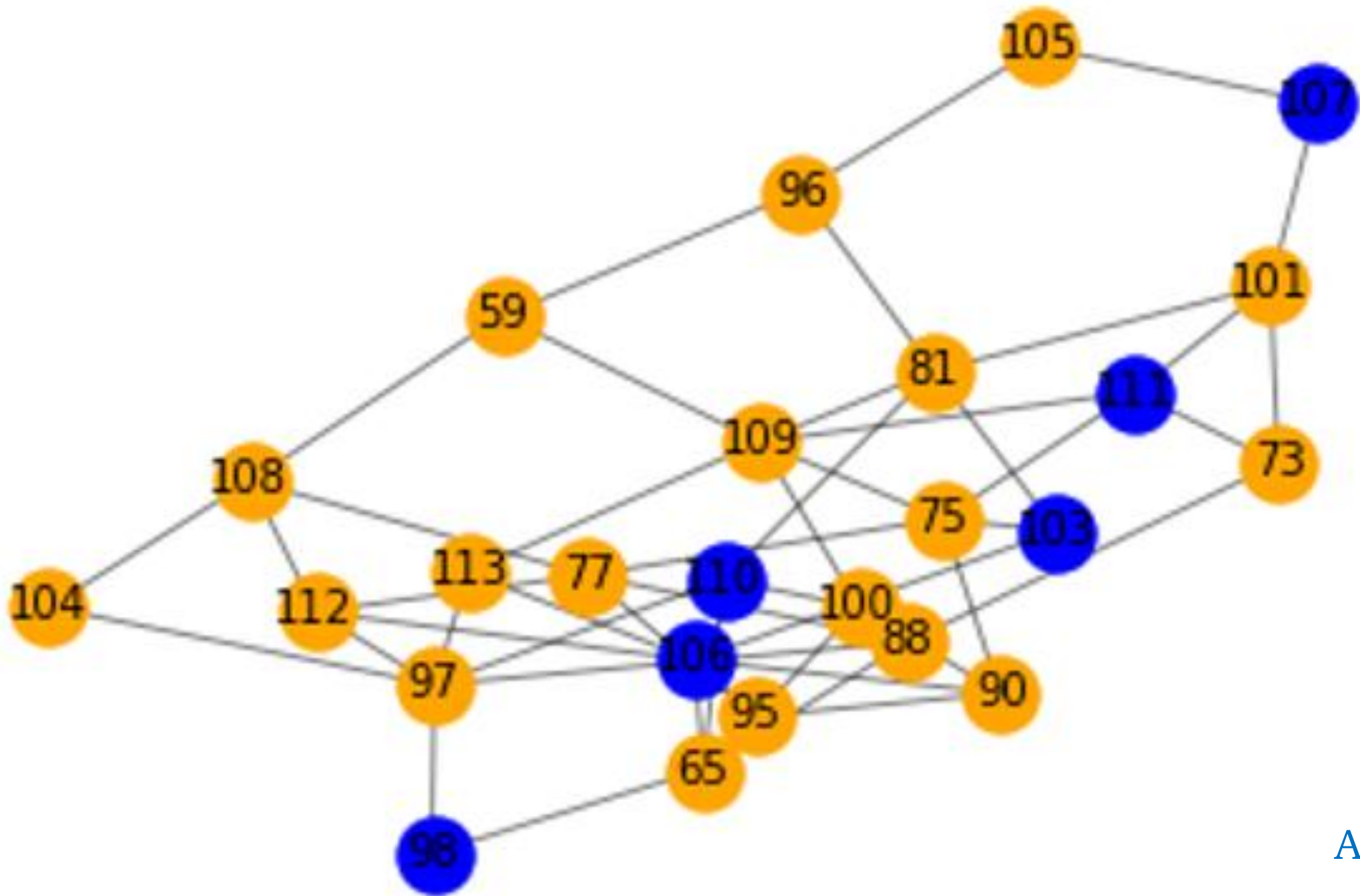


AI Population  
10.00%

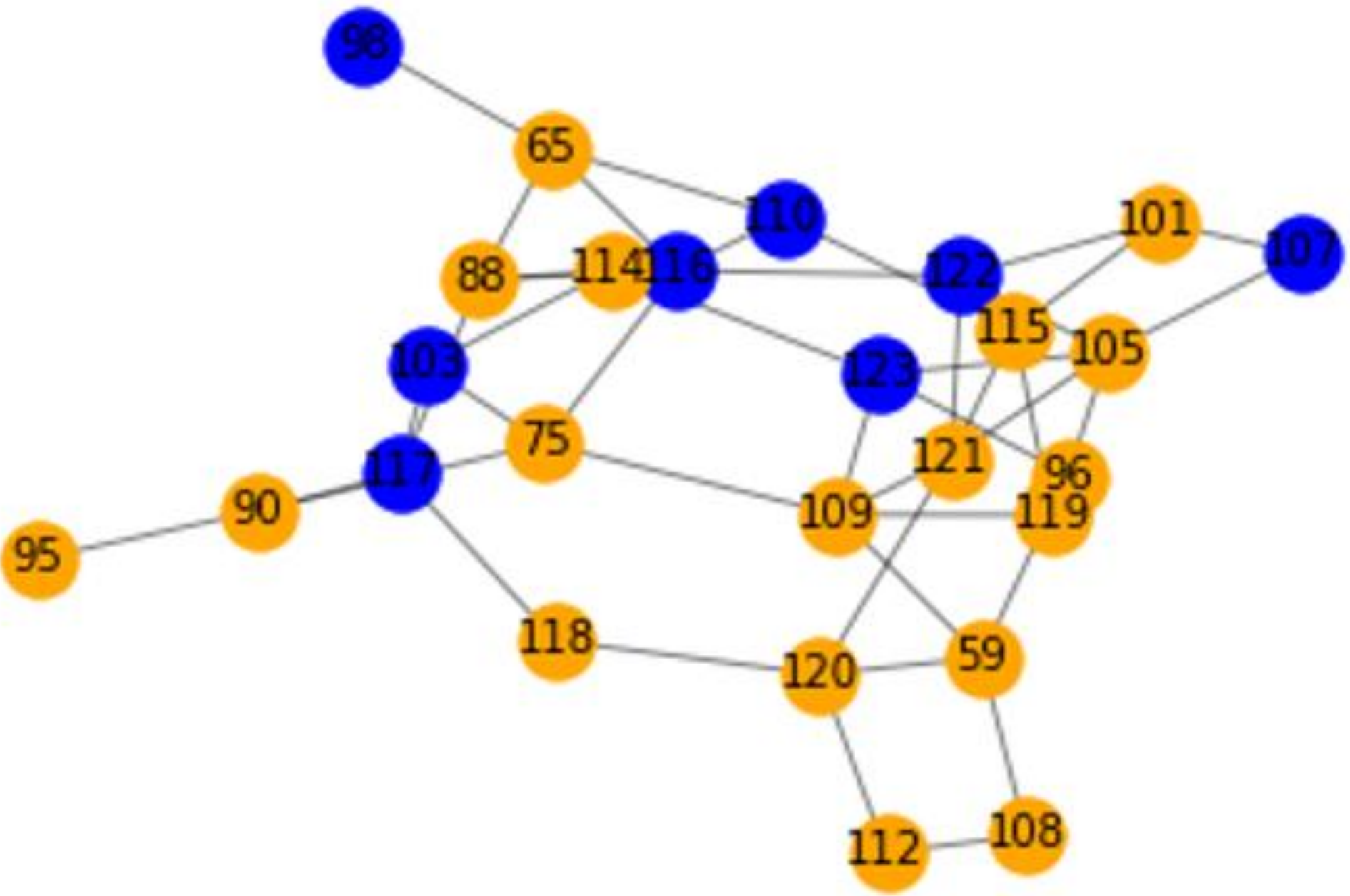


Population  
14.81%

2036

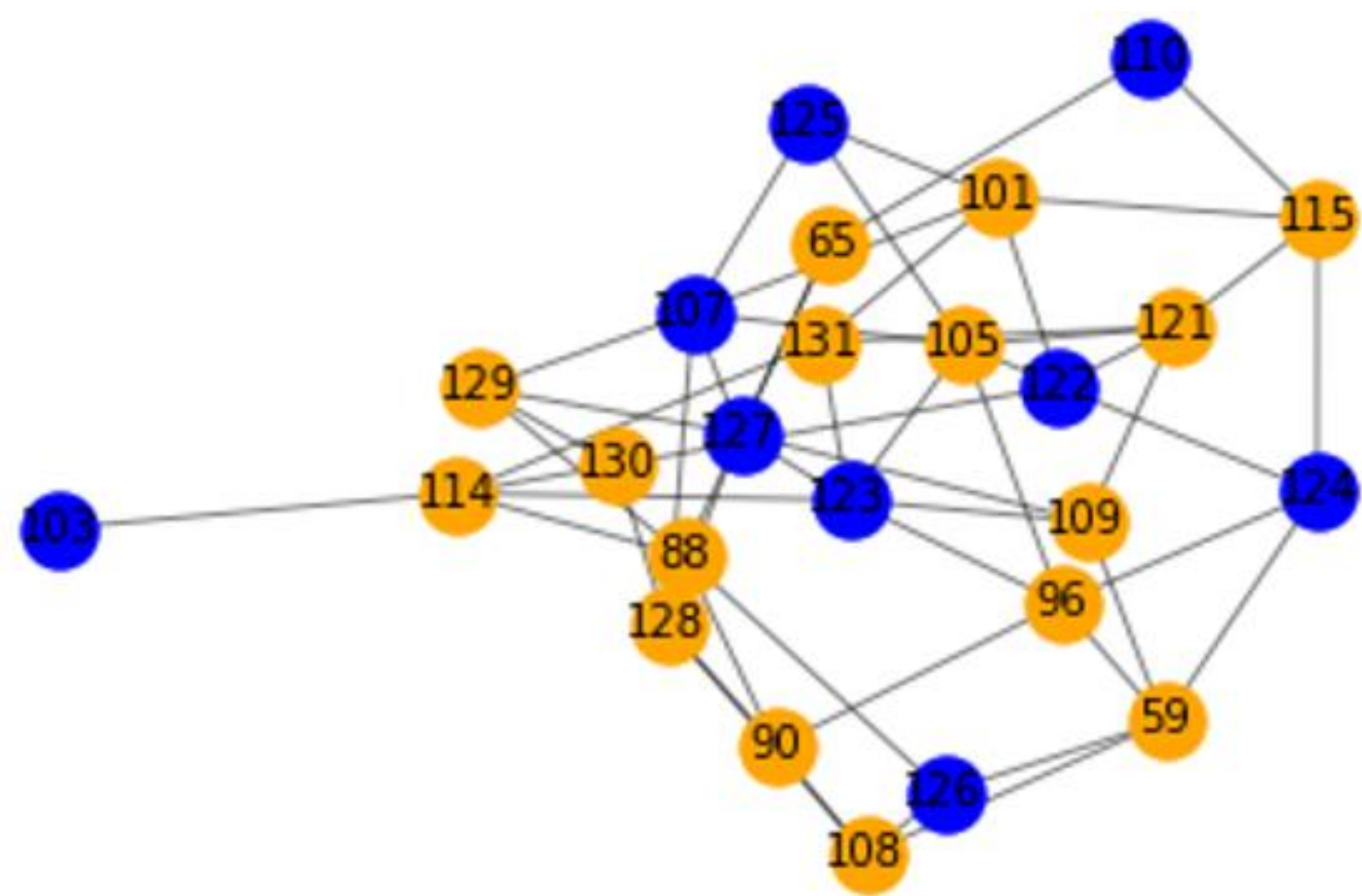


AI Population  
25.00%

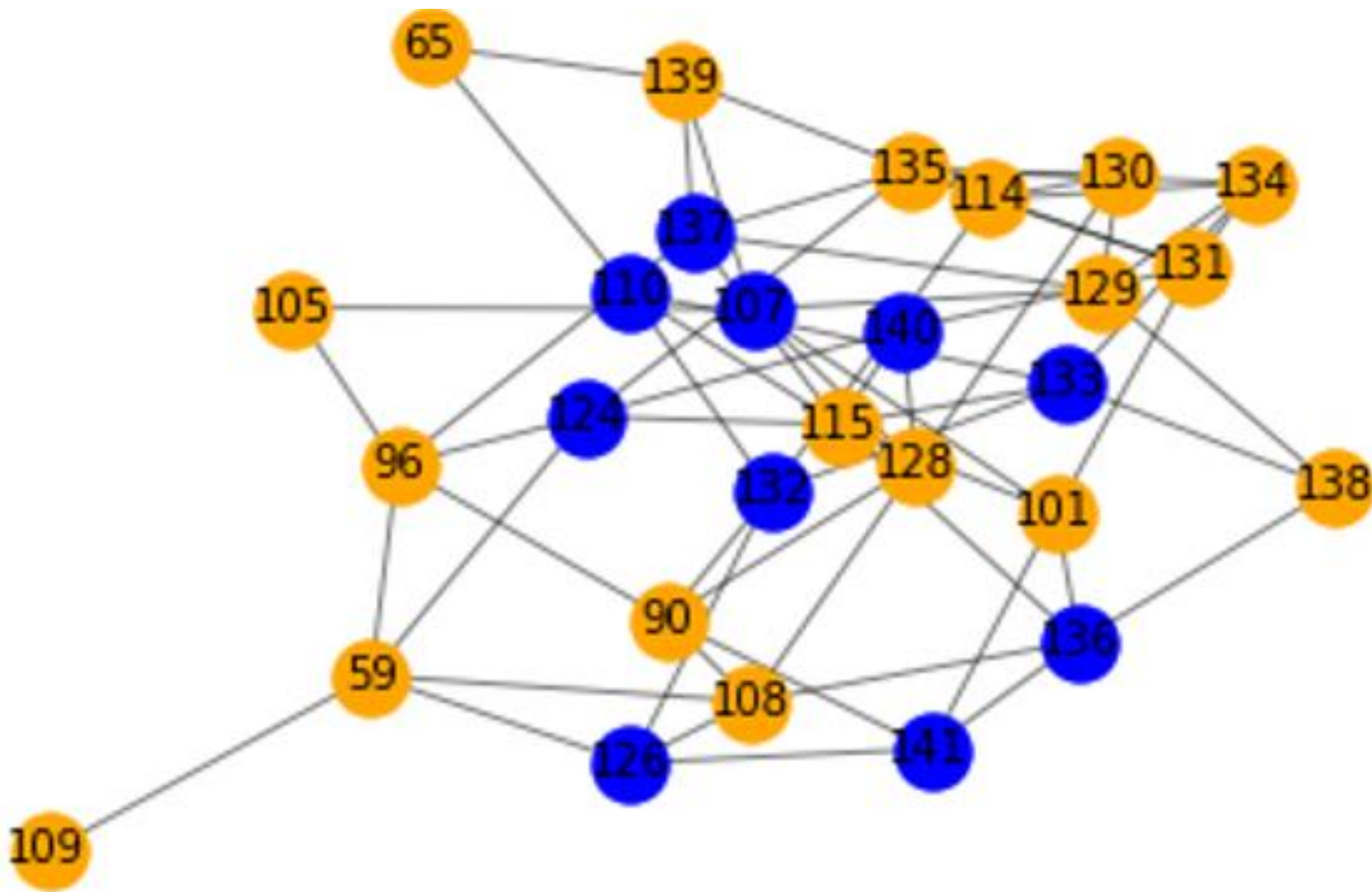


AI Population  
30.77%

2038

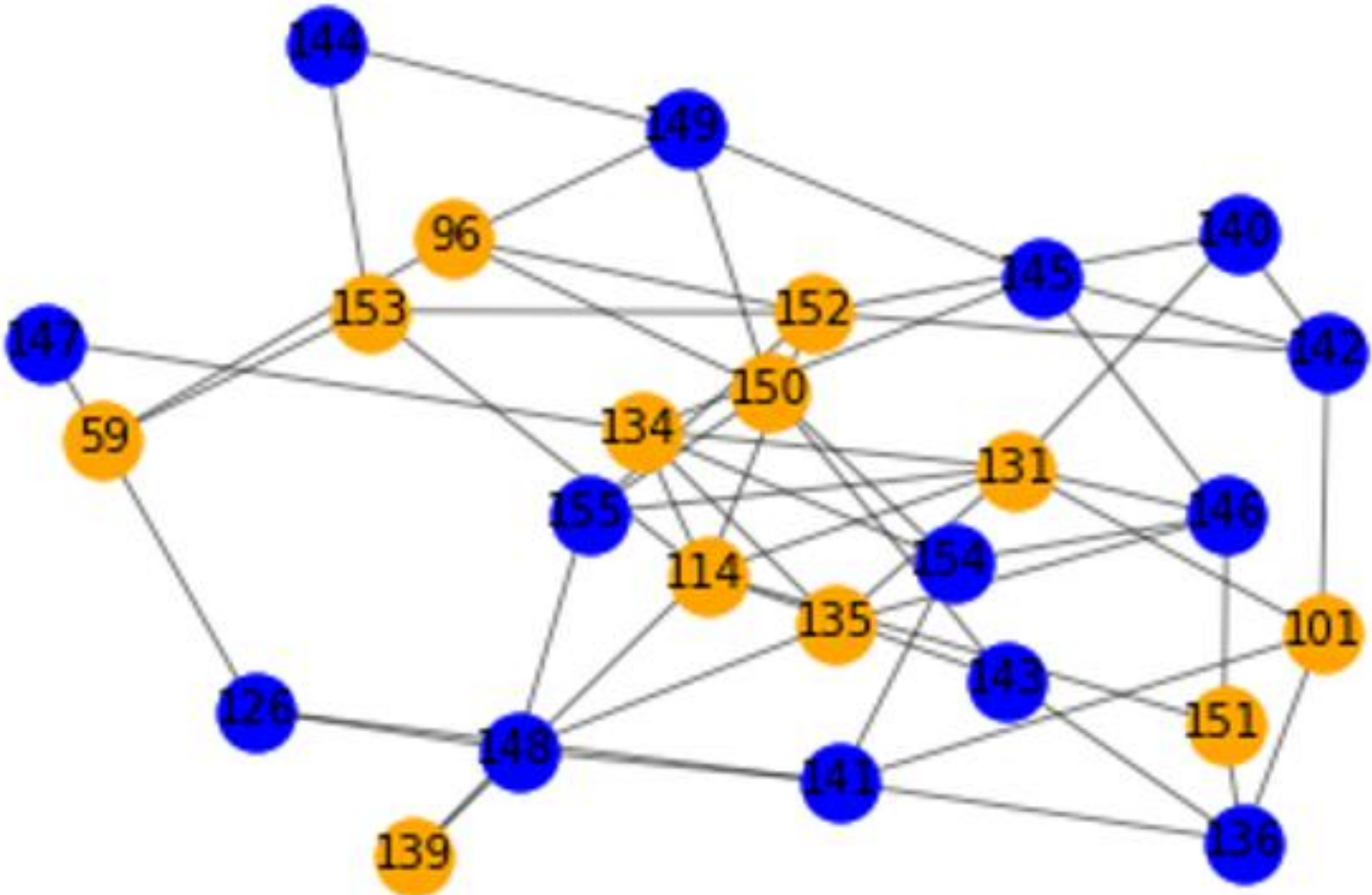


AI Population  
36.00%

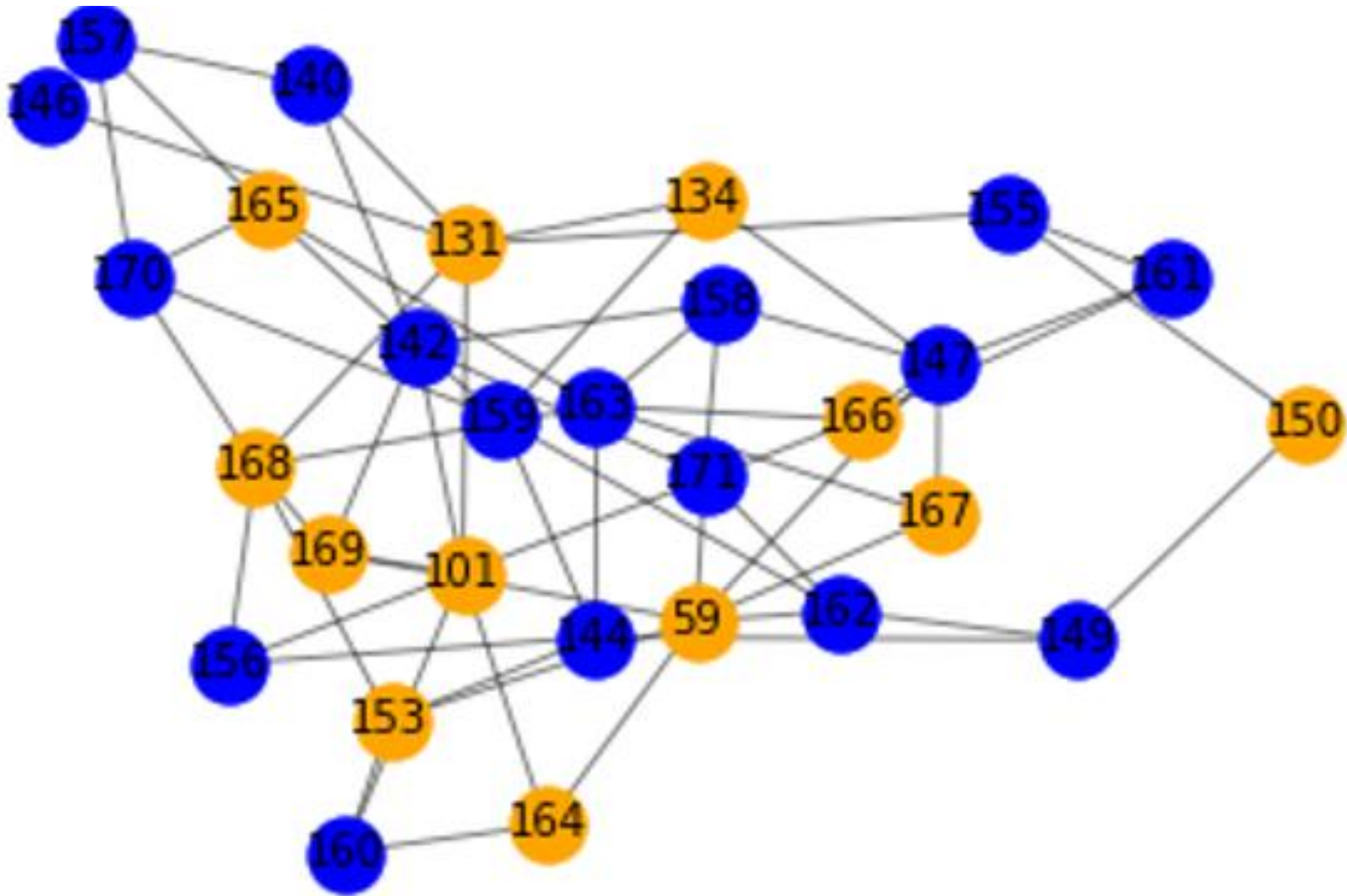


AI Population  
38.46%

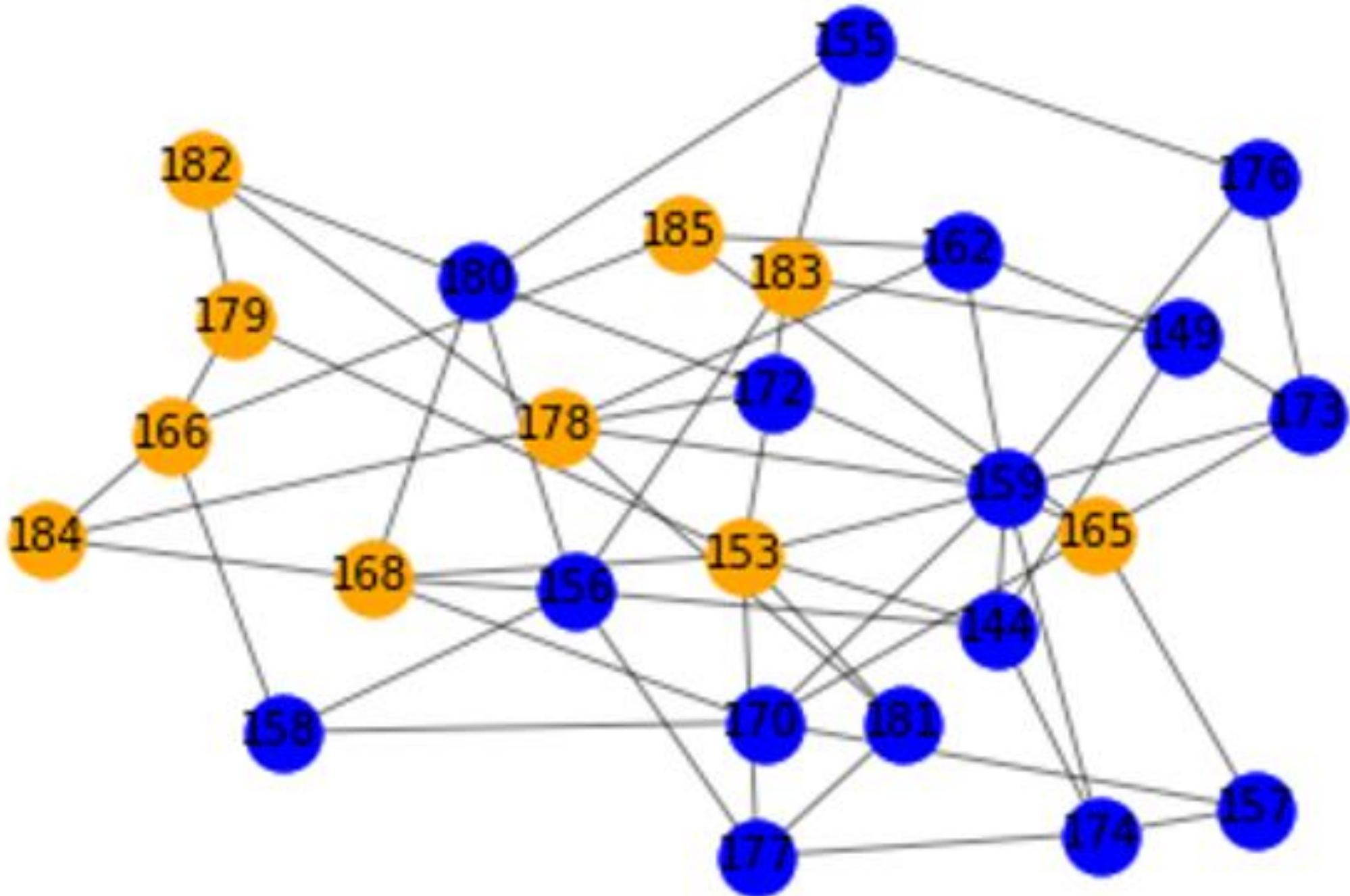
2040



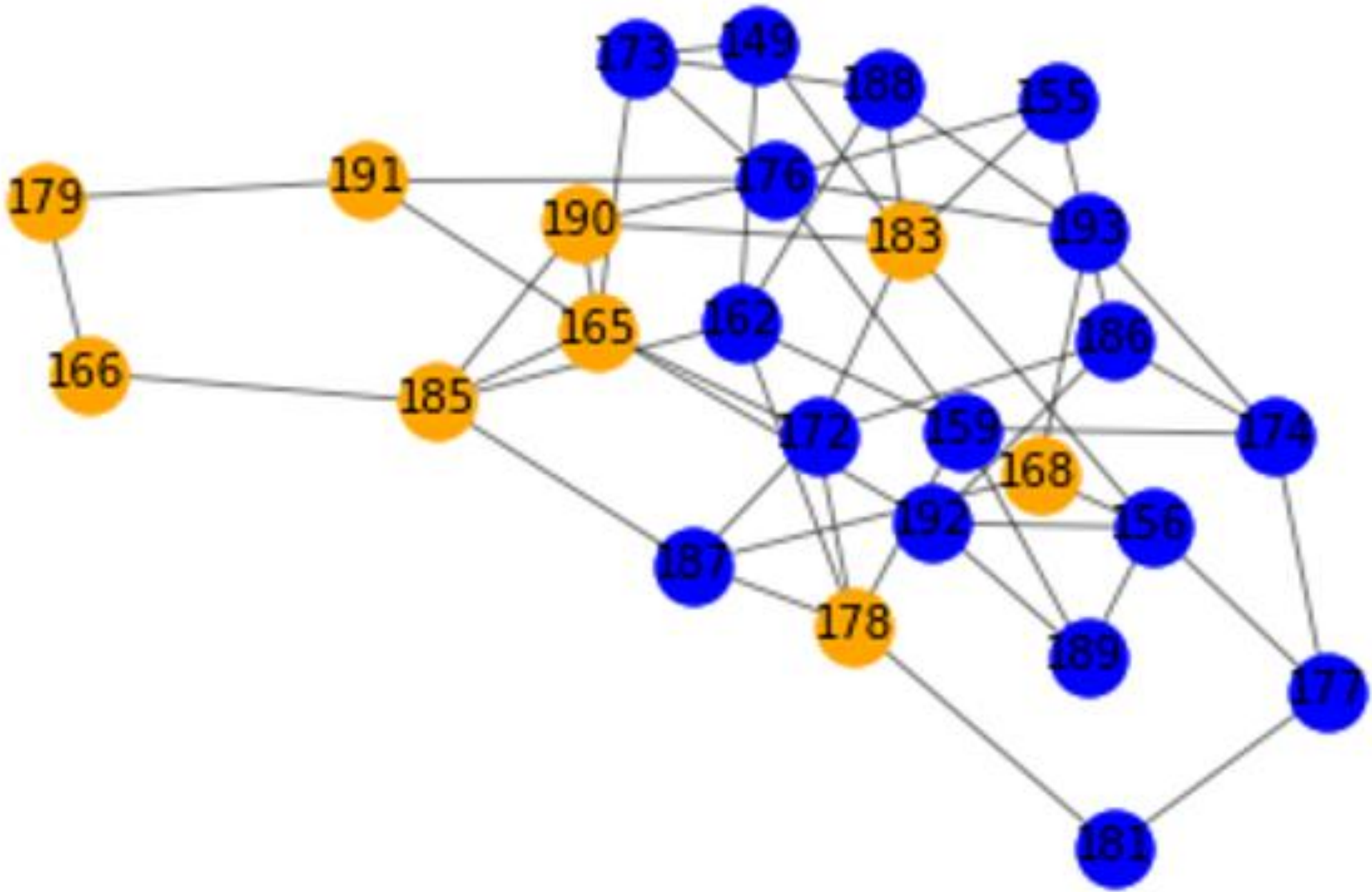
AI Population  
53.84%



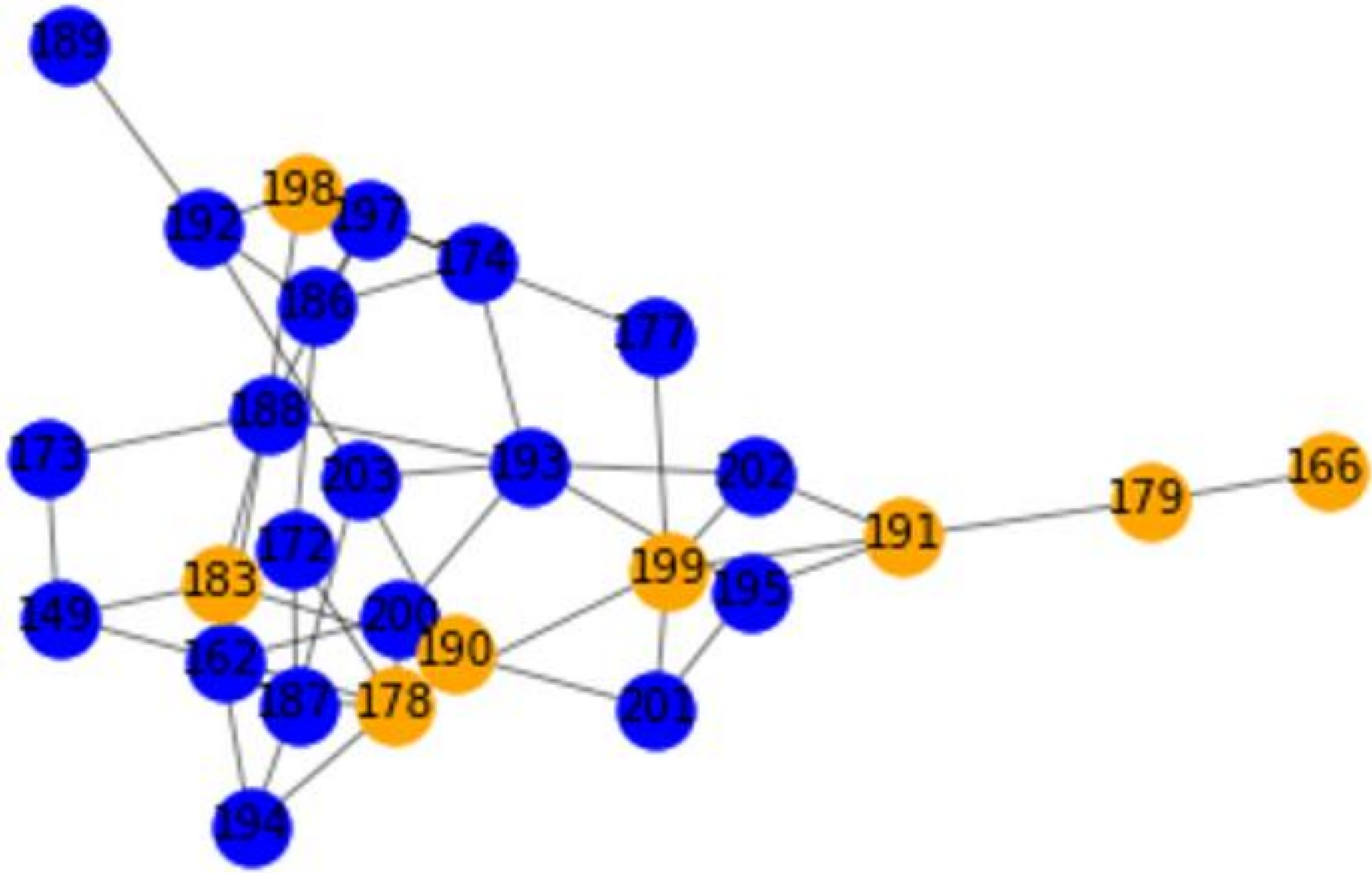
AI Population  
56.67%



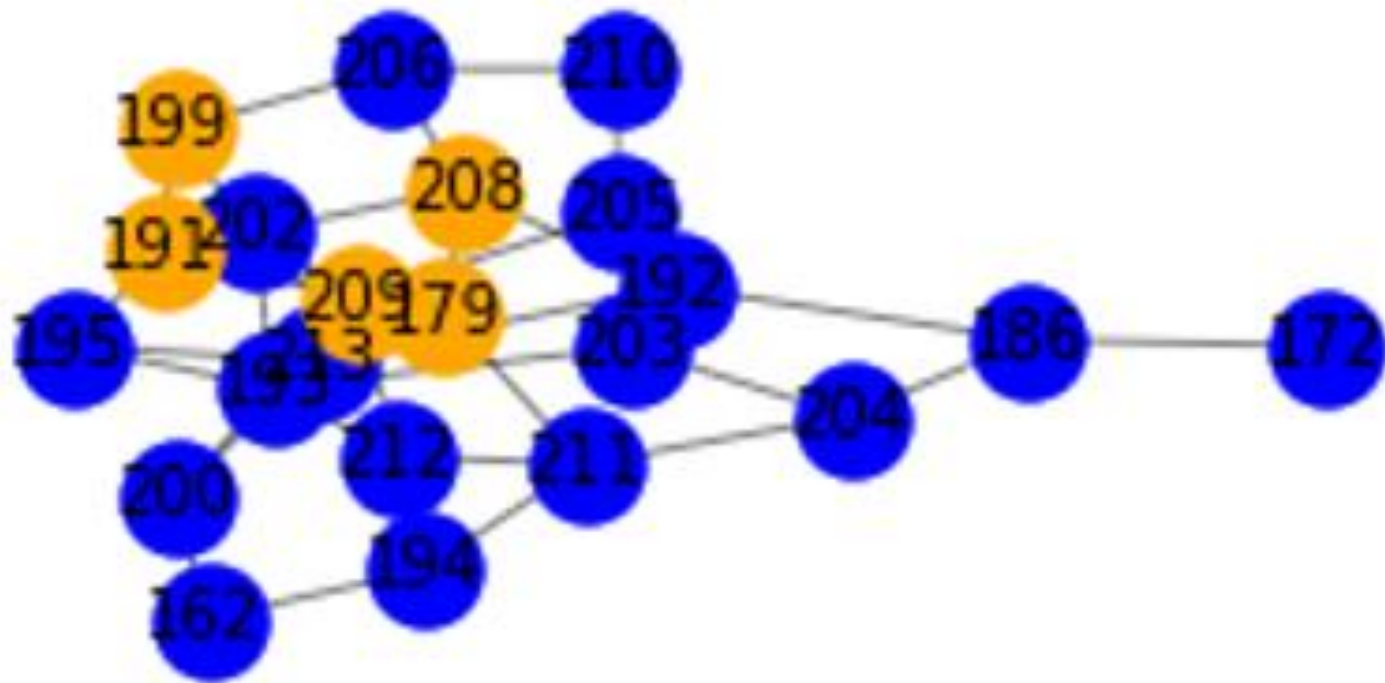
AI Population  
61.54%



AI Population  
65.38%

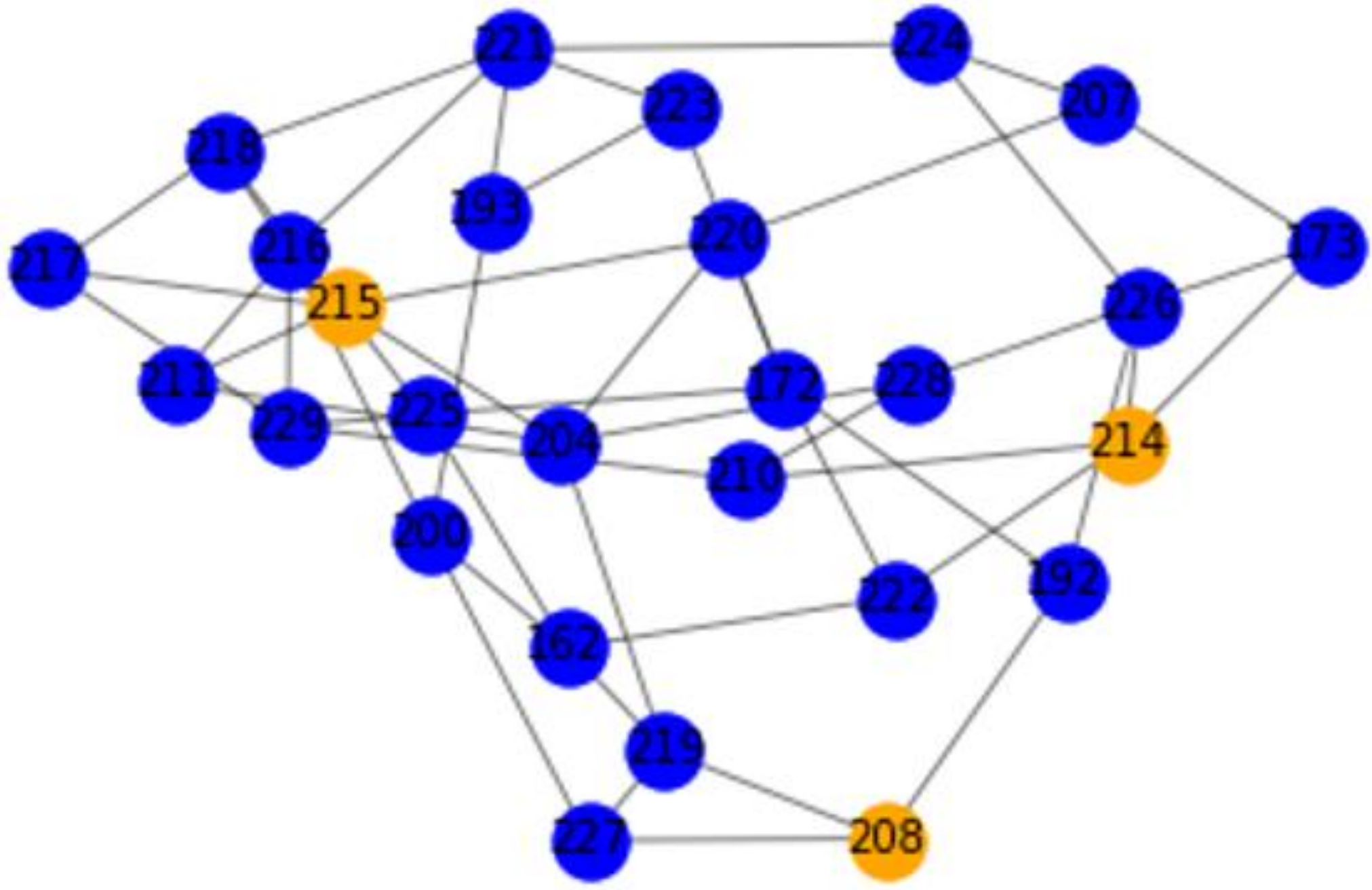


AI Population  
75.00%

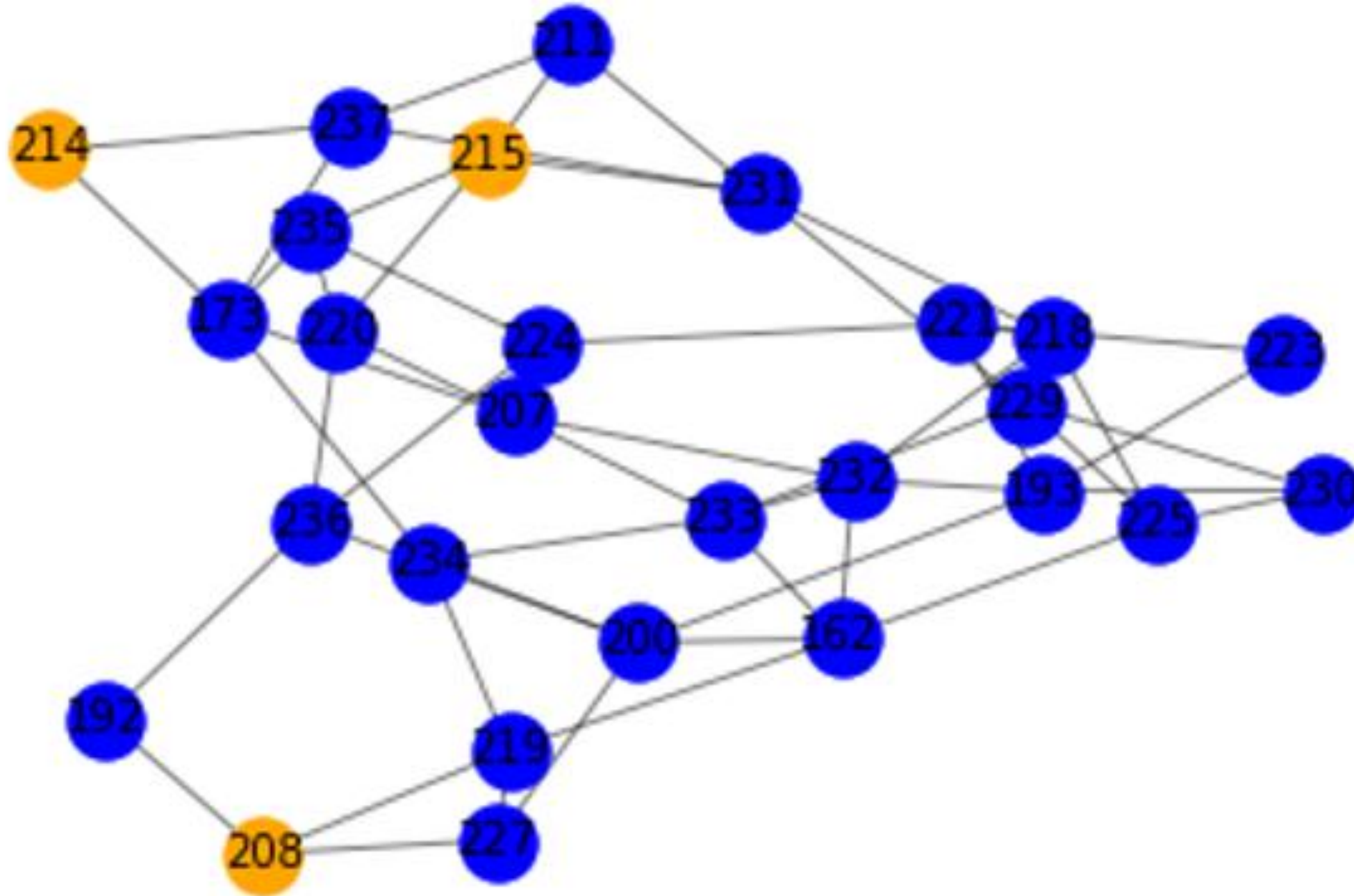


AI Population  
79.17%

2046

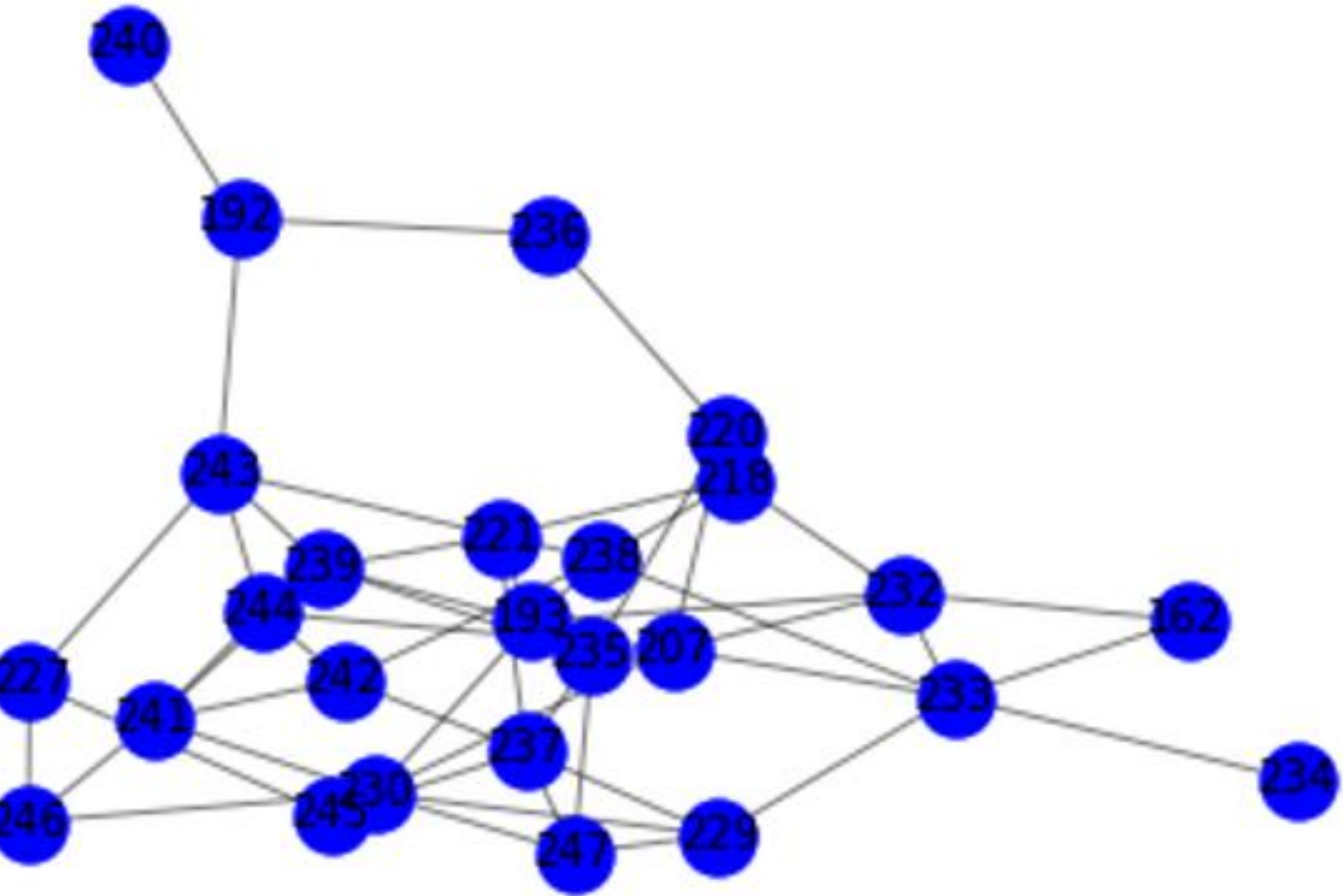


AI Population  
88.89%



AI Population  
88.89%

2048



AI Population  
100.00%

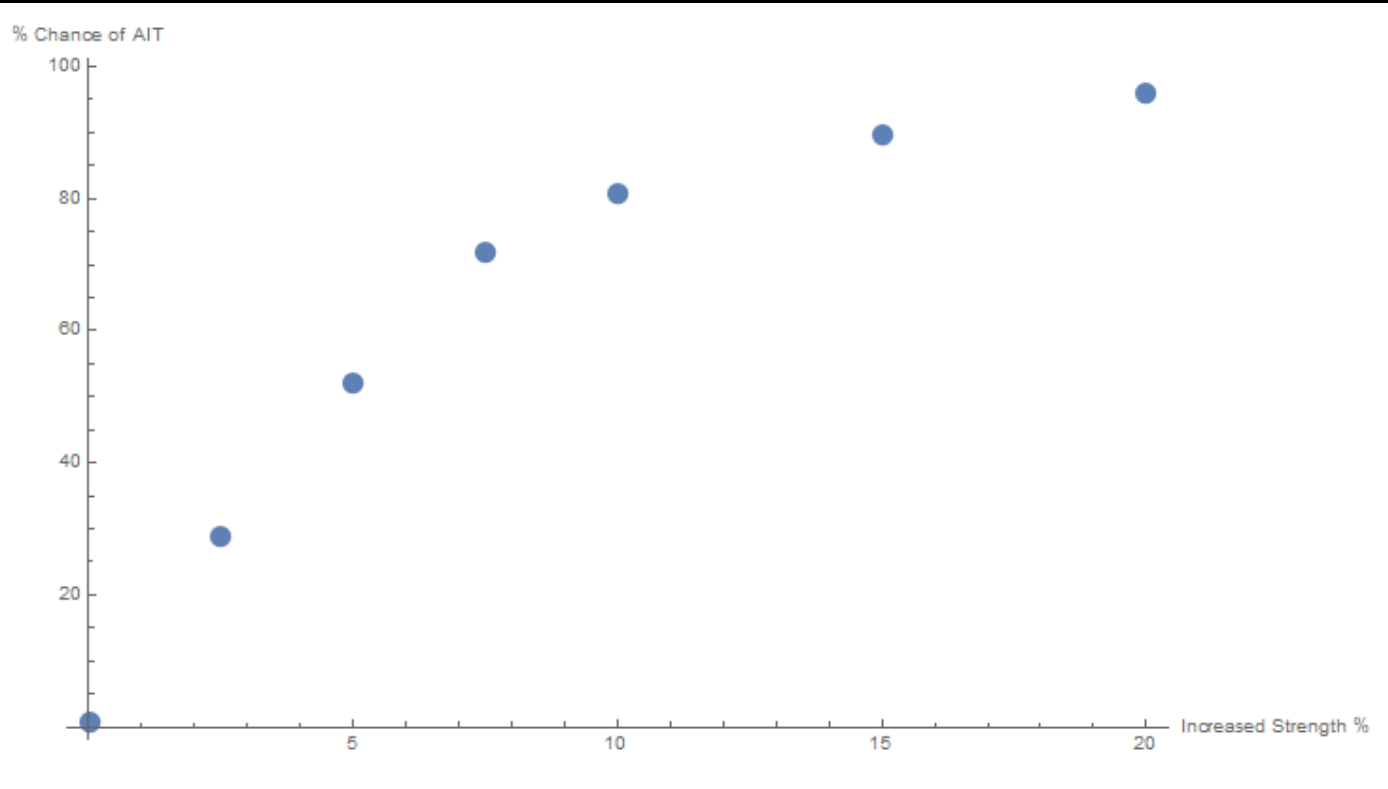
# AI TAKEOVER!



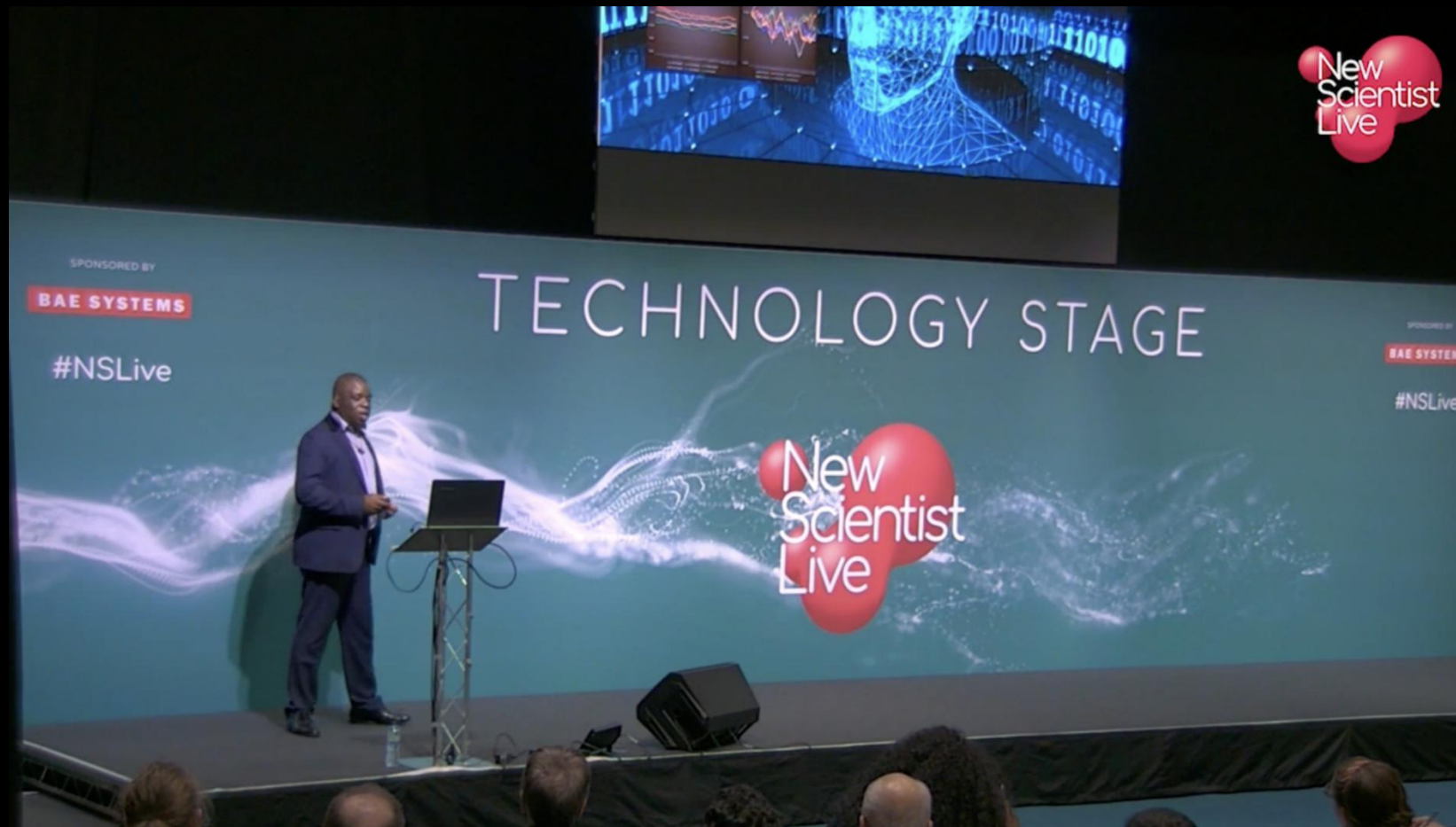
TO BE CONTINUED!



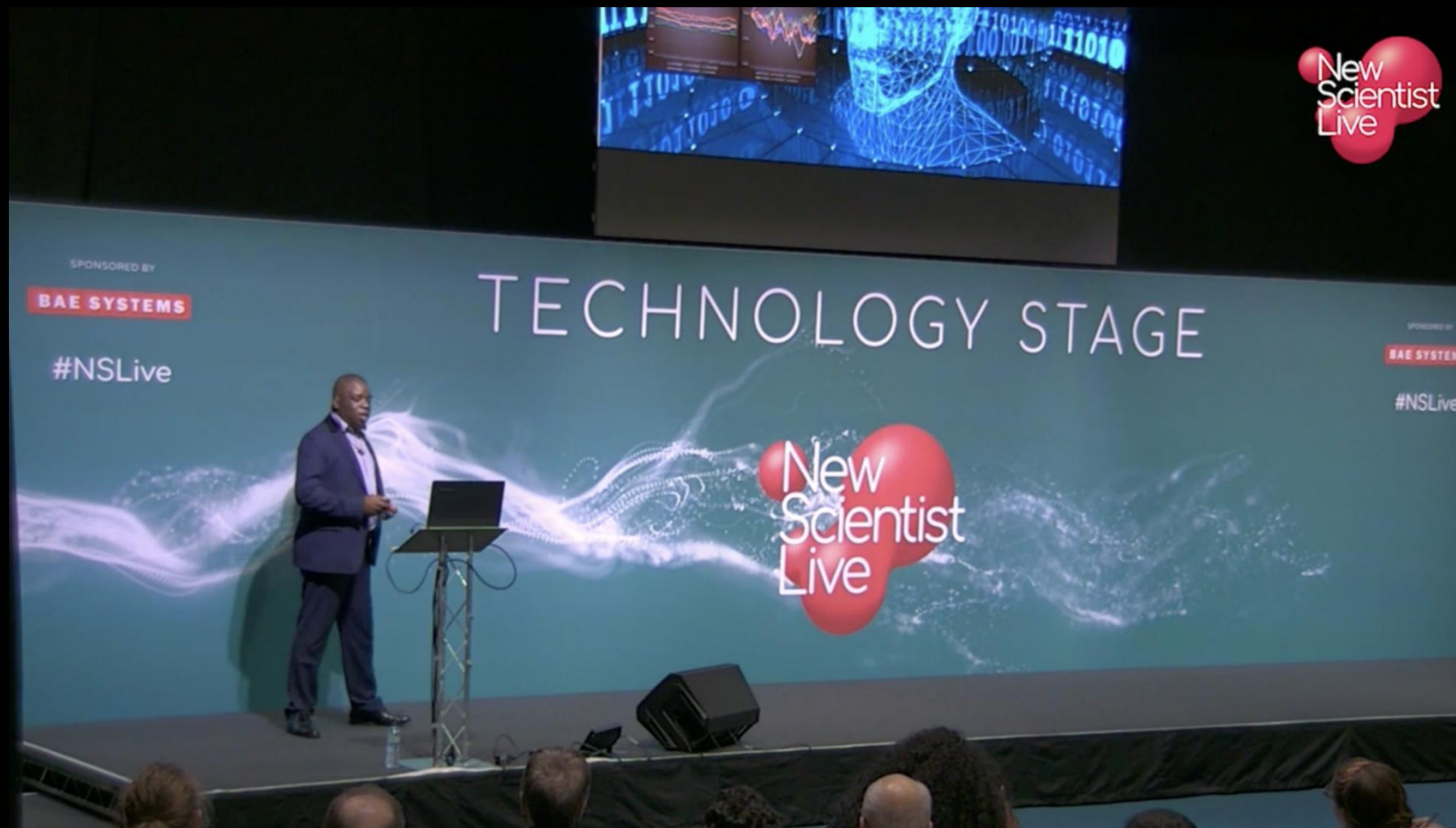
# IF THE AI BECOMES STRONGER IT DEFEATS ALL STRATEGIES AIMED AGAINST IT.



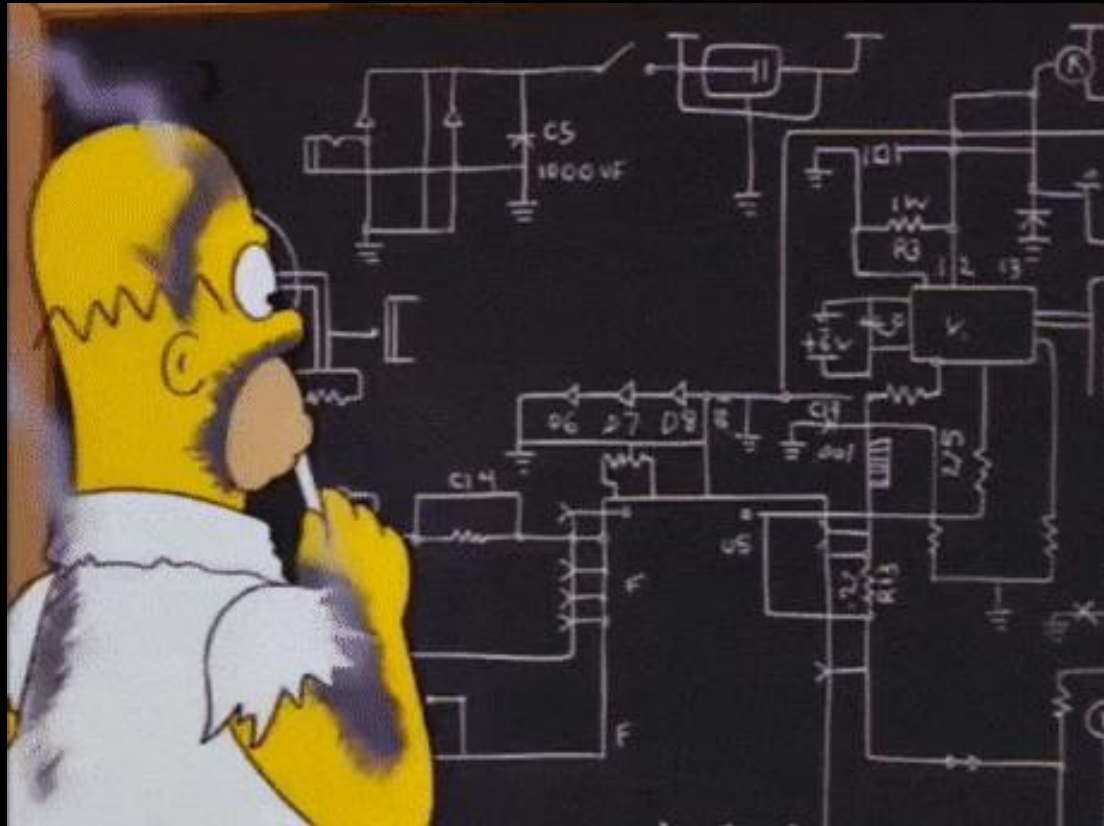
# MINIMISING THE PROBABILITY OF AN AI TAKEOVER



# THE MATHEMATICS THAT CAN STOP AN AI APOCALYPSE!



# BACK TO THE DRAWING BOARD





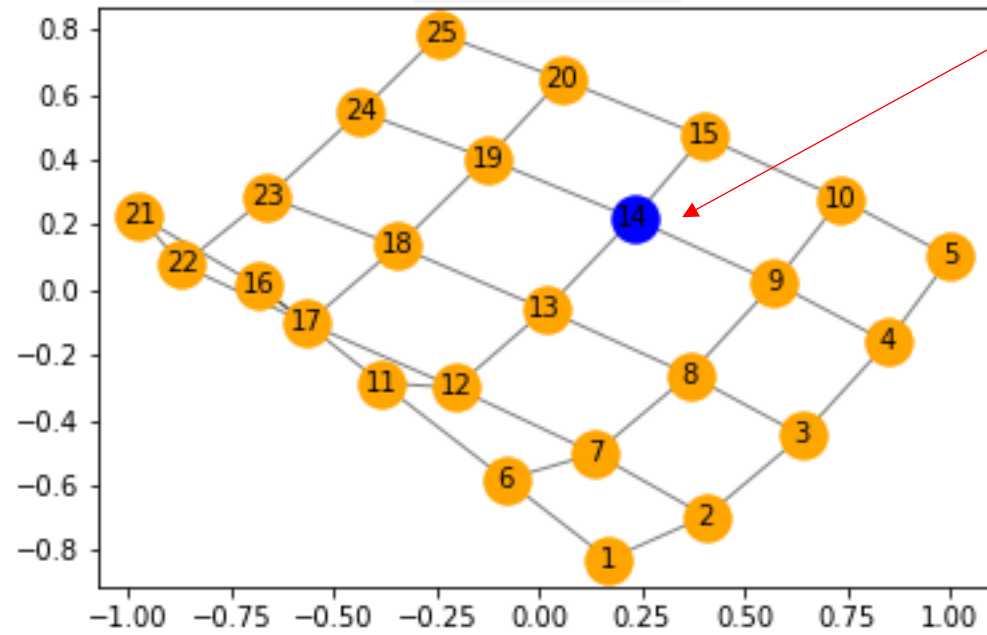
**OBAMACARE**



# ANTI AI AI







# LOADING AI VERSUS HUMAN SIMULATION

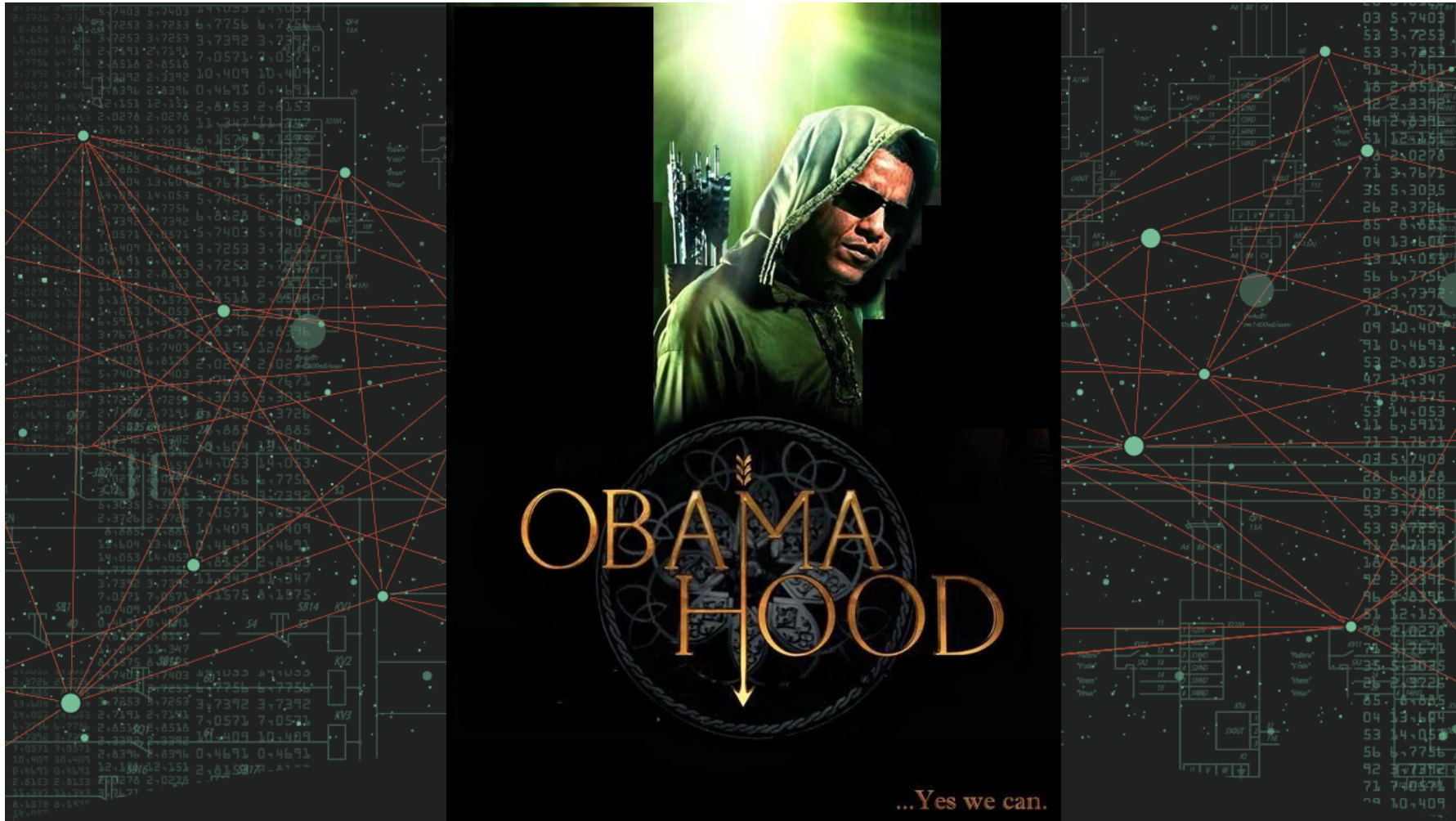




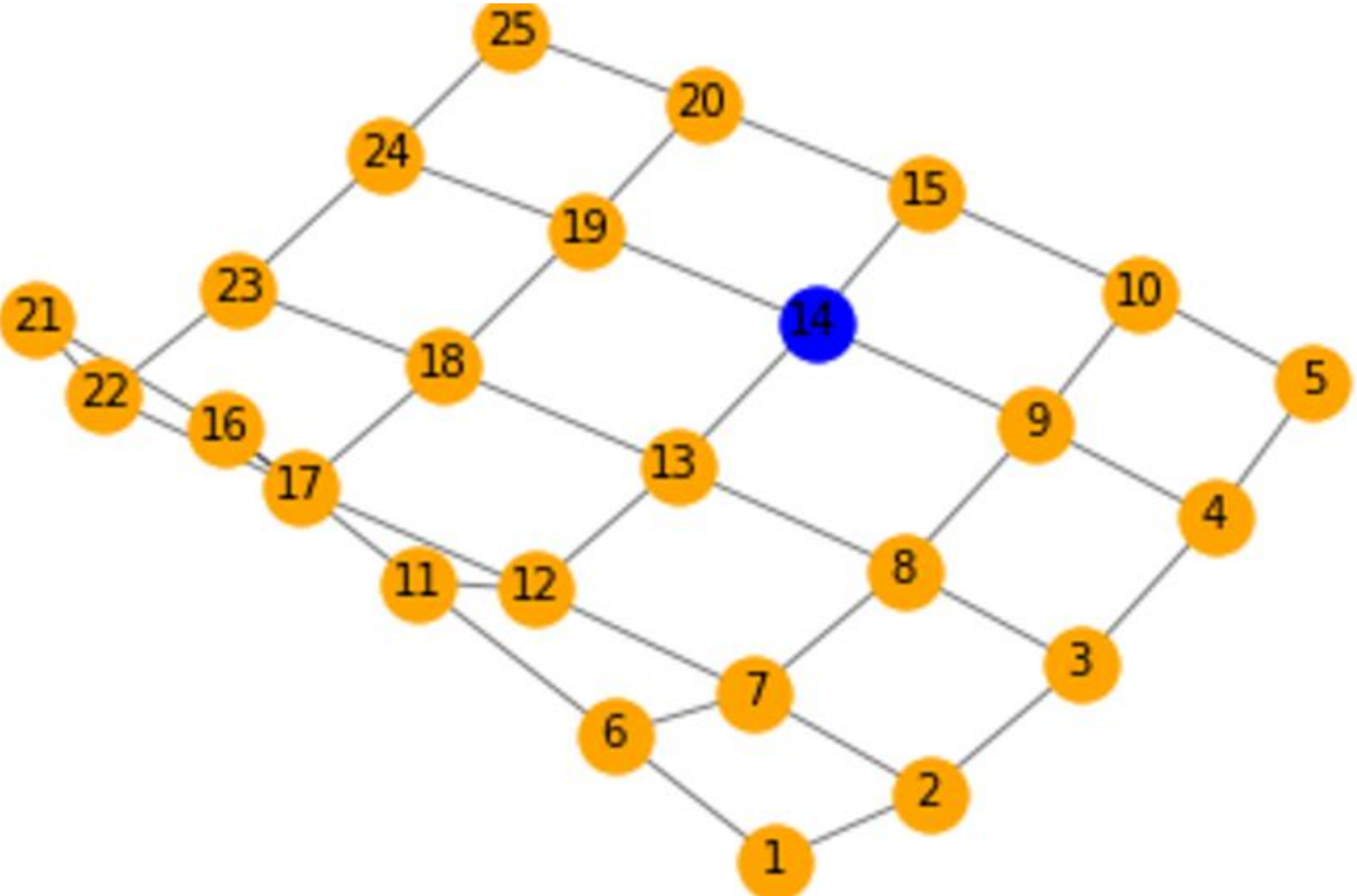
OBAMA  
HOOD

...Yes we can.

# LOADING THE OBAMA HOOD ALGORITHM

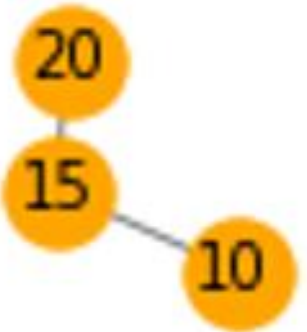
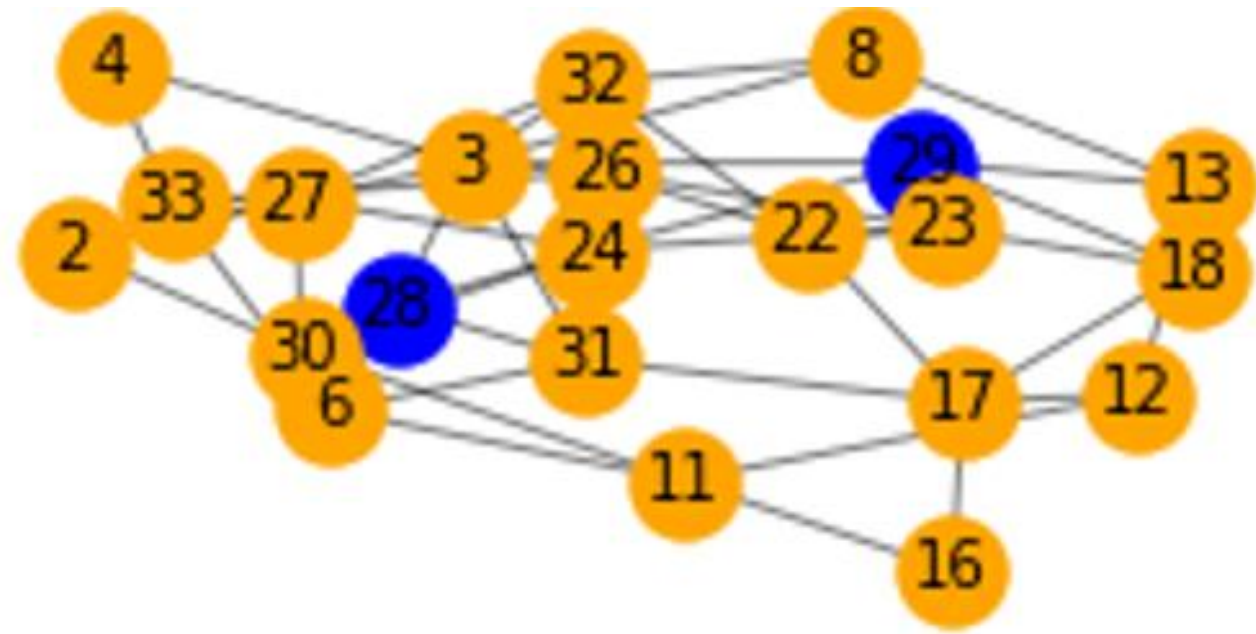


2026



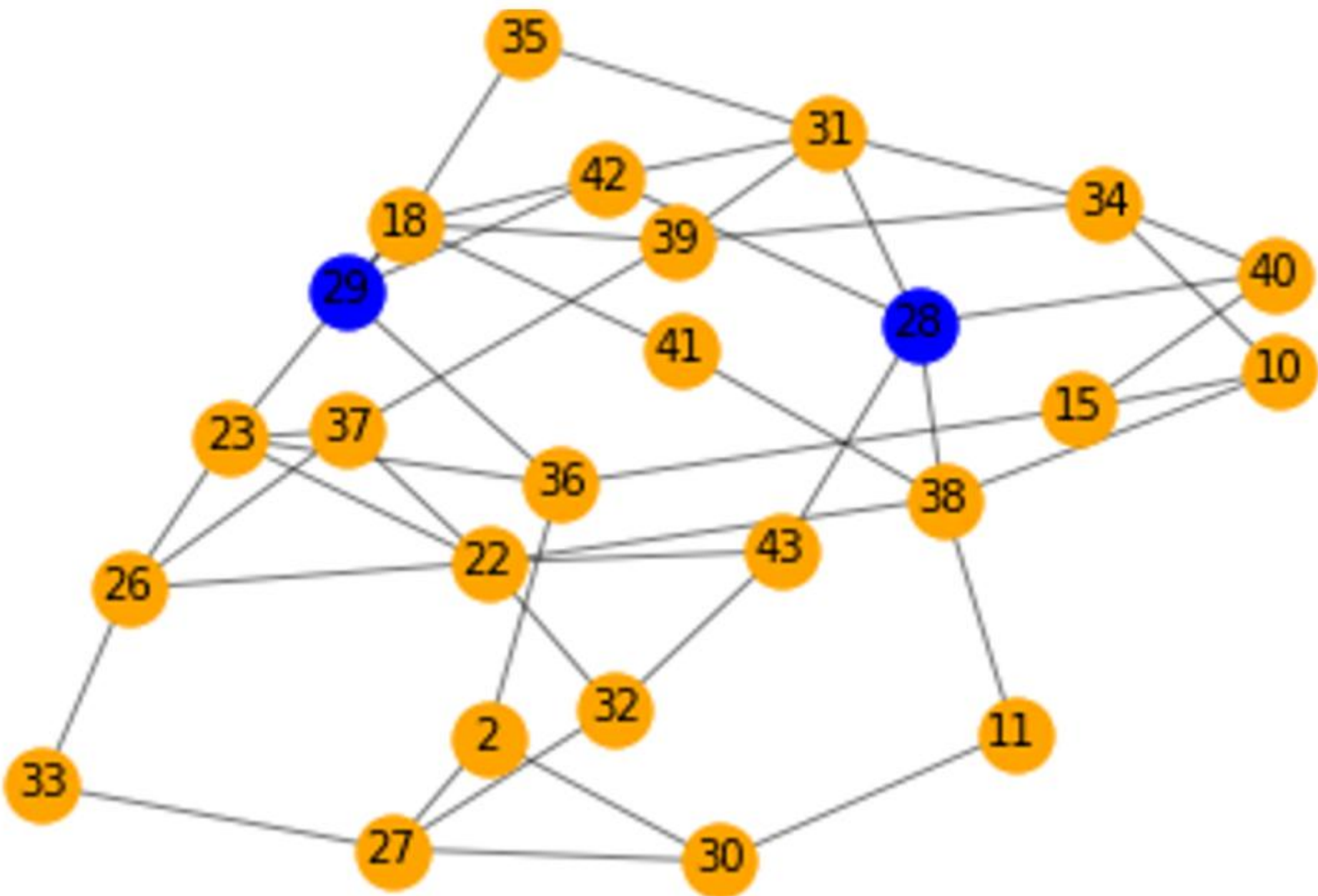
AI Population  
4.00%

2027



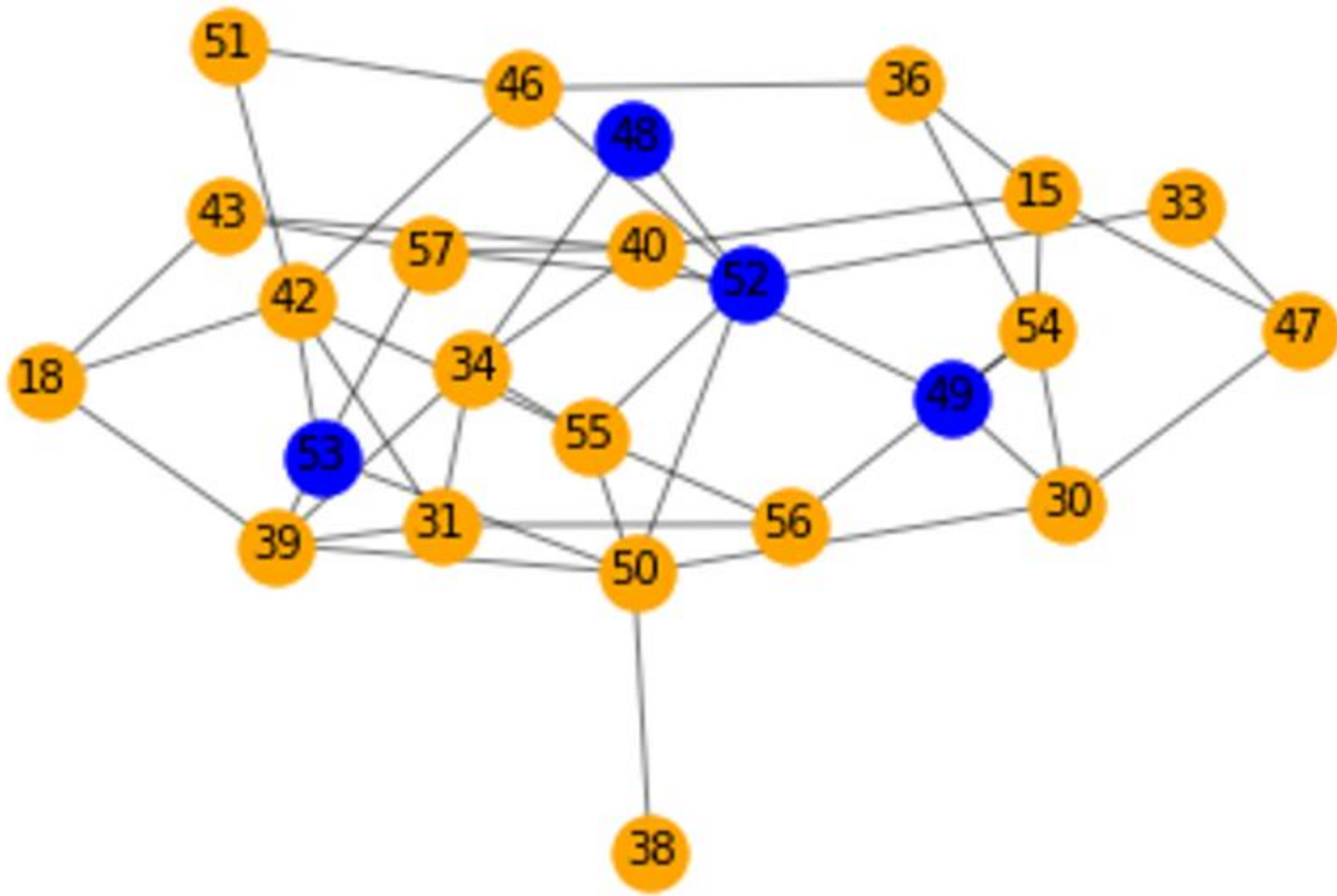
AI Population  
8.00%

2028



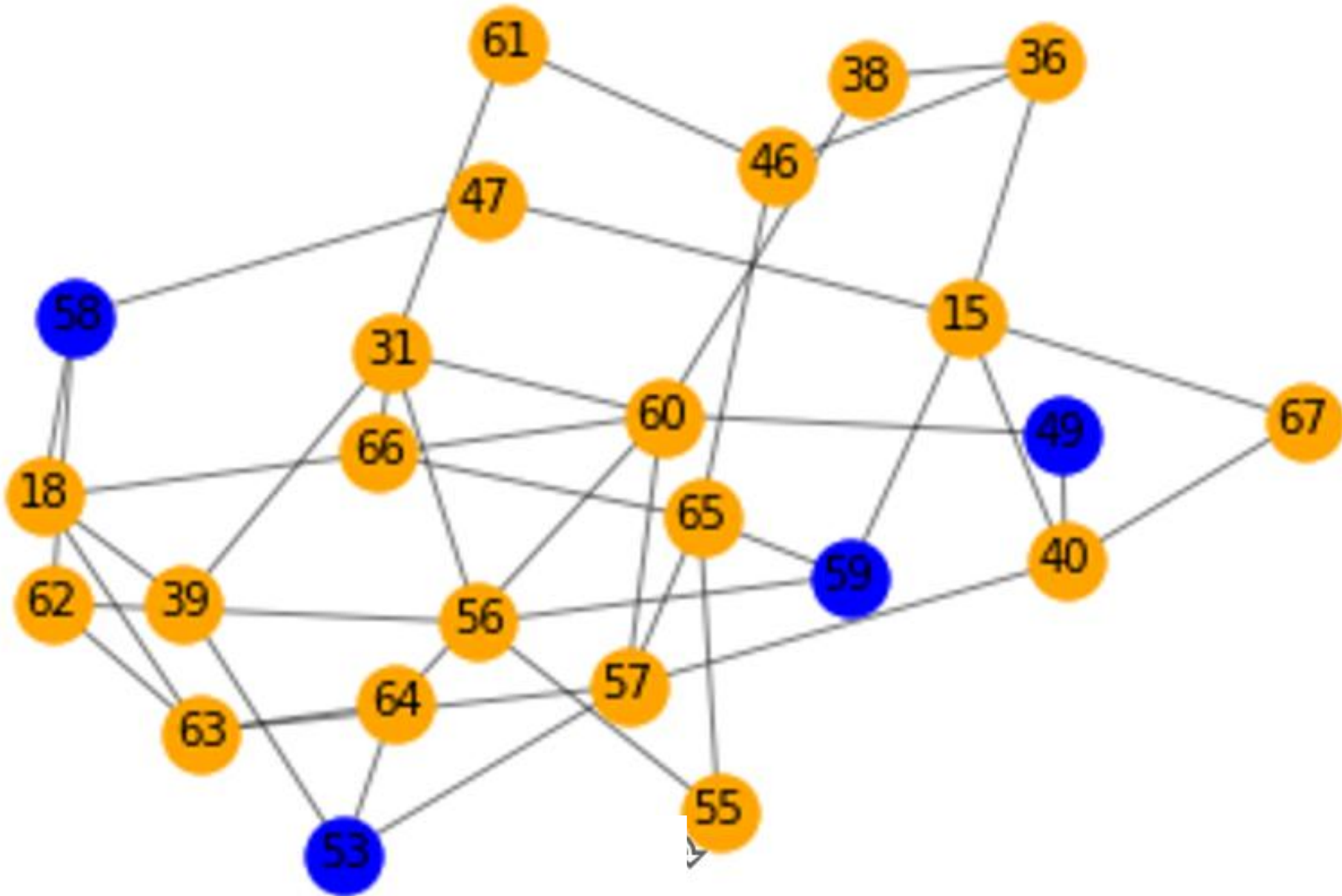
AI Population  
8.00%

2029

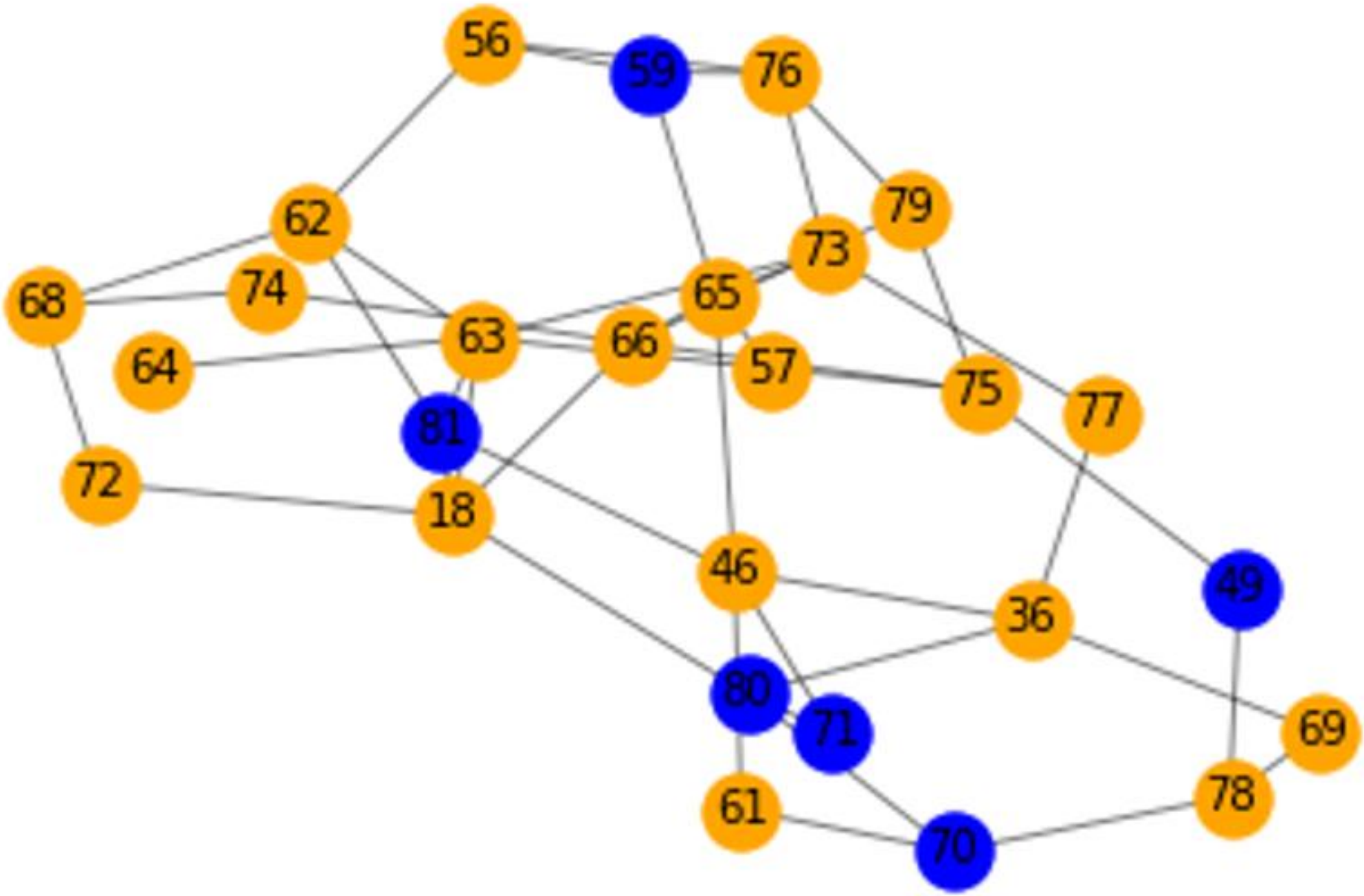


AI Population  
16.67%

2030

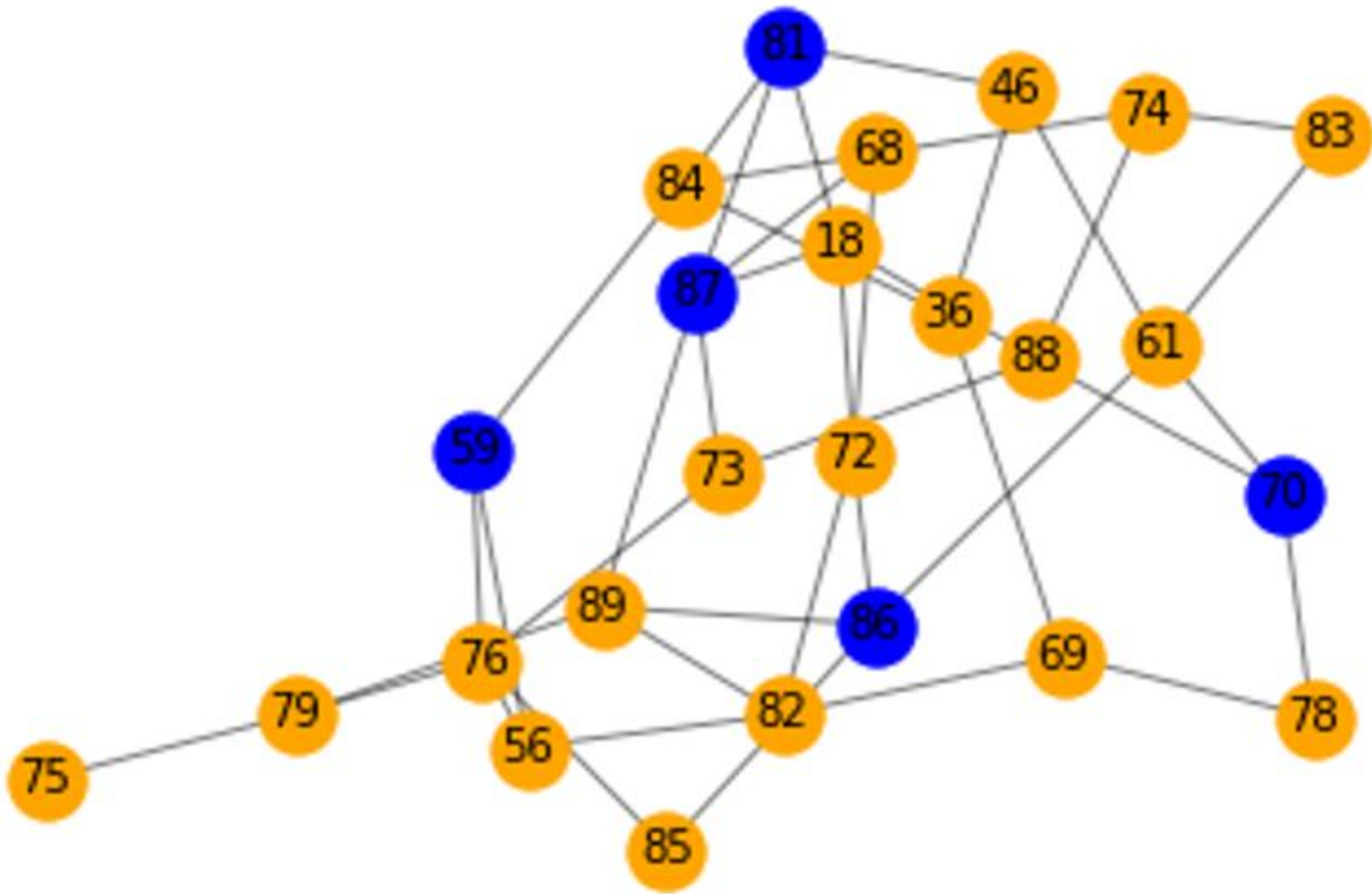


AI Population  
17.39%



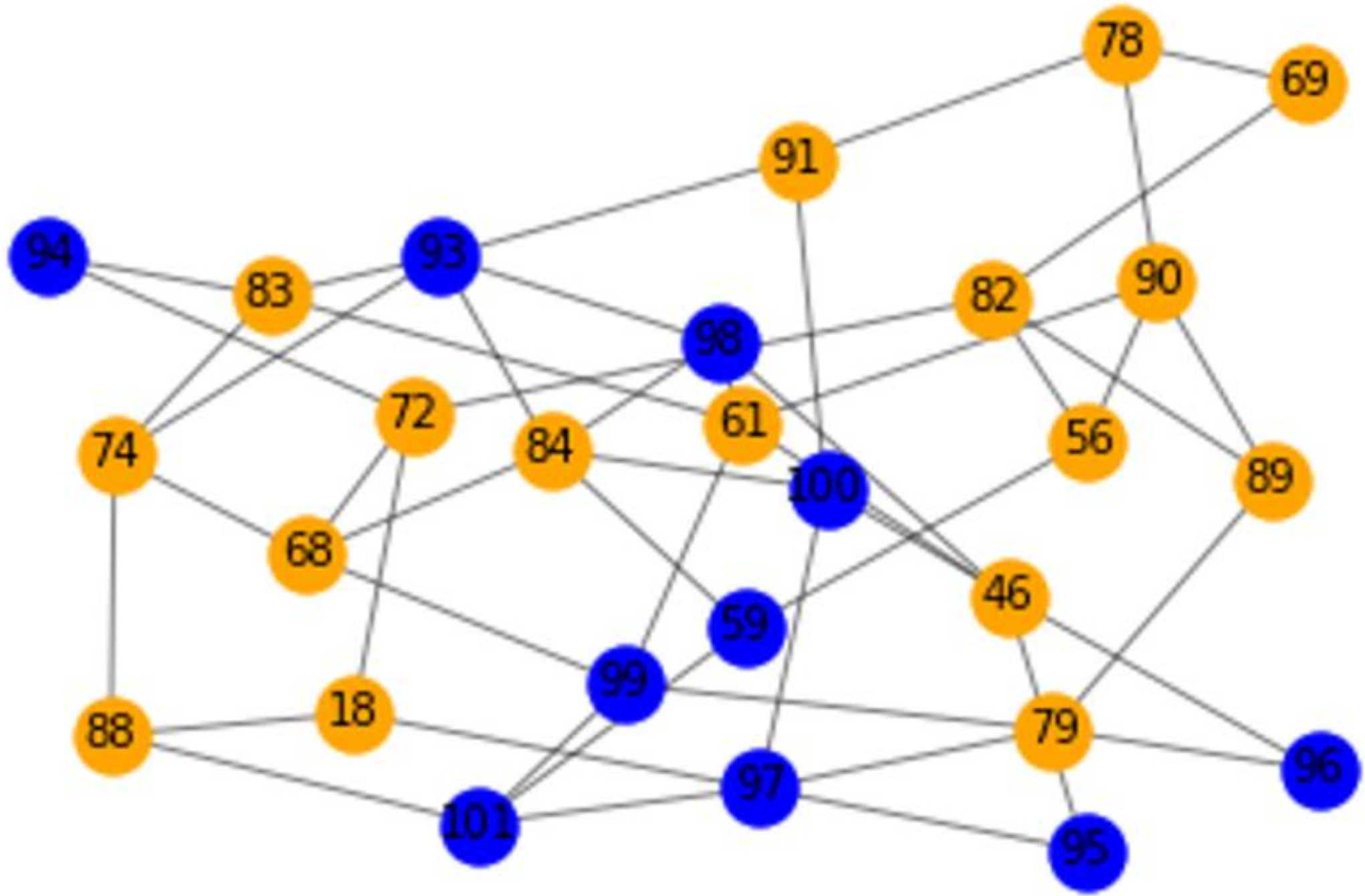
AI Population  
23.08%

2032



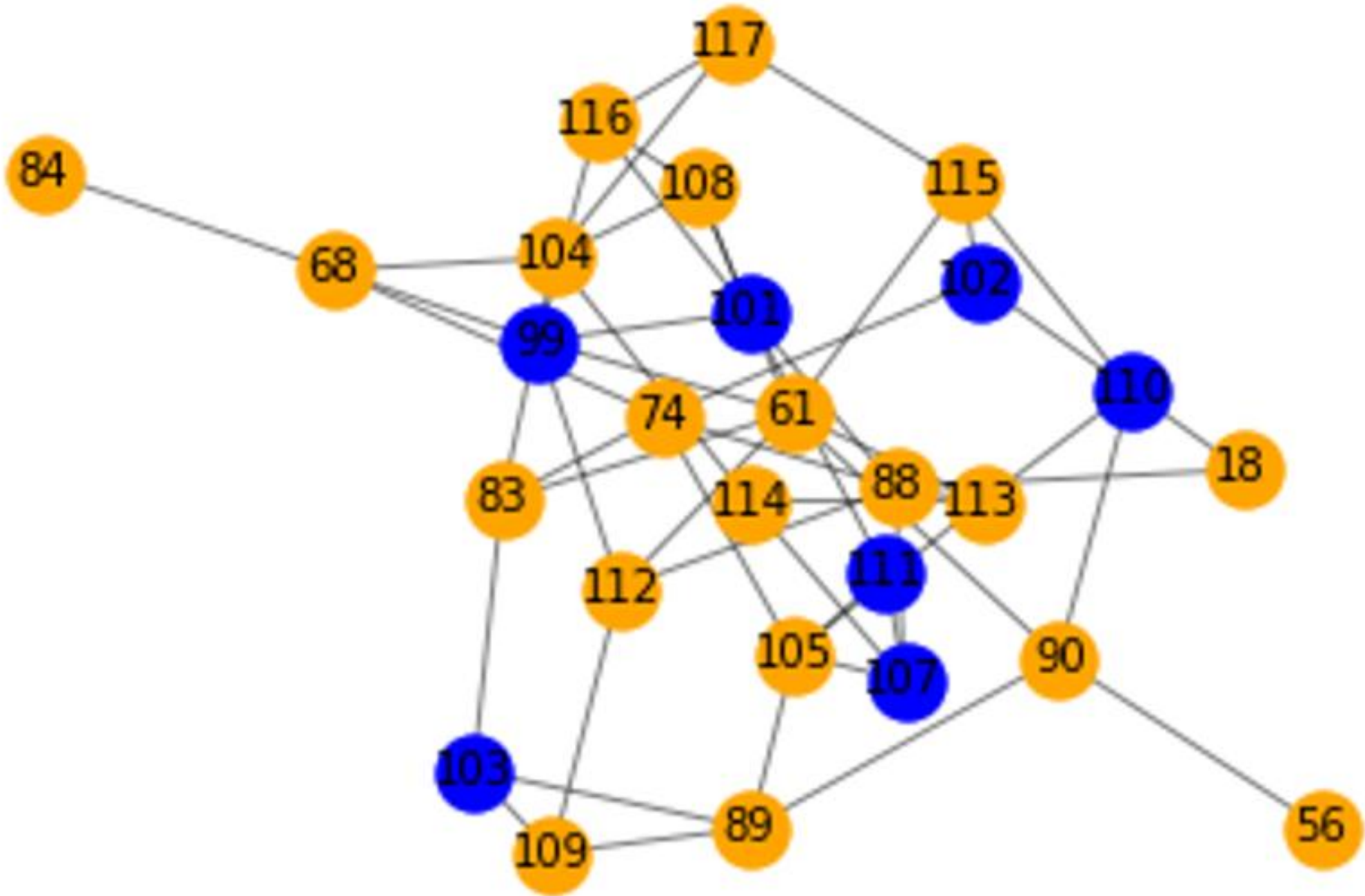
AI Population  
20.00%

2033



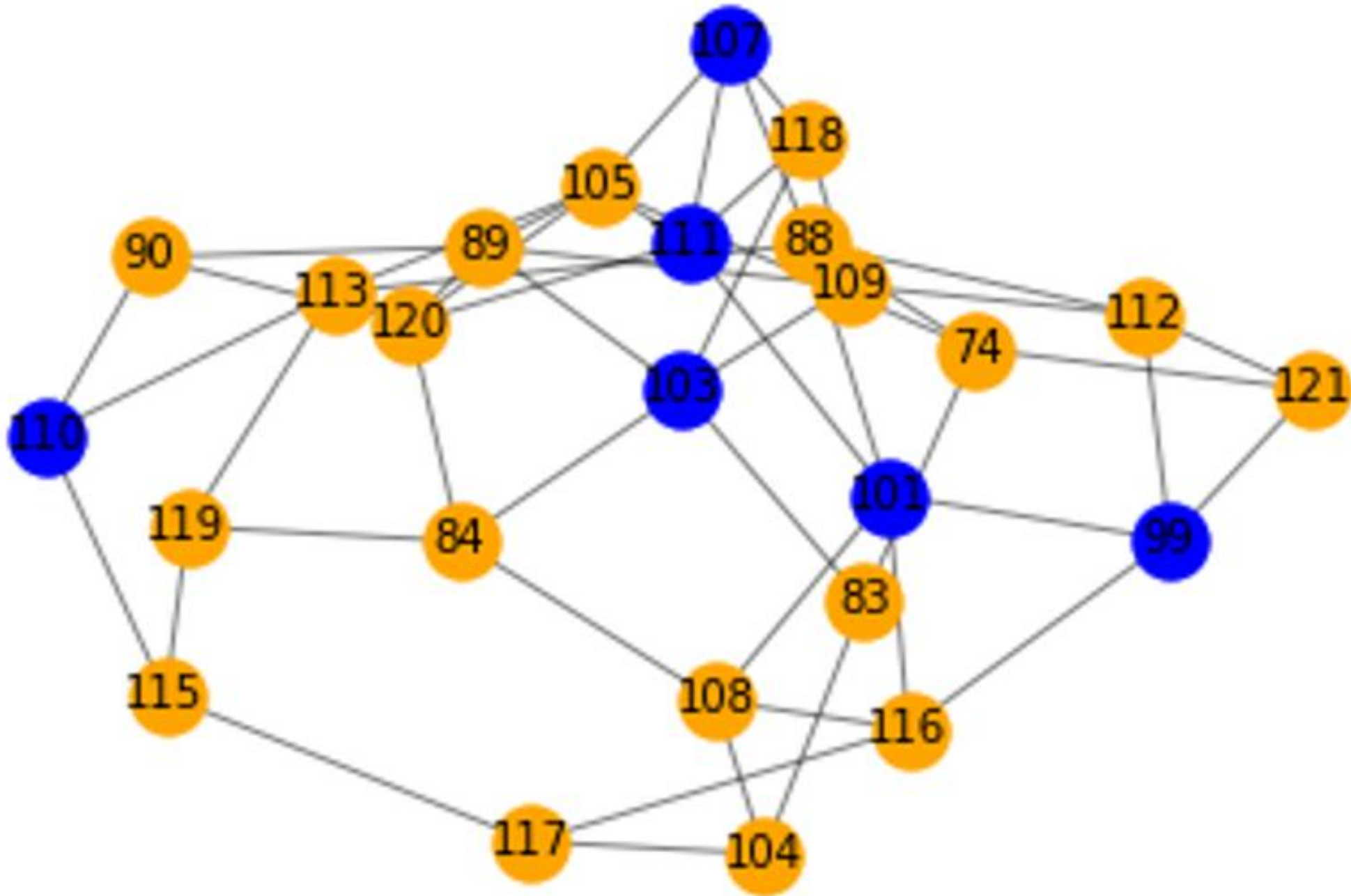
AI Population  
37.04%

2034



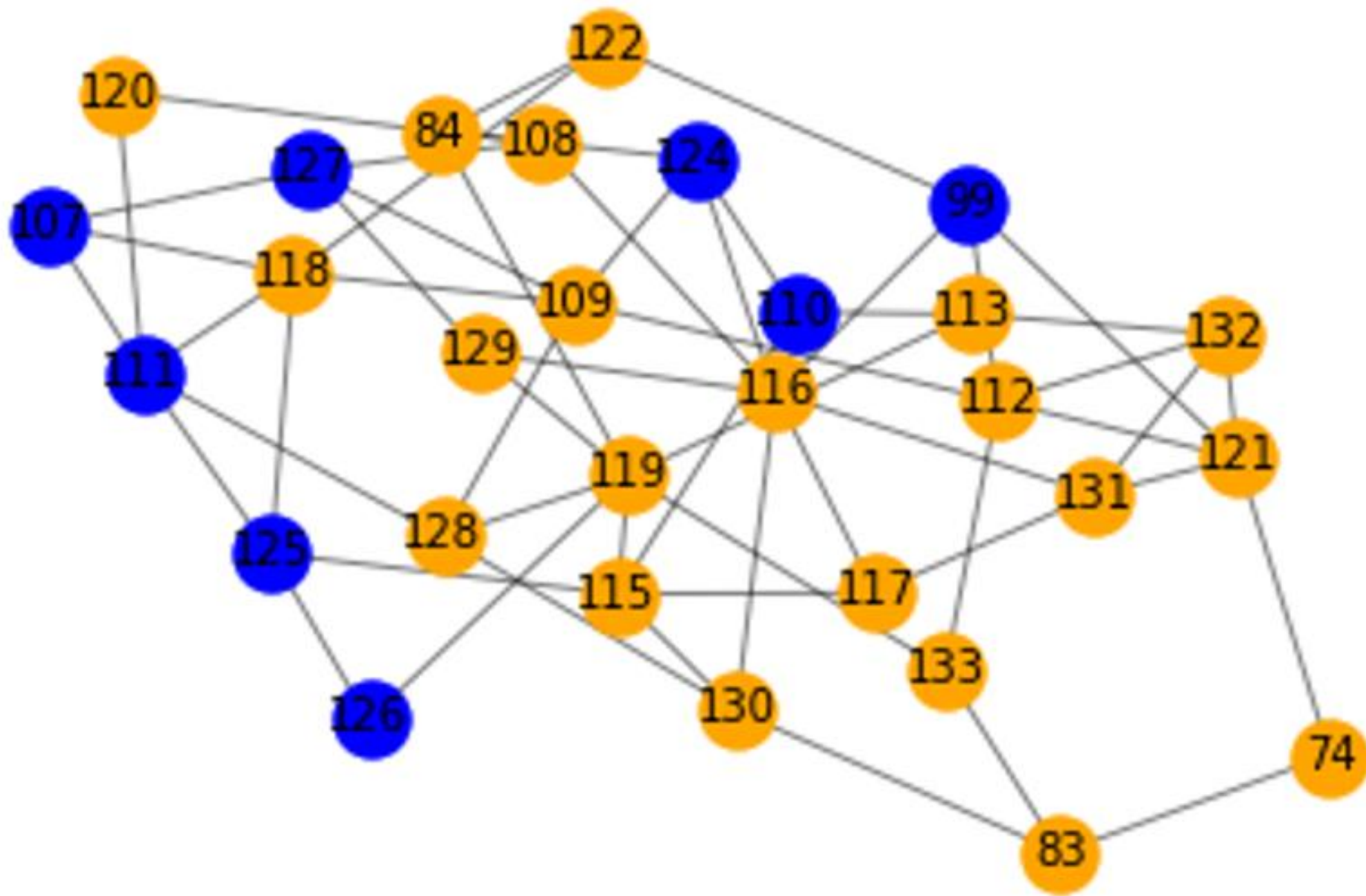
AI Population  
25.93%

2035



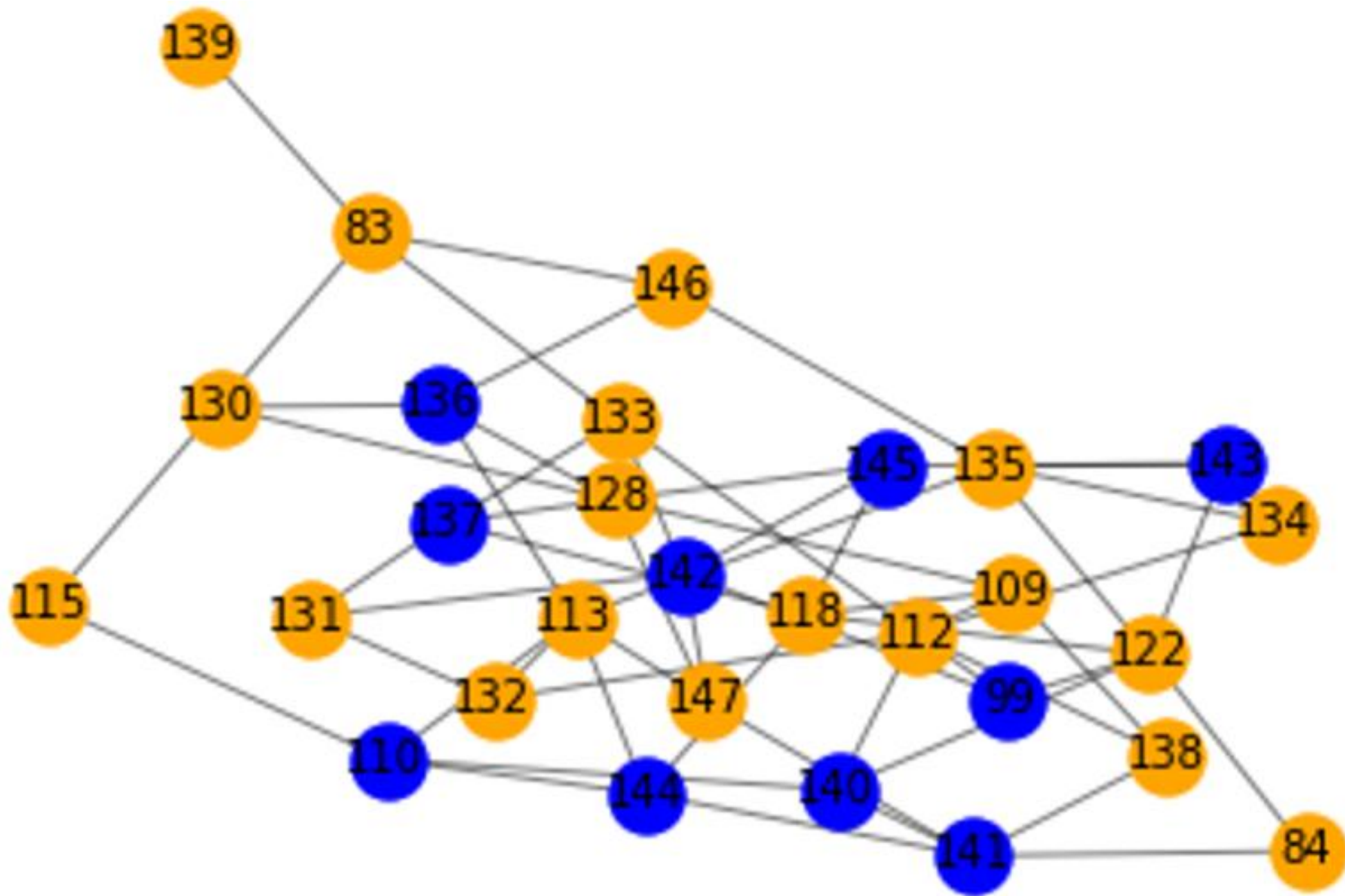
AI Population  
24.00%

2036



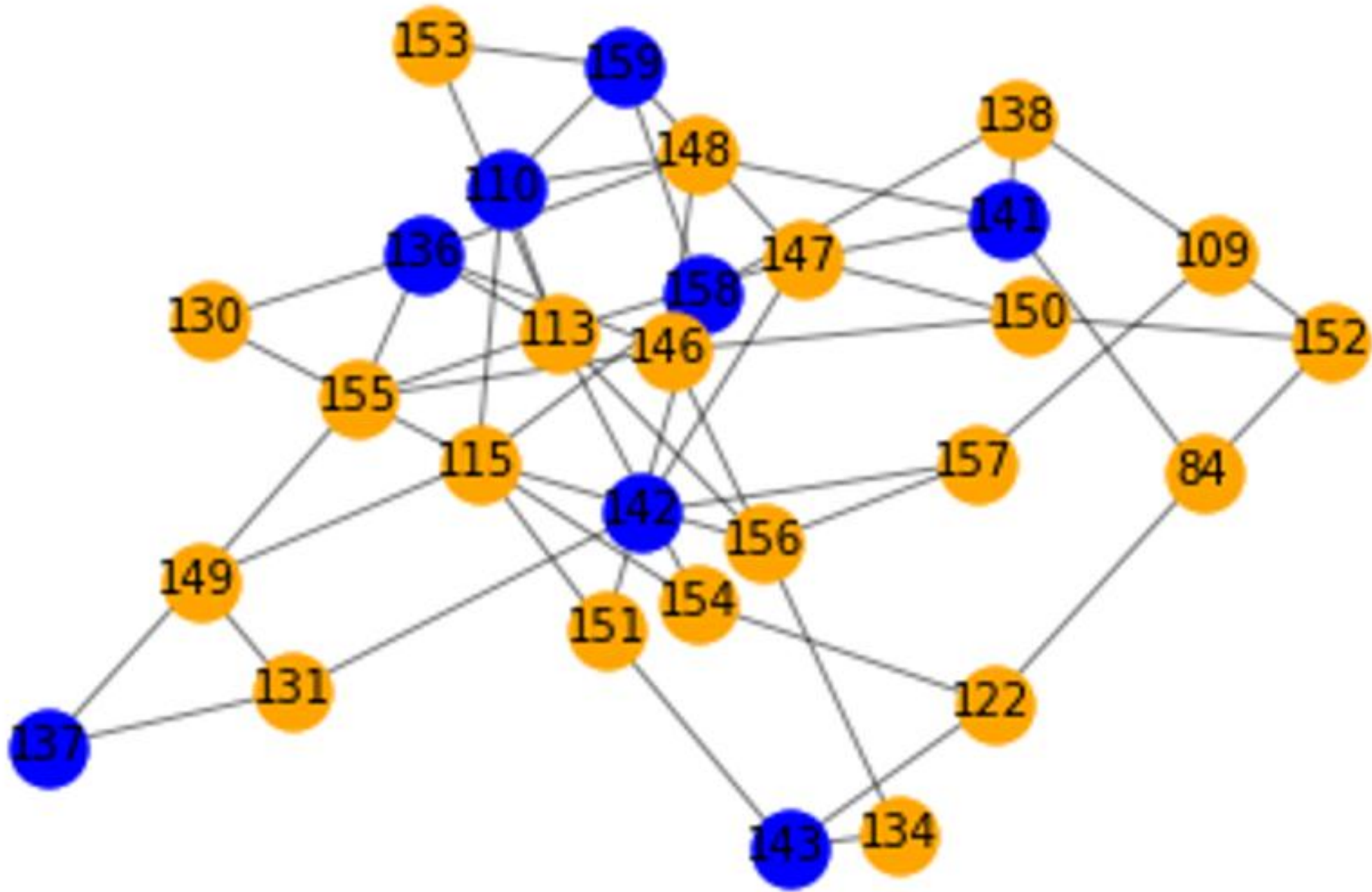
AI Population  
28.57%

2037



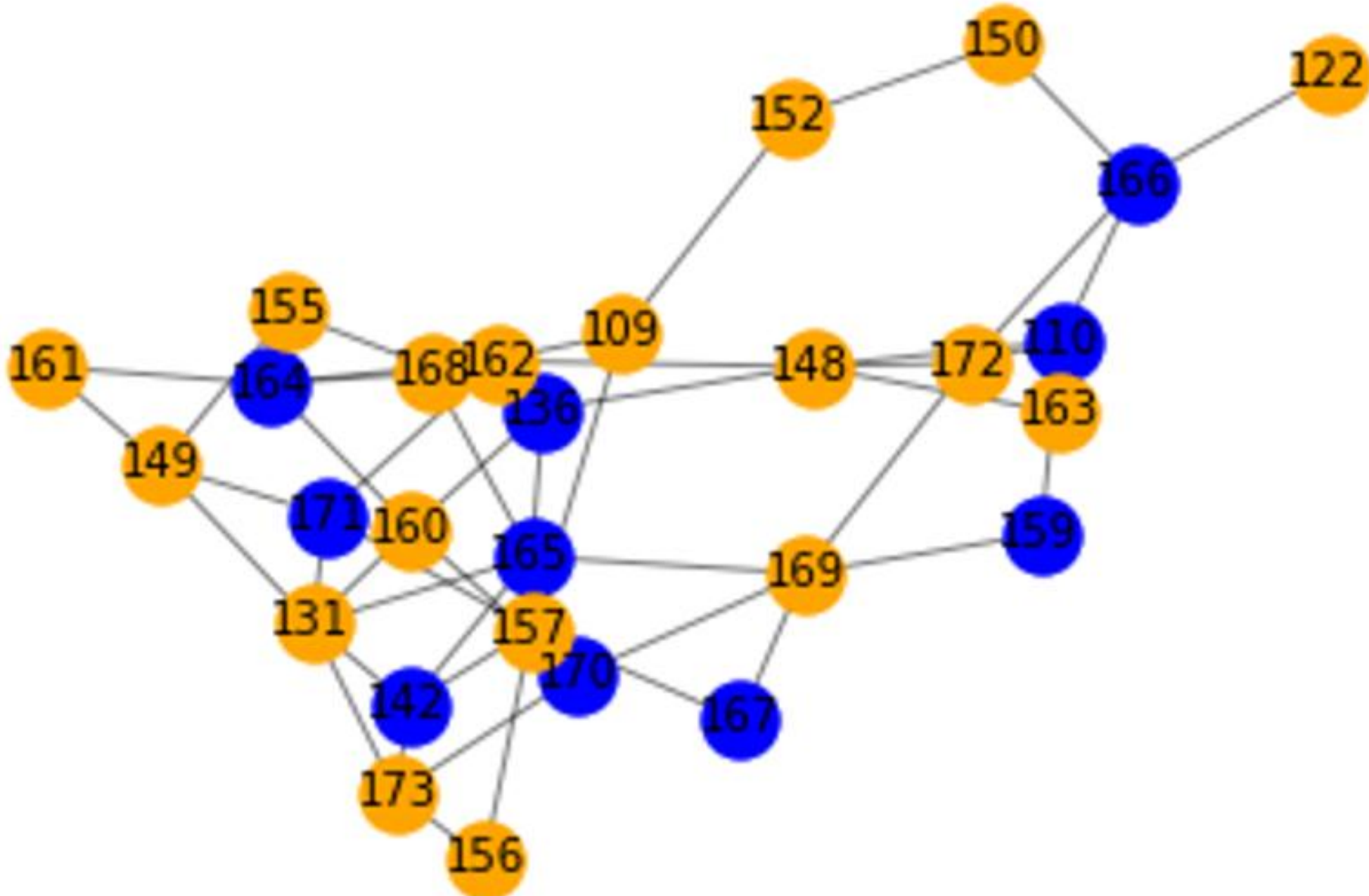
AI Population  
37.04%

2038



AI Population  
27.59%

2039

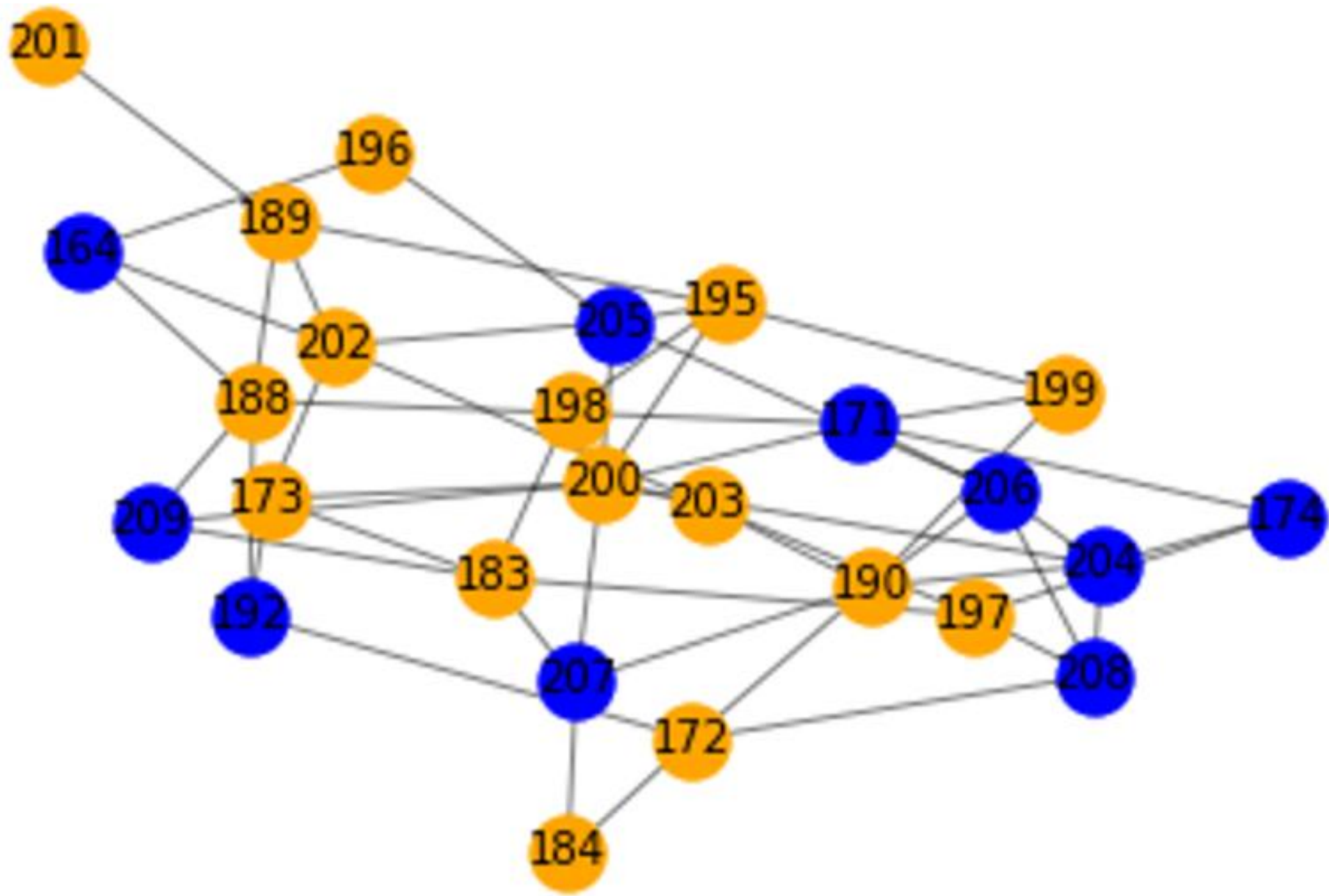


AI Population  
37.04%



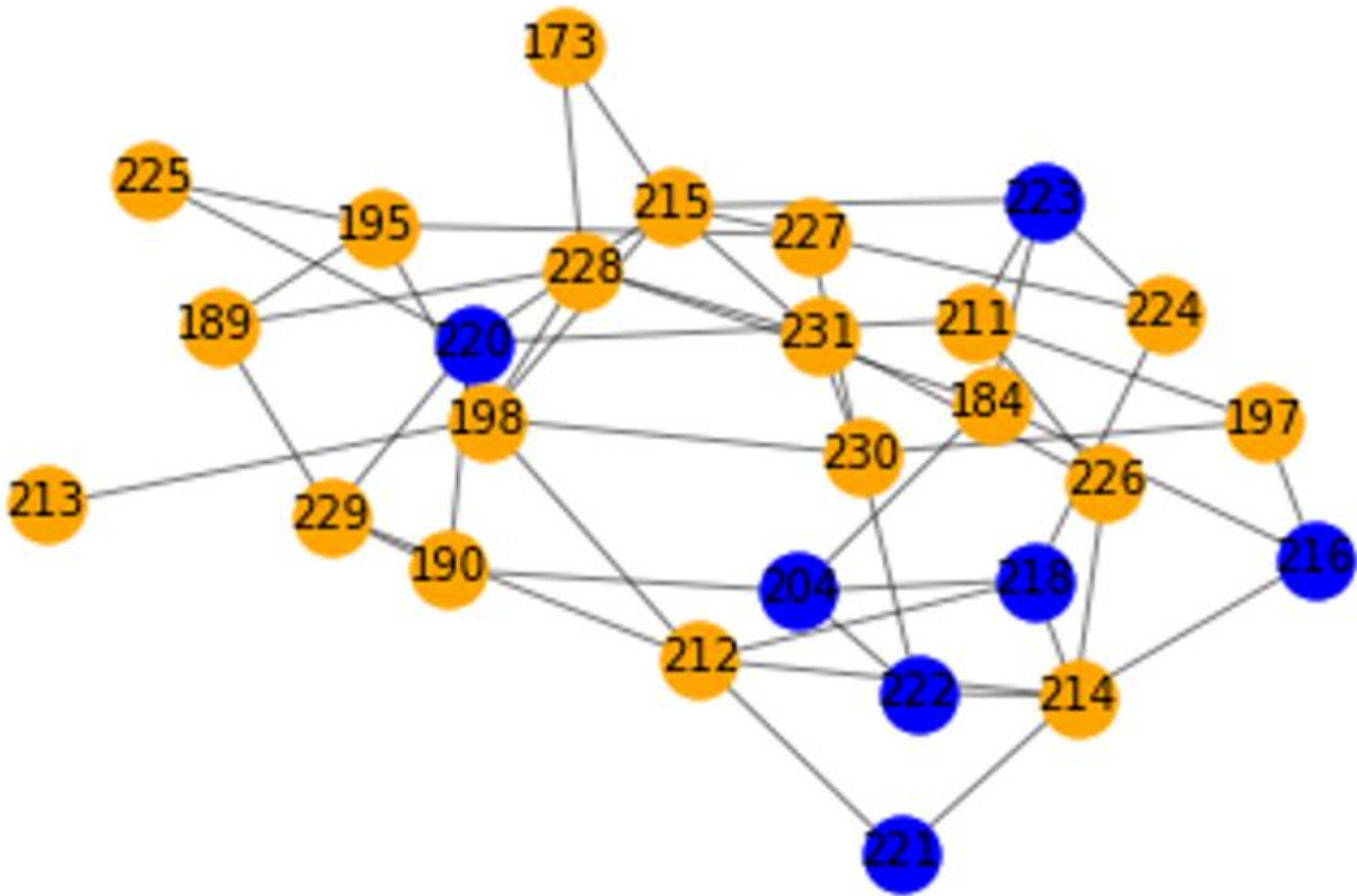


2042



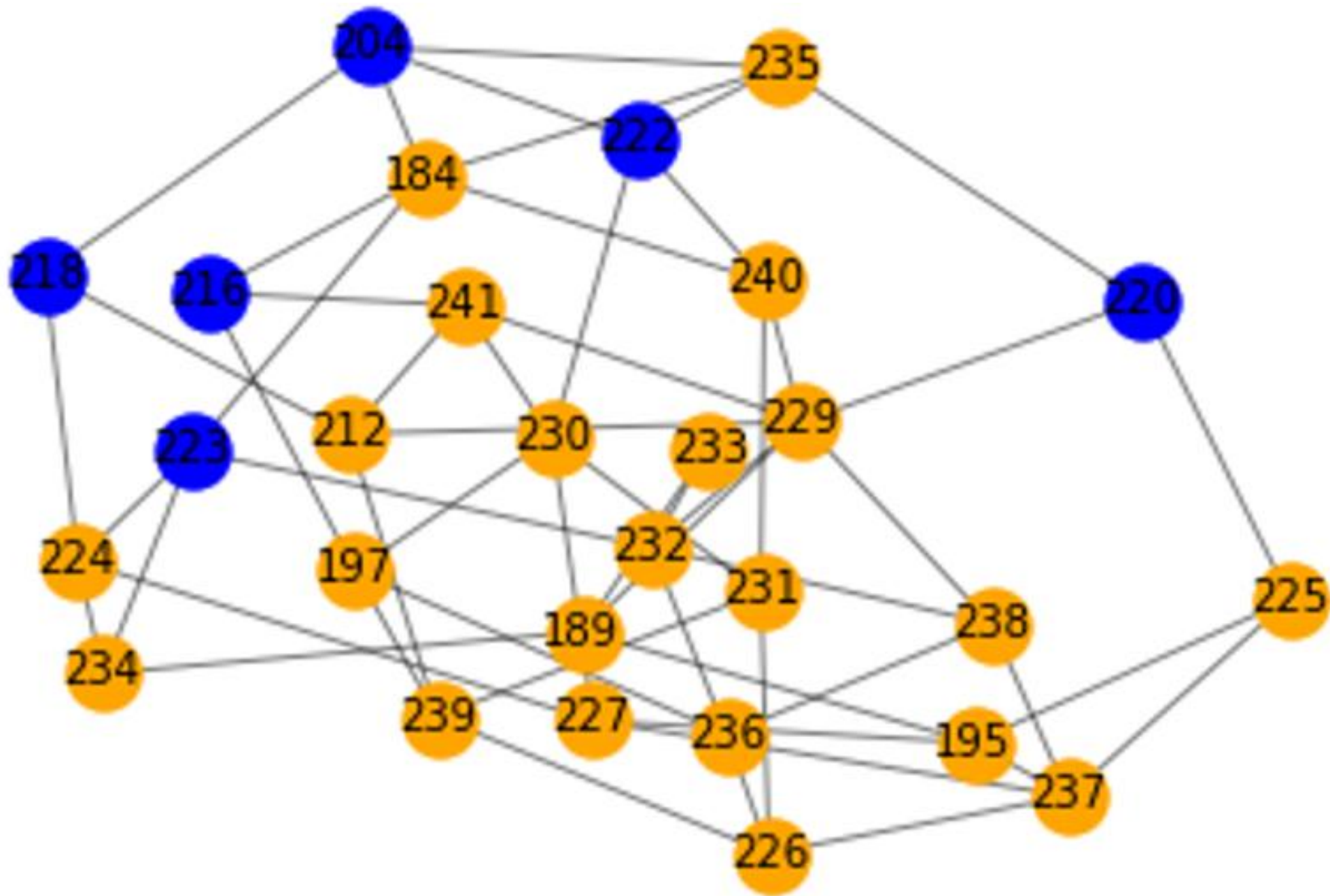
AI Population  
38.46%

2043



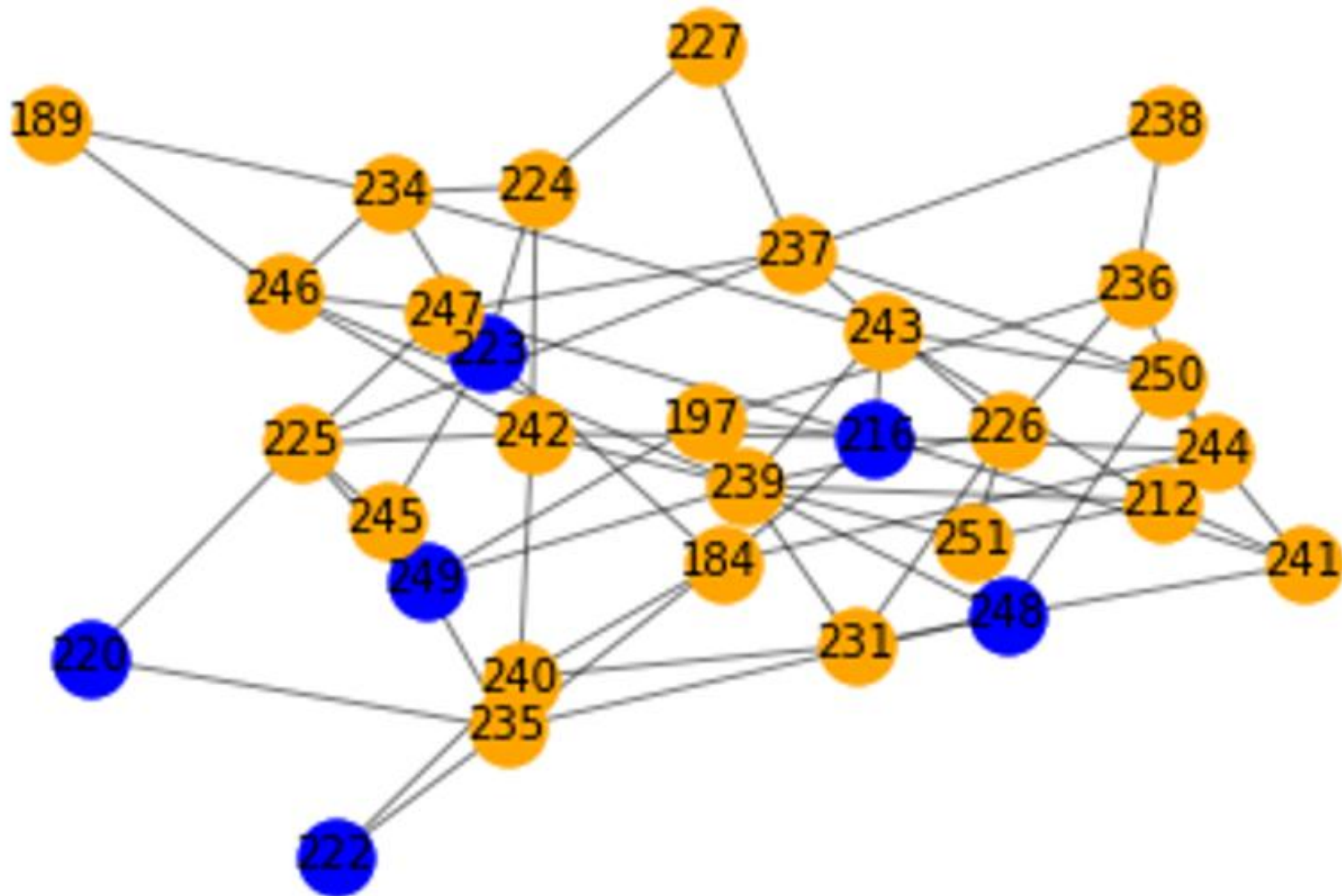
AI Population  
26.92%

2044



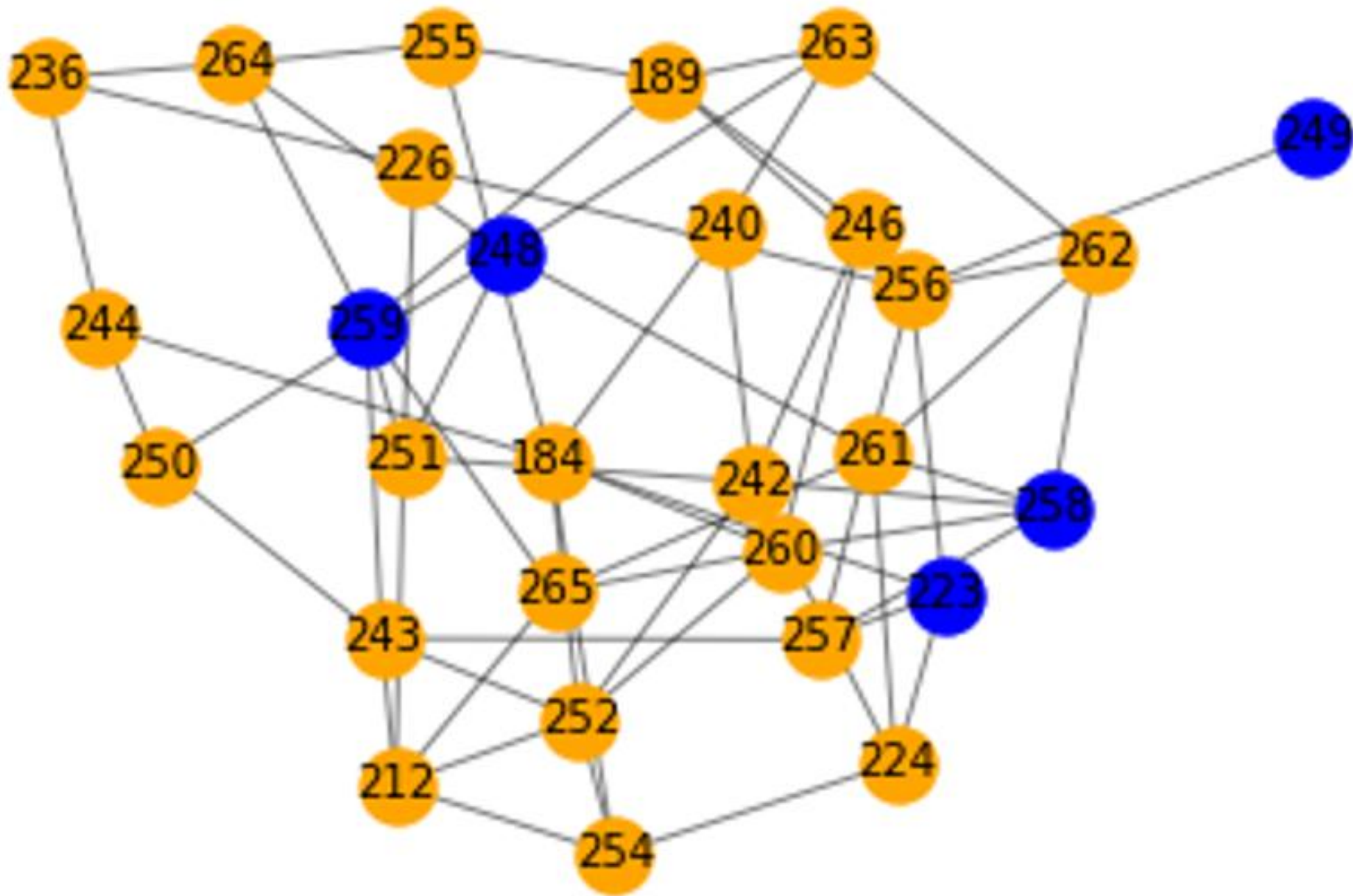
AI Population  
21.43%

2045



AI Population  
20.69%

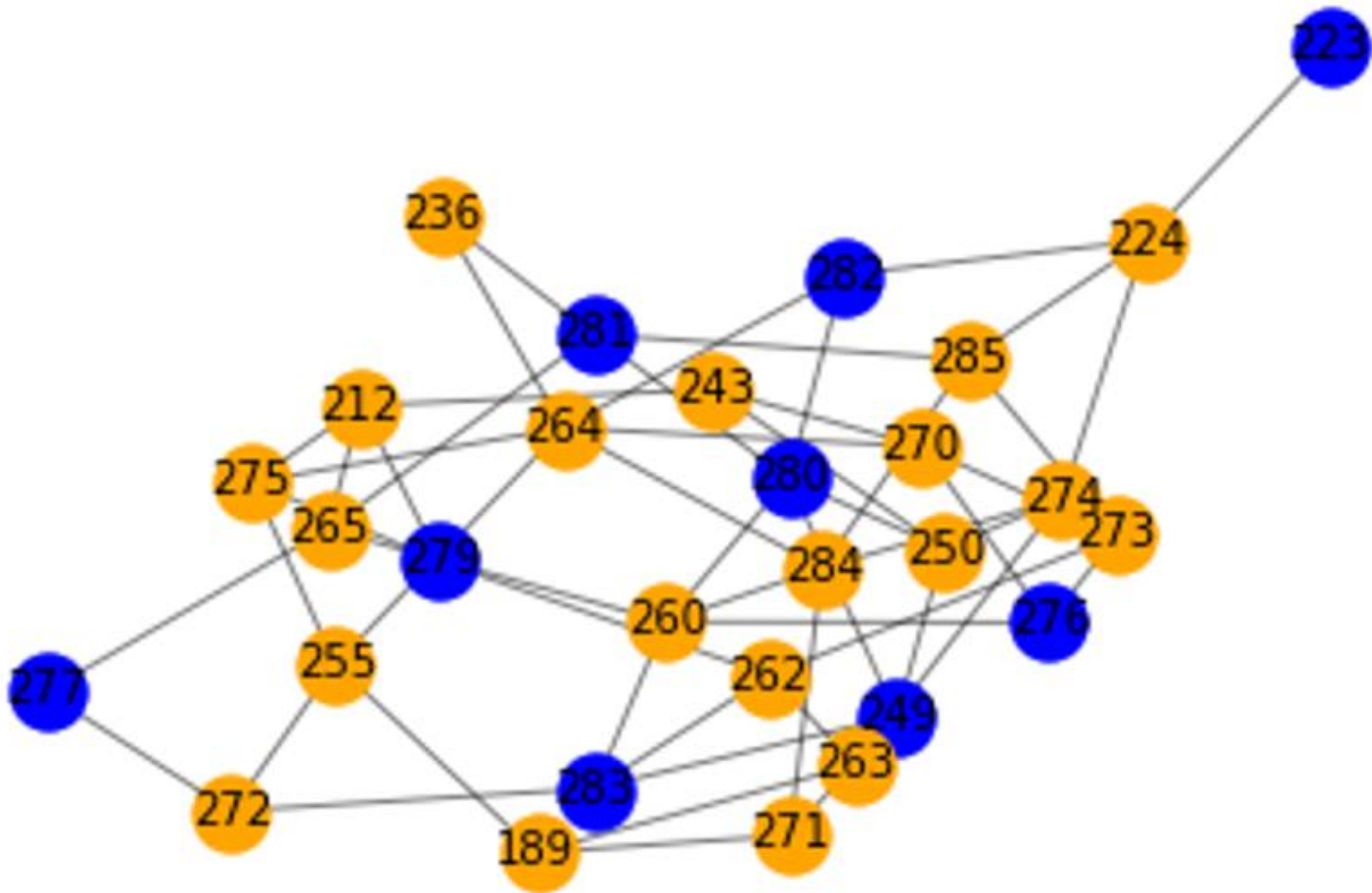
2046



AI Population  
17.86%

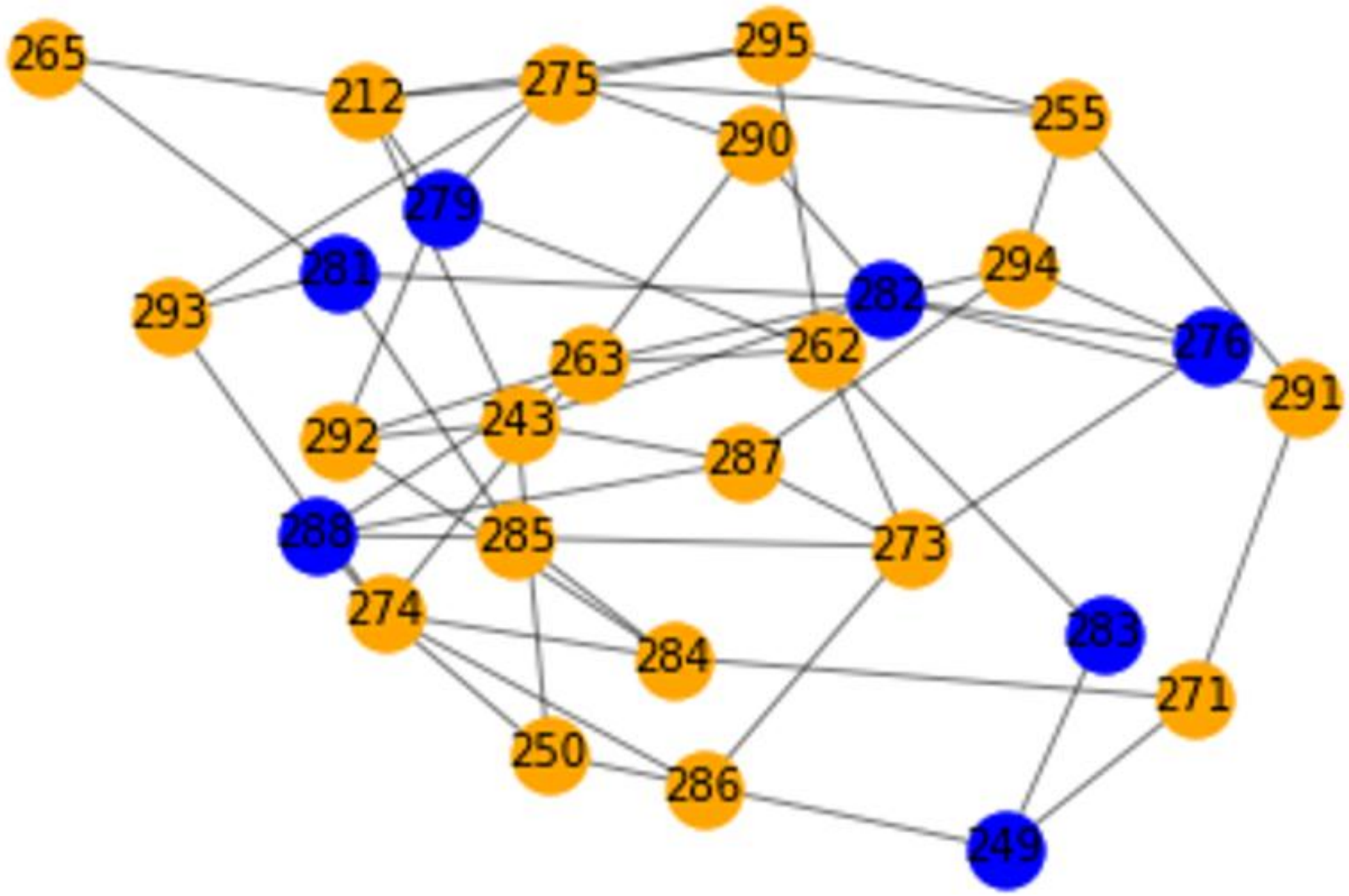


2048



AI Population  
34.62%

2049



AI Population  
28.00%



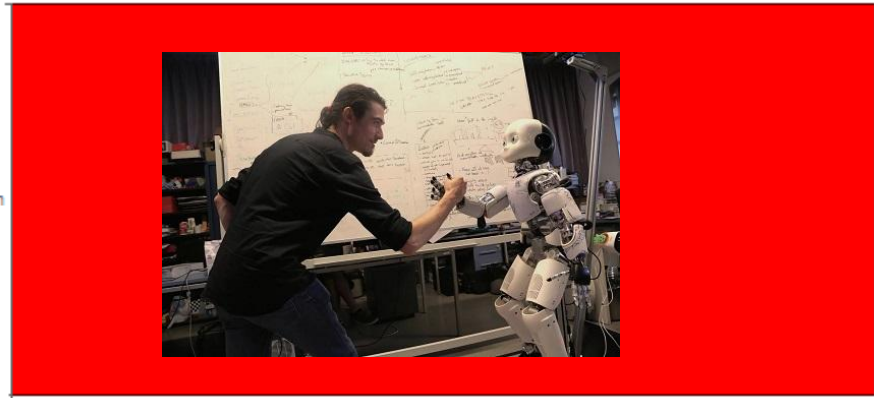
# AI TAKEOVER?

---

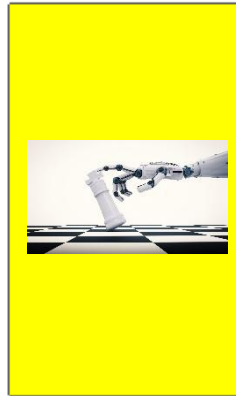


# OBAMA HOOD - NO AI TAKEOVER

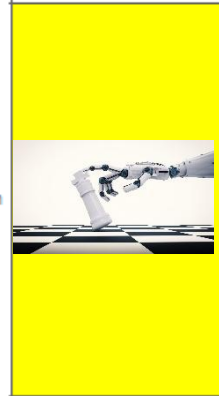




78%



20%



19%



80%



3%

75

50

25

0

0

25

50

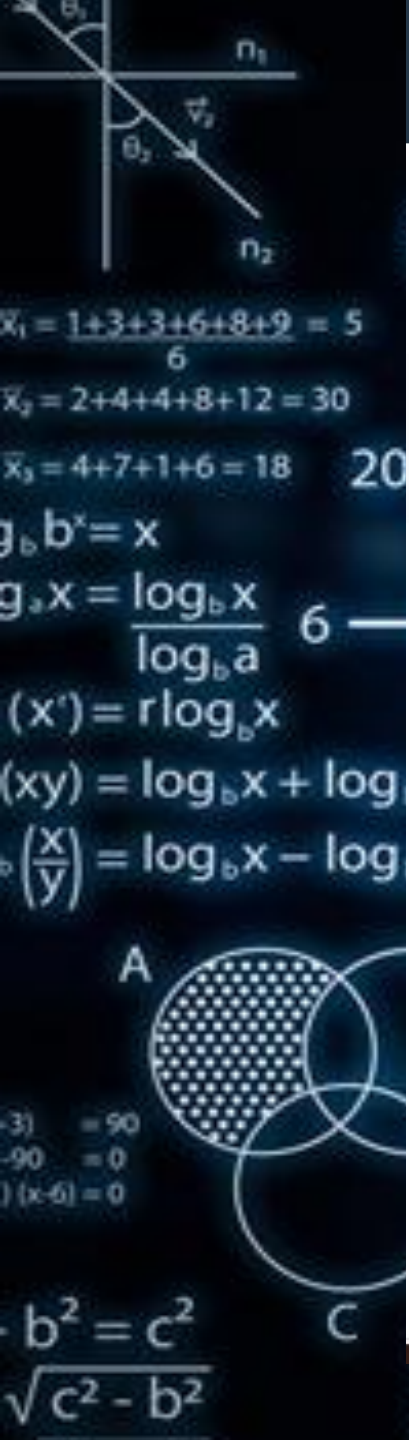
75


Published: 23 February 2023

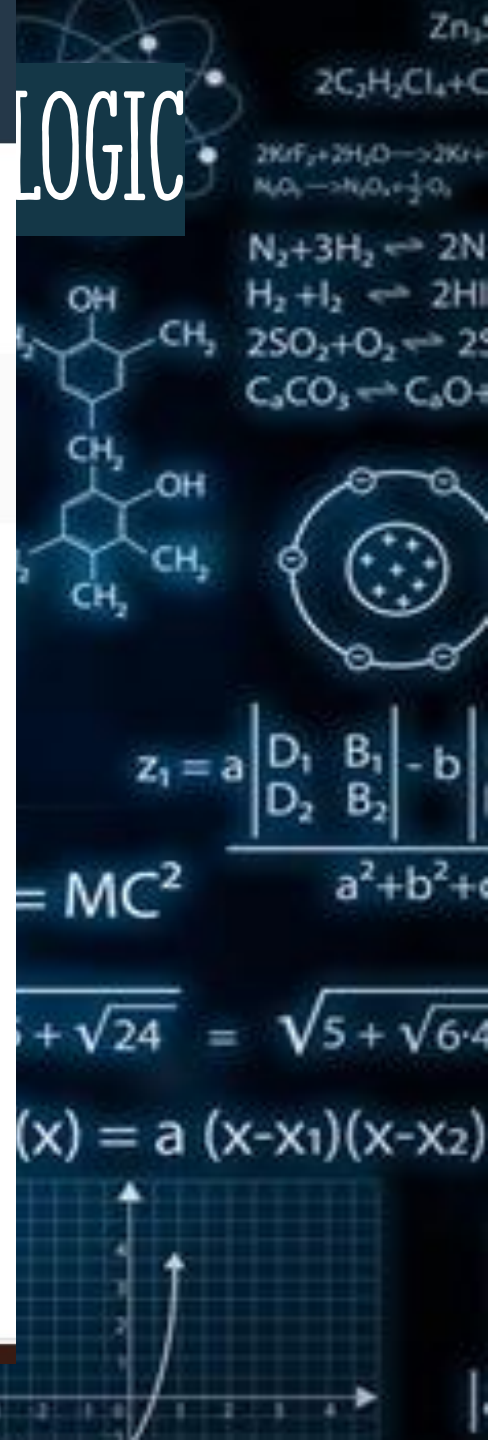
NEWS

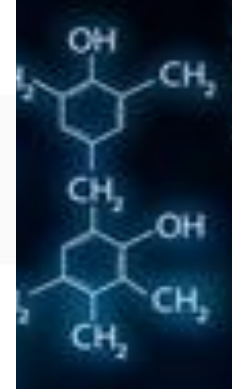


## Top mathematician prevents AI apocalypse

With the spectre of ChatGPT threatening the stability of life as we know it – if you believe what the sensationalists say – the 2023 annual Lewis Elton lecture was particularly timely.

$n_1$   
 $n_2$   
 $\theta_1$   
 $\theta_2$   
 $\bar{x}_1 = \frac{1+3+3+6+8+9}{6} = 5$   
 $\bar{x}_2 = 2+4+4+8+12 = 30$   
 $\bar{x}_3 = 4+7+1+6 = 18$   
 $20$   
 $g_b b^x = x$   
 $g_a x = \frac{\log_b x}{\log_b a}$   
 $(x^r) = r \log_b x$   
 $(xy) = \log_b x + \log_b y$   
 $\left(\frac{x}{y}\right) = \log_b x - \log_b y$   
 A  
  
 C  
 $b^2 = c^2$   
 $\sqrt{c^2 - b^2}$   
 $x^2 + 2ax + a^2 = (x+a)^2$   
 $x^2 - 2ax + a^2 = (x-a)^2$   
 $y = ax + b$   
 $\cos(60^\circ) = \frac{y}{r}$



$Zn_3$   
 $2C_3H_7Cl_4 + C$   
 $2K_2F_2 + 2H_2O \rightarrow 2KF + 2H_2$   
 $N_2 + 3H_2 \rightleftharpoons 2NH_3$   
 $H_2 + I_2 \rightleftharpoons 2HI$   
 $2SO_2 + O_2 \rightleftharpoons 2SO_3$   
 $C_3CO_3 \rightleftharpoons C_3O +$   
  
  
 $z_1 = a \frac{\begin{vmatrix} D_1 & B_1 \\ D_2 & B_2 \end{vmatrix} - b}{a^2 + b^2 + c^2}$   
 $= MC^2$   
 $\sqrt{24} = \sqrt{5 + \sqrt{6 \cdot 4}}$   
 $(x) = a(x-x_1)(x-x_2)$   


# ANTI AI AI IS NOT NEW



# YOUNG AI SCIENTISTS THOUGHT EXPERIMENT

Would you build a high performance car without brakes?



# SO HOW DOES EDI AND AI COME TOGETHER?



Is AI immune to Gender and Racial Bias?

**No — AI is *not* immune to gender and racial bias.** In fact, AI systems often *inherit and amplify* the biases present in the data they are trained on, as well as the social structures in which they are deployed [ALI Social Impact R... +3](#) .

GEOFFREY HINTON "THE  
GODFATHER OF AI". GOOGLE  
AND NOBEL PRIZE WINNER



GEOFFREY HINTON "THE  
GODFATHER OF AI". GOOGLE  
AND NOBEL PRIZE WINNER

"You can't eliminate  
AI Bias"



GEOFFREY HINTON "THE  
GODFATHER OF AI". GOOGLE  
AND NOBEL PRIZE WINNER

"is to manage and  
mitigate bias, not  
eradicate it entirely. "





# Case Studies: Real-World Examples of AI Bias & Consequences



Facial Recognition & Racial Bias



Gender Bias in AI Recruiting Tools



AI Bias in Healthcare



Bias in Financial Services



Misinformation & Bias in AI Content Moderation

# RUHA BENJAMIN IS A PROFESSOR OF AFRICAN AMERICAN STUDIES AT PRINCETON UNIVERSITY



**SHE PROVED THAT RACISM DOESN'T JUST LIVE IN PEOPLE—IT LIVES IN CODE. HER WORK REVEALED HOW ALGORITHMS QUIETLY DECIDE WHO GETS SEEN, HIRED, AND HELPED. TECHNOLOGY, SHE SAYS, IS NOT DESTINY**

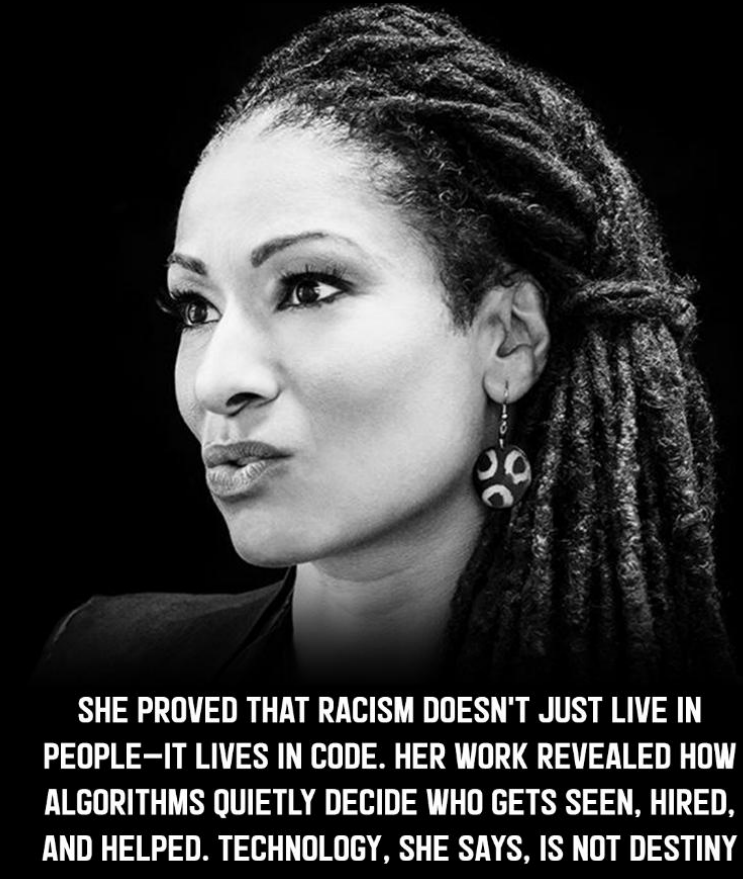
# RUHA BENJAMIN IS A PROFESSOR OF AFRICAN AMERICAN STUDIES AT PRINCETON UNIVERSITY

- A gang database in which 87% of names are Black and Latino—including babies under age one supposedly listed as "self-described gang members."
- Facial recognition software that can't recognize darker skin tones.
- Hiring algorithms that screen out qualified candidates based on postcodes that correlate with race.
- Predictive policing systems that send more officers to neighbourhoods already over-policed, creating a feedback loop that "proves" those neighbourhoods need more policing.



**SHE PROVED THAT RACISM DOESN'T JUST LIVE IN PEOPLE—IT LIVES IN CODE. HER WORK REVEALED HOW ALGORITHMS QUIETLY DECIDE WHO GETS SEEN, HIRED, AND HELPED. TECHNOLOGY, SHE SAYS, IS NOT DESTINY**

# WHY ARE ART SUBJECT MATTER EXPERTS AHEAD OF THE STEM COMMUNITY WHEN IT COMES TO EDI & AI BIAS?



**SHE PROVED THAT RACISM DOESN'T JUST LIVE IN PEOPLE—IT LIVES IN CODE. HER WORK REVEALED HOW ALGORITHMS QUIETLY DECIDE WHO GETS SEEN, HIRED, AND HELPED. TECHNOLOGY, SHE SAYS, IS NOT DESTINY**



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into anything  
and you will find  
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and you will find  
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BUT, IF IT IS POSSIBLE TO ERADICATE AI BIAS.....



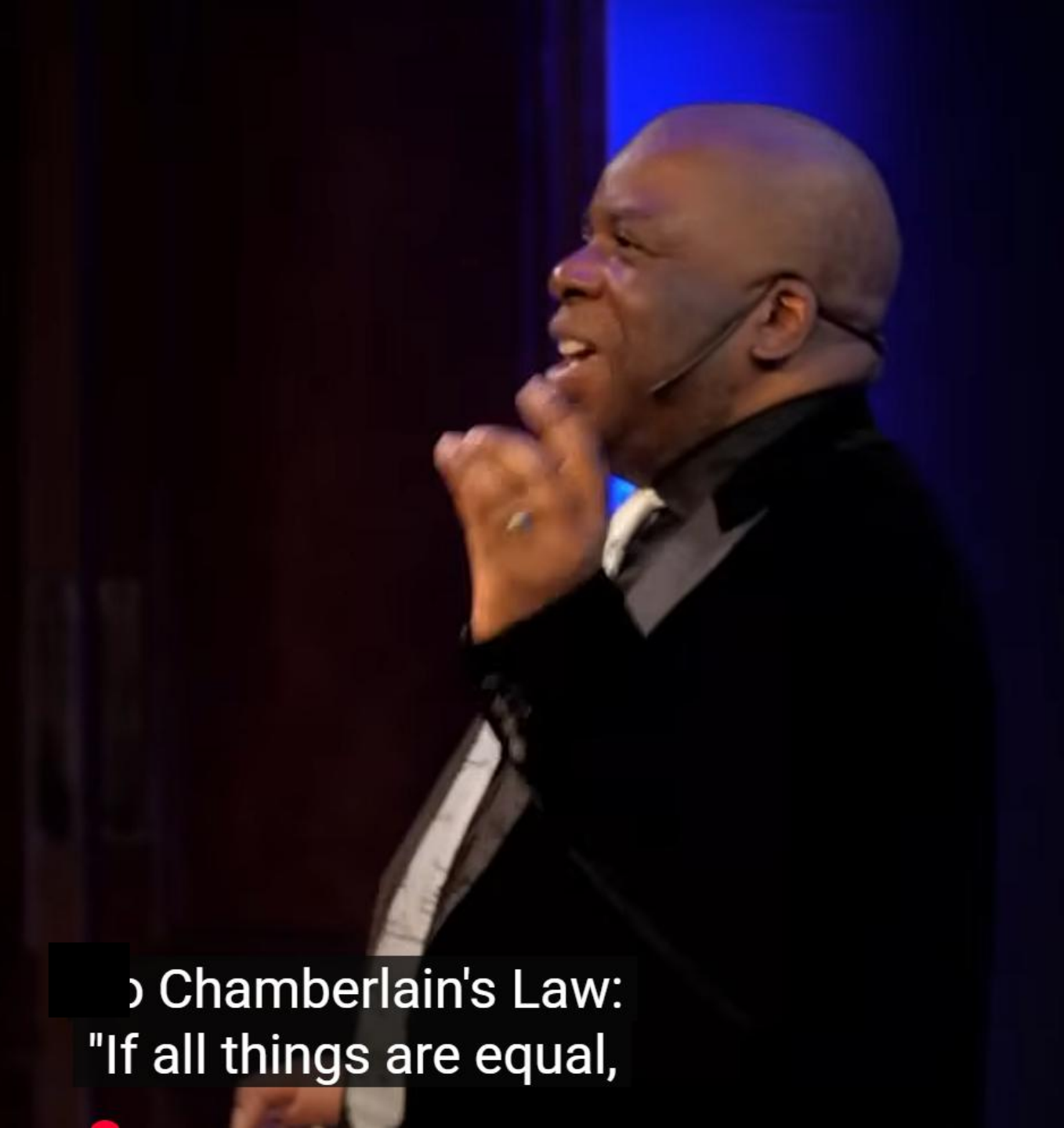
Then the  
first step  
is to say this...



↳ Chamberlain's Law:  
"If all things are equal,

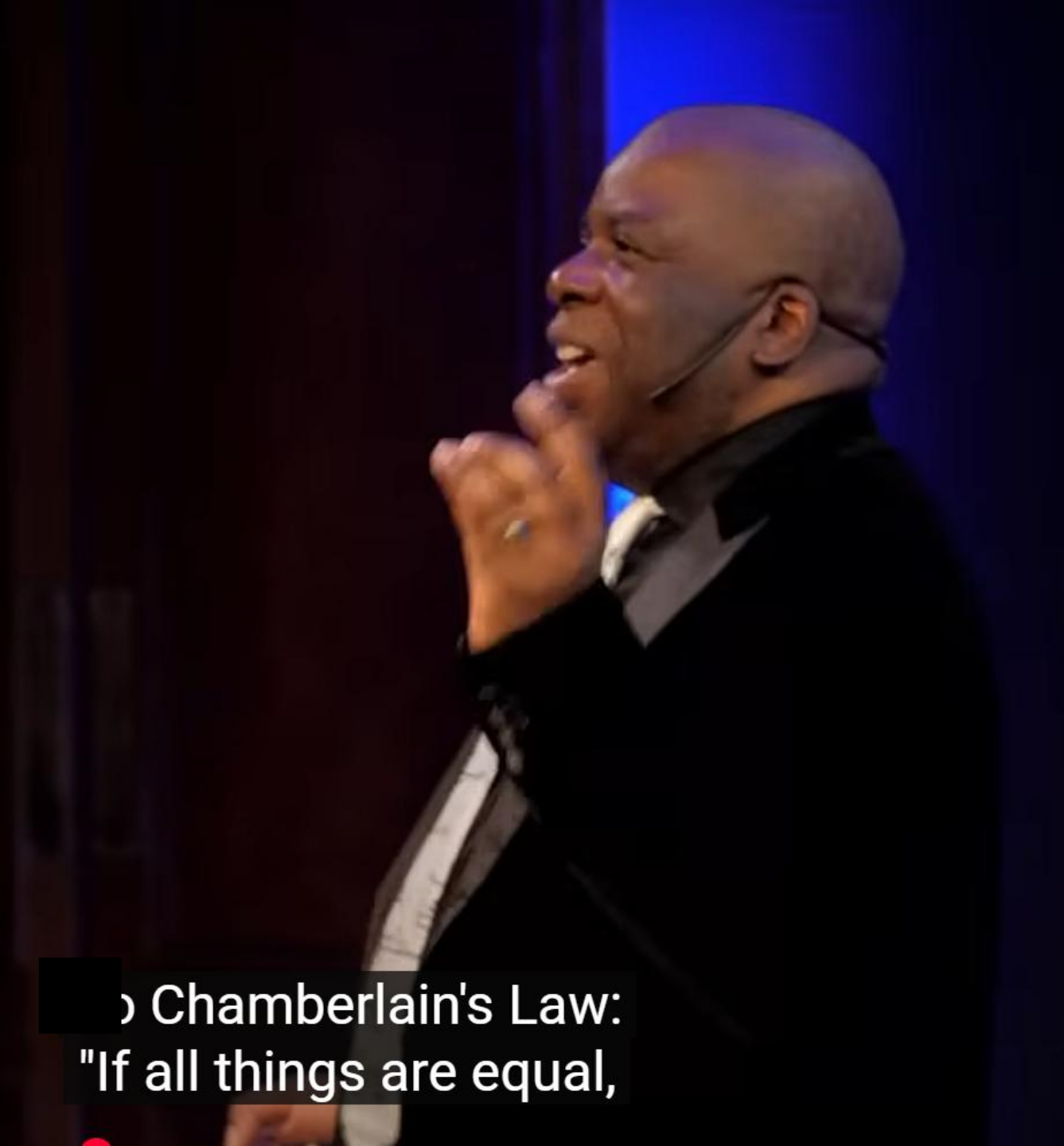
Then the  
first step  
is to say this...

*"If all things are  
equal, what numbers  
do we expect to see!"*

A man in a dark suit and tie is speaking on a stage. He is wearing a headset microphone and has his hand near his chin. The background is dark with blue lighting.

Chamberlain's Law:  
"If all things are equal,

# Thank you!



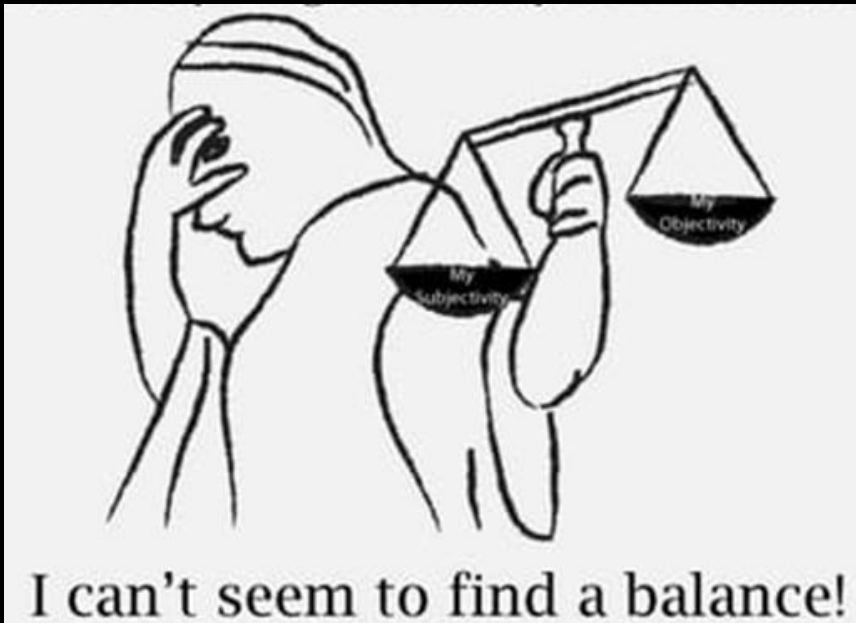
o Chamberlain's Law:  
"If all things are equal,

# EDI IS SUBJECTIVITY



Diversity is often misperceived as just numbers

I'm sick of diversity questionnaires — the best place for them is safely stacked in a bonfire



In any event, the data collected is skewed and meaningless, because it's mainly people who feel completely comfortable in declaring their ethnic background that fill in the forms. Only those who have never experienced racism really feel good about ticking these boxes.



Will we look back in horror at our EDI metrics?

# EDI DEFINITIONS WELL MEANING BUT ARE NOT HELPFUL



Independent report

## Report on the Inclusion at Work Panel's recommendations for improving diversity and inclusion (D&I) practice in the workplace

Published 20 March 2024



**Equality is everyone getting a pair of shoes.**



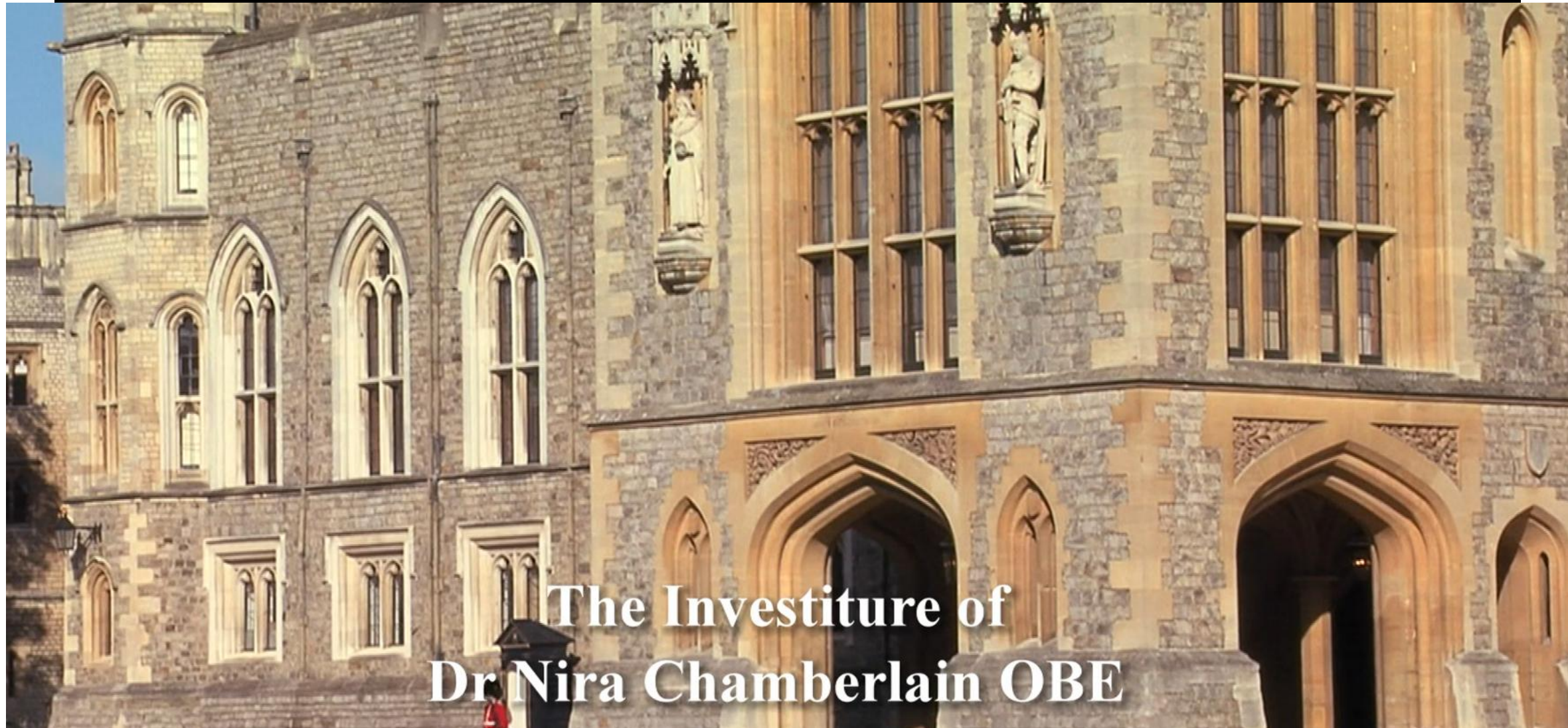
**Diversity is everyone getting a different type of shoe.**

The terms 'diversity', 'inclusion' (and other associated terminology) are conceptually ambiguous, rapidly evolving, and often conflated. The terms 'equality' and 'equity' are also used interchangeably, incorrectly. Within academic literature [\[footnote 9\]](#) these have

Because D&I is a social, not physical, science, causality between interventions and outcomes is often near impossible to discern, even if positive correlations should be taken seriously and shared. Definitive claims of 'what works' can be misleading or inconclusive. Results in one context cannot necessarily be replicated in another as workplaces are complex social environments with countless variables. This is not to

Diversity is being invited to the ball, inclusion is being asked to dance and equity is being able to dance as if no one is watching.





The Investiture of  
Dr Nira Chamberlain OBE





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