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Optimization of Various Scenarios for Urban Planning Game

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The town planning that we pay attention in this our research is An object of the simulation, The town planning is important as the basics of a policy in Japan, such us a prefecture and a city, a region to be a person of operative subject. And, The tool which a person of operative subject in a city is expected. At the same time, the recent years, Because We come on a information oriented society and a globalized society, dynamics of society increase the complexity. And a forecast for the future and a decision making are difficult today. The computer simulation is a effective measure for this difficulty. Agent-based Simulation (ABS) was applied the analysis of foreign exchange interventions and a presumption of population in the real modern society, ABS was attracts attention. Above all things, the simulation of society system that made a game form called "Serious Game". a serious game is suitable for the education as the tool, A tool to learn financial markets and operation of a university as serious game was introduced into a class. And, the serious game has a big good point that a learner could try a various scenarios and a various actions, and a learner could study a dynamics of society.

In our research, We pay attention to the town planning in a society system. The town planning has the stakeholder such as a city and a region to be a person of operative subject. And criterion for evaluation is variety

such as the population and a income and a pollution and a travel time to work and a crime rate. In addition, Decision of policy is behind with influence a few years later or a few decades later. So the town planning is helped by the computer simulation. As a past study the development of the town There is already the study that made single objective AI(Artificial Intelligence) in the study that modeled a chisel, a very simple model, but there is not the model that I intend for the modern society, and took education of the operative subject of the citizen-based town planning into consideration.

To promote understanding and discovery of the mechanism of the modern society for education to the administration subject of the town in this study,

It was possible for the plural scenarios and actions that were the good point of a serious game introduced widely in a real educational front and suggested the citizen-based town planning game that took in the element which there was to the modern society visually. The element which there was in the modern society took in "the nonlinearity" which a nonlinearity changed, and was unbalanced in "a delay of the influence" that plural divisions did not influence so that the health damage by the used "complicated influence relations" and environmental pollution was not crowded, the use of the commerce institution of the resident in this study. In addition, as the AI which performed various citizen-based town planning, I expressed a policy with action group - value type, and the rule of the citizen-based town planning adopted the vehicle that could cope even if a rule changed by real education frequently. I suggested the search that added α to simulated annealing method and a local search method if a limited part was most legitimate as search technique.

As a result, I performed an experiment by the player and was able to scarcely give profit if I did not think about the use between divisions. In addition, I implemented local search method and simulated annealing method and it was simple multipurpose optimization, but was able to show that I could show various scenarios. The search that I added was not able to implement α over circumstances of the time, but thinks about primarily performing implementation and an experiment for a future additional problem.