



THE SHIN-LIFE CAREER GAME: PURSUING YOUR NEW LIFE STYLE THROUGH GAMING SIMULATION

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Summary

The purpose of this study is to propose a serious game: the Shin-Life Career Game, which allows players to construct various careers. The name of this game is come from the most famous classic game: the Life Career Game developed by Boocock. In the field of career education, various serious games have been developed as a means for students to learn about career planning and development in a practical way. However, in conventional serious games for career education, the diversity of careers constructed by the players is low compared to the reality of today's working society. We propose a new serious game: the Shin-Life Career Game which eliminates the restriction on the number of occupations a player is able to take at the same time. We plan to use this game to explore the possibilities of various lifestyles for people.



Background

Gaming and Simulation (GS) [1]

- Gaming and Simulation is a learning method that simplifies complex real-world problems to enable learners to experience the reality of the problems.
- Steps for Learning
 - Briefing → Gaming → Debriefing
- Members
 - Facilitators and Players (Individuals or Teams)
- Outcome
 - Understanding mechanisms of the target problems
 - Acquiring the virtual cases composed of players' decision-making



Background

Career Education

- Education for students to learn knowledge about career development and career choice.
- The target of education is elementary school to university students.

Application of Gaming Simulation to Career Education

- The Life Career Game [2], The Real Game [3], MeTycoon [4], etc.

Problems with conventional gaming simulations for career education

- Less freedom in labor and occupational choices handled in the game.
 - Multiple occupations, multiple workplaces, multiple employers, etc...
 - Full-time workers, freelancers, part-time workers, gig workers, etc...



Purpose and Approach

Purpose

- Show that players who play the Shin-Life Career Game are affected by the experience of economic depression, just as real workers are.

Approach

- Develop a gaming simulation: the Shin-Life Career Game
- Conduct gaming experiments with the Shin-Life Career Game which has a scenario with a economic depression.



What is the Shin-Life Career Game ?

The Life-Career Game [2]

- The world's oldest gaming simulation for career education, developed in the 1960s.
- A type of life game [5] that requires players to solve a resource allocation problem.
- Students from elementary school to university are the target of the game.

What is the Shin-Life Career Game ?

- "Shin" is a Japanese word meaning "new".
- The Shin-Life Career Game is a modern update of the original Life Career Game.
 - Working in more than one occupation at the same time.
 - Various forms of work



Resource variables and activities in the Shin-Life Career Game

Resource

- Money resource variable
Resource equivalent to money in the real world.
It has extensive property and has no upper limit.
- Ability resource variable
Resource equivalent to the knowledge and skills for the career.
It has Intensive property and no upper limit.
- Time resource variable
Resource corresponding to time spent on real life activities.
It has extensive property and an upper bound.

INPUT OUTPUT	Money	Ability	Time	Health
Money			Simple work	
Ability		Permanent work Freelance work		
Time		Learning		
Health				

MATH model [6]

Activity

- Permanent work:
Long-term employment with a particular company and earning regular wages
- Freelance work:
Operate a business that provides professional services independent of the organization
- Simple work:
Provides working hours to an organization and earns wages.
- Learning:
Develop skills voluntarily.



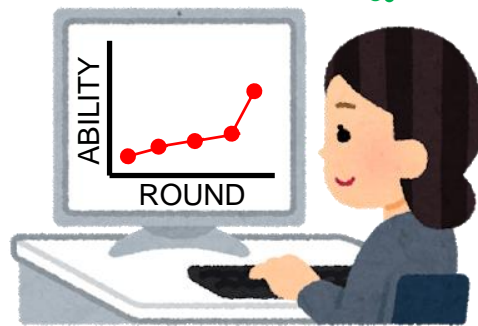
The Shin-Life Career Game

Resources
Money, Ability,
Time

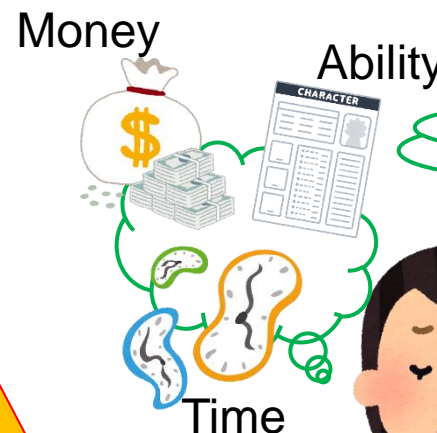


Begin the first turn

I wish I got to be
a better business worker



Check play status



How do I allocate my resources
to achieve my goal?

Labour

- Permanent work
- Freelance work
- Simple work

Learning

Consider policies for resource allocation.

Make decision
according to my policy

To the
next turn



Sometimes a
depression happens.

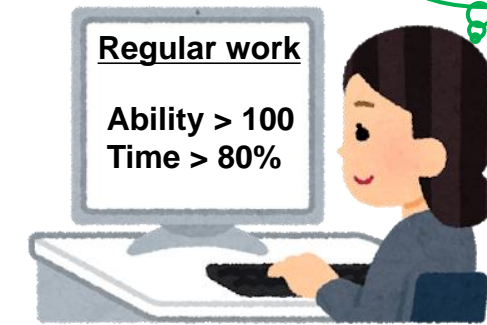


Retirement

Final turn ?



Game system calculates and
updates players' status.



Allocate players' resources
to activities



The Shin-Life Career Game

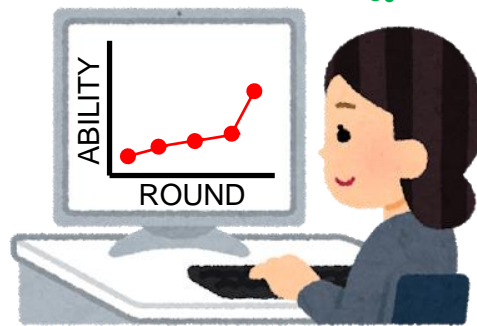
Resources
Money, Ability, Time



Begin the first turn



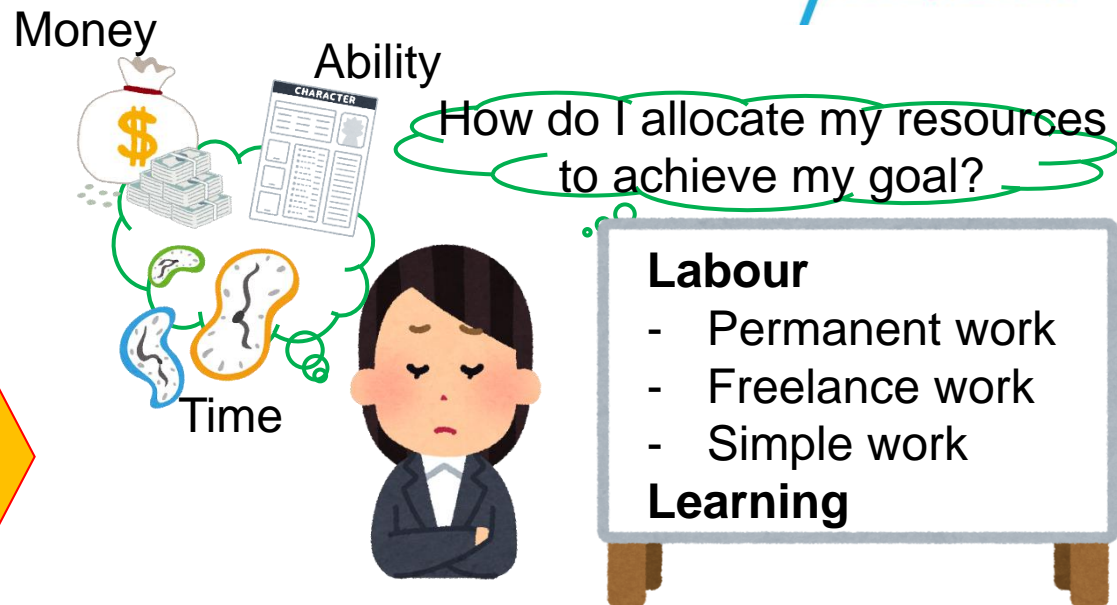
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Money Ability



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Regular work

Ability > 100
Time > 80%

Allocate players' resources to activities



The Shin-Life Career Game

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Money, Ability,
Time



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Ability



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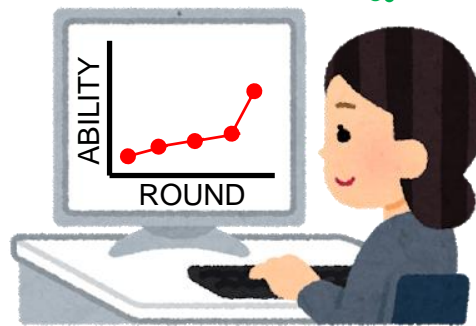
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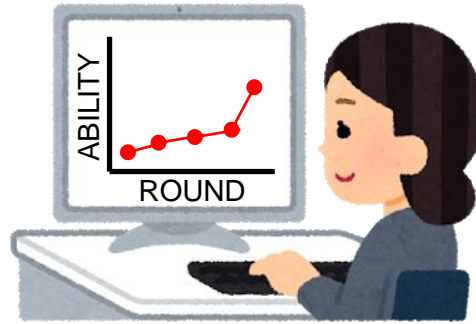
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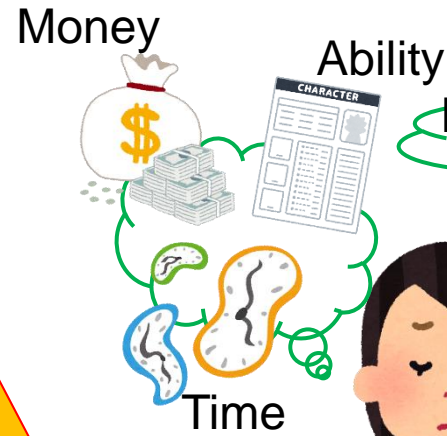


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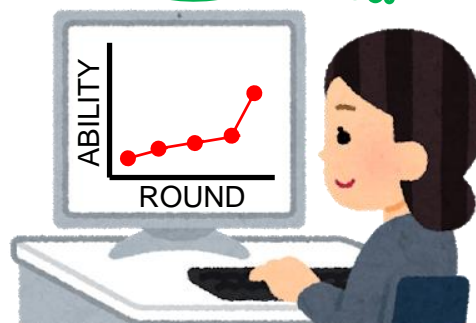
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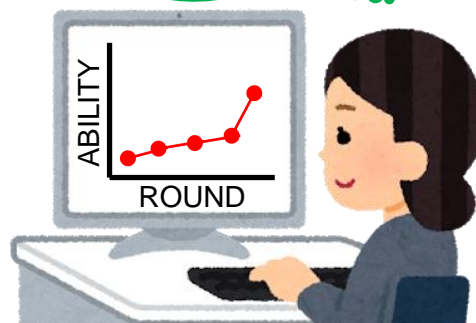
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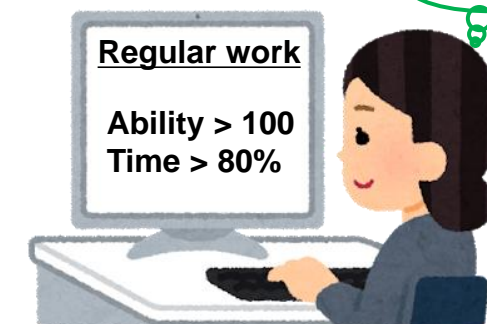


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Experiment

Participants

- Four types of software agents.

System



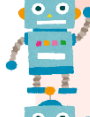
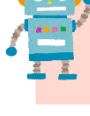
- C#
- PC, Windows10 Pro 64bit OS. 16GB RAM

Game Scenario

- A economic depression happens in round 30.
 - Assume the case of a worker who experiences an economic downturn in his or her 50s.
- The total number of rounds in the game is 40.



Agent

Policy				Time Resource Allocation Behavior			
#	Stable Income	Higher Income	Ability Growth	Permanent Work	Freelance Work	Simple Work	Learning
 A	○	○	○	Rand.		Rest/2	Rest/2
 B	○	○		Rand.		Rest	
 C	○		○	Rand.			Rest
 D	○			Rand.			

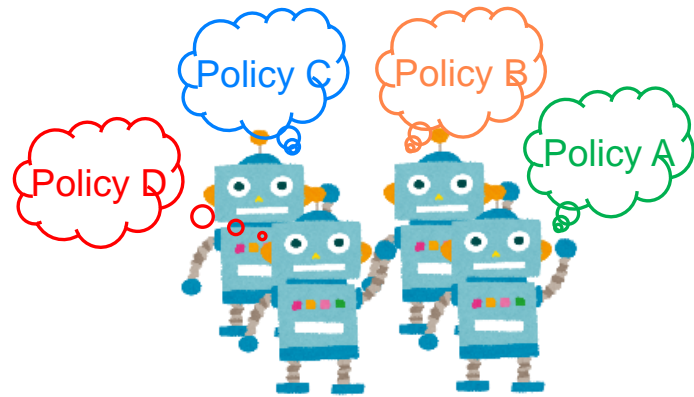
○: means that the agent considers it important in his/her work life.

“Rand.” is randomly determined in the range of 70-100% of the time resources available for a certain amount of time each turn.

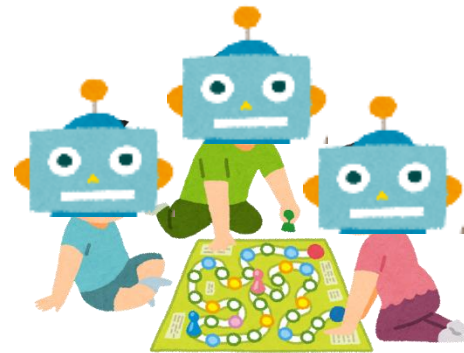
“Rest” refers to the remaining time resources after excluding the time resources spent on permanent work.



Procedures

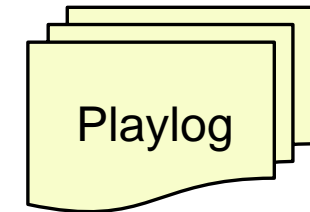


Software agents
(Each agent have just one policy)



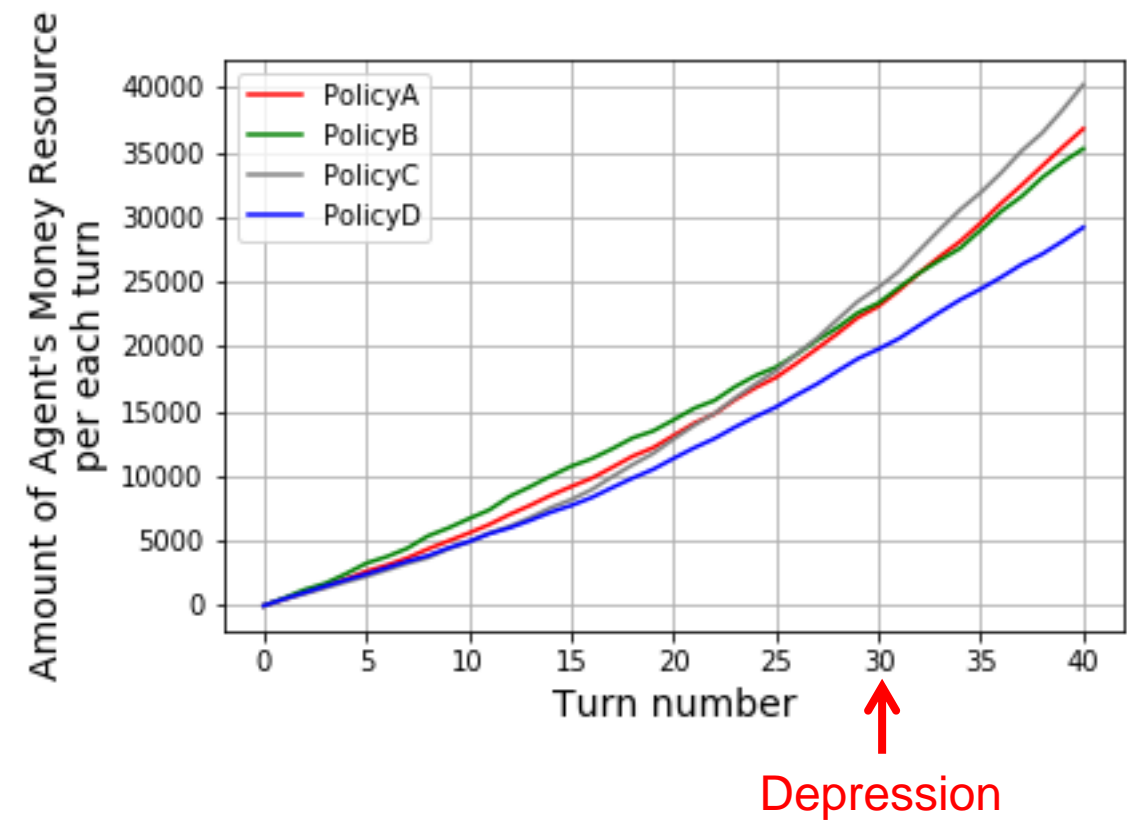
Gaming

Each agent plays the game independently
for 40 turns per a gaming session.



Results

Policy			
#	Stable Income	Higher Income	Ability Growth
A	○	○	○
B	○	○	
C	○		○
D	○		

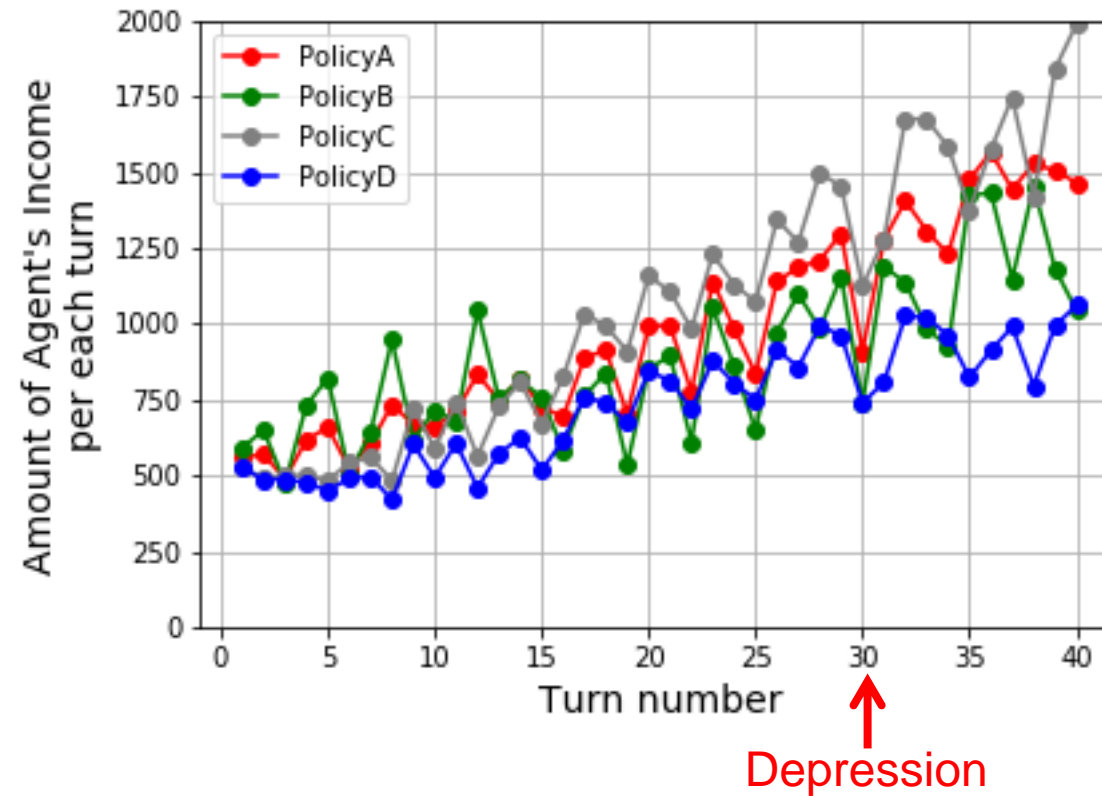


The agent who has the policy of focusing only on stable income are relatively less likely to accumulate money resources.



Results

Policy			
#	Stable Income	Higher Income	Ability Growth
A	○	○	○
B	○	○	
C	○		○
D	○		

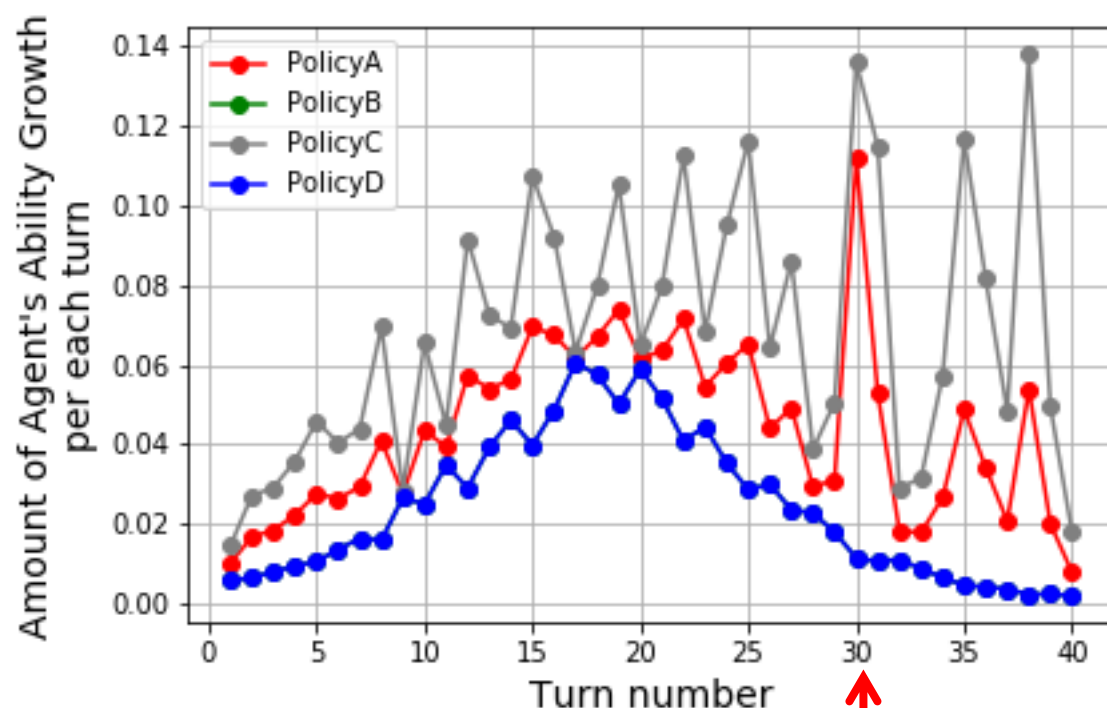


Regardless of the policy, when agents experience an economic downturn, they uniformly reduce their income significantly.

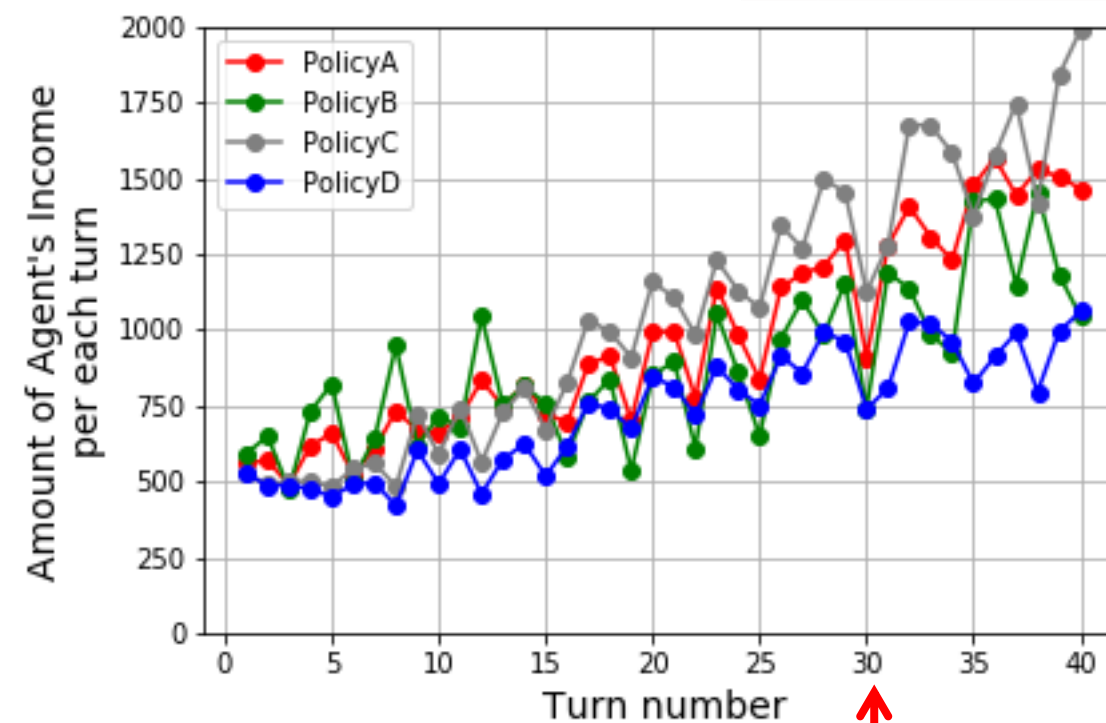


Results

Policy			
#	Stable Income	Higher Income	Ability Growth
A	○	○	○
B	○	○	
C	○		○
D	○		



Depression



Depression

The ability resources of agents who emphasize ability development continue to increase throughout the game. Therefore, their income from labor also increases continuously.



Discussion

Impact of economic recession

The following factors may be responsible for the large decrease in income of all agents at the same time as the economic downturn occurred

- When an economic downturn occurs, the system significantly reduces the time resources allocated to work outside of formal employment.
- The system also reduces the amount of time resources allocated to formal labor to 70% of the total.

In the real world, non-regular workers and freelancers temporarily lost their jobs due to the global financial crisis.



Discussion

Possibility of not earning enough with only a stable income.

- By engaging in additional activities in addition to full-time employment work, agents may be able to increase their income further.
- The possibility of increasing income over the long term through continuous skill development.
- In the case of full-time employment, when workers become older, they are less likely to grow through their work, suggesting that voluntary skill development may be the key to higher earnings in the latter half of workers' lives.



Summary and Future Work

Summary

- Developed the Shin-Life Career Game.
- Four software agents, each with a different resource allocation policy, played gaming in a scenario in which they experienced only one economic recession.
- All agents experienced a large temporary drop in income when they experienced an economic downturn.
- Agents who follow a strategy of engaging only in permanent work may end up having particularly few money resources.
- Agents with strategies that actively contribute to the growth of their capabilities may continue to accumulate capability resources even in the latter half of the game, and their incomes may continue to rise.

Future Work

- Apply this game to gather knowledge about career choices and career development that modern workers have.
- Feed back the acquired knowledge to the career education of the next generation.



Reference

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2. S. S. Boocock, "The life career game," The Personnel and Guidance Journal, Vol. 46 No. 4, pp. 328-334, 1967
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5. J. Ferrara, "Games for Persuasion: Argumentation, Procedurality, and the Lie of Gamification," Games and Culture, Vol. 8, No. 4, pp. 289-304, 2013.
6. M. Kunigami, R. Okumura, T. Kikuchi, A. Sakata, and T. Terano, "Agents' Resources Allocation and Growth Modeling for Social and Organizational Agent Simulations," In: Editor, F., Editor, S. (eds.) JSAI Special Interest Group on Business Informatics 17th, 2021. (in Japanese)

