

## The concept of an intelligent system for modeling economic development of the region

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**Abstract.** The study is devoted to the concept of an intelligent system for modeling the economic development of a region, and especially to the interaction of individual economic agents with each other. The article presents the structure of an intelligent modeling system and the architecture of multi-agent models of economic agents. The result of the research is planned to be methods and algorithms for an intelligent decision support system for managing regional innovative development. The overall goal of the project is to create a complex system that facilitates the strategies development and the activities implementation aimed at enhancing and effectively managing of innovation in the regional context.

**Keywords:** intelligent system, multiagent models, decision making system, regional development, innovation, big data

## REFERENCES

1. Gurtuev A., Makhosheva S., Ivanov Z., Khadzhieva M. Theoretical and methodological foundations for the development and formal model of behavior of a subject of a multi-level innovation environment with information asymmetry. *BIO Web of conferences*. 2024. Vol. 84. P. 4017. DOI: 10.1051/e3sconf/202346003024
2. Zalnieriute M., Bennett Moses L., Williams G. The rule of law and automation of government decision-making. *Modern law review*. 2019. Vol. 82. No. 3. Pp. 425–455. DOI: 10.1111/1468-2230.12412
3. Zhao B. Analysis on the negative impact of AI development on employment and its countermeasures. *SHS Web of conferences*. 2023. Vol. 154. P. 03022. DOI: 10.1051/shsconf/202315403022
4. Casas P., Torres J.L. Government size and automation. *International tax and public finance*. 2024. DOI: 10.1007/s10797-024-09833-0
5. Larsson K.G. Digitization or equality: When government automation covers some, but not all citizens. *Government information quarterly*. 2021. Vol. 38. No. 1. P. 101547. DOI: 10.1016/j.giq.2020.101547
6. Lakman I.A., Gorshechnikova A.V., Shamsutdinova N.K., Prudnikov V.B. Spatial modeling of human potential in the Republic of Bashkortostan. *Statistics and economics*. 2019. Vol. 16. No. 4. Pp. 35–44. DOI: 10.21686/2500-3925-2019-4-35-44
7. Cheng K., Wang X., Liu S., Zhuang Y. Spatial differences and dynamic evolution of economic resilience: from the perspective of China's eight comprehensive economic zones. *Economic change and restructuring*. 2024. Vol. 57. No. 2. DOI: 10.1007/s10644-024-09665-2
8. Zhang J., Liu Q., Wang C., Li H. Spatial-temporal modeling for regional economic development: A quantitative analysis with panel data from Western China. *Sustainability*. 2017. Vol. 9. No. 11. P. 1955. DOI: 10.3390/su9111955
9. Musikhin I., Karpik A. Use of GIS technology and cellular automata for modeling multiple socio-economic scenarios of regional spatial development and inter-regional cooperation. *Geo-spatial information science*. 2023. Vol. 26. No. 1. Pp. 1–23. DOI: 10.1080/10095020.2023.2182237
10. Wang Z., Zheng J., Han C. et al. Exploring the potential of OpenStreetMap Data in regional economic development evaluation modeling. *Remote sensing*. 2024. Vol. 16. No. 2. P. 239. DOI: 10.3390/rs16020239

11. Kassen M. Blockchain and e-government innovation: Automation of public information processes. *Information systems*. 2022. Vol. 103. P. 101862. DOI: 10.1016/j.is.2021.101862
12. Wang H. Application of intelligent analysis based on project management in development decision-making of regional economic development. *Applied artificial intelligence*. 2023. Vol. 37. No. 1. DOI: 10.1080/08839514.2023.2204263
13. Das D., Banerjee S., Chatterjee P. et al. Design and development of an intelligent transportation management system using blockchain and smart contracts. *Cluster computing*. 2022. Vol. 25. No. 3. Pp. 1899–1913. DOI: 10.1007/s10586-022-03536-z
14. Ng K.S., Yang A.Y. Development of a system model to predict flows and performance of regional waste management planning: A case study of England. *Journal of environmental management*. 2023. Vol. 325. P. 116585. DOI: 10.1016/j.jenvman.2022.116585
15. Nagoev Z., Pshenokova I., Pshenokova I. et al. Learning algorithm for an intelligent decision making system based on multi-agent neurocognitive architectures. *Cognitive systems research*. 2021. Vol. 66. Pp. 82–88. DOI: 10.1016/j.cogsys.2020.10.015

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