Nigeria Human Population Management Using Genetic Algorithm Double Optimized Fuzzy Analytics Engine Approach

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- Abraham Ayegba Alfa,
- Sanjay Misra,
- Blessing Iganya Attah,
- Kharimah Bimbola Ahmed,
- Jonathan Oluranti,
- Ravin Ahuja &
- Robertas Damasevicius

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Abstract

Governments and informal sectors require accurate perception concerning the impending size of various entities such as population, resources, demands, consumptions, and failures for purpose of planning activities. In order to acquire this information, the behavior of the associated variables is analyzed on the basis of past; thereafter utilize the outcomes to make imminent predictions of the targeted variable. Presently, statistical methods such as conventional and Bayesian has been deployed for population data analytic about regions and countries. More recently, heuristics and metaheuristic are being exploited for the purposes of forecasting population growth rate and optimization problems. The concept of staggered optimization of fuzzy analytic engine rules list have been undertaken in the benchmark studies to reduce redundancy in the rules lists and increase forecasting accuracy. There are still problems of redundancy and low accuracy, which were explored with evolutionary algorithm (that is, genetic algorithm (GA) and fuzzy analytics) approaches to manage Nigeria’s human population changes. This proposed approach combines the outcomes of staggard GA optimizations of fuzzy analytics engines whose rules lists were filtered to generate the finest fuzzy rules list. The outcomes showed that 12.92% error rate was observed against 17.82, 26.95%, and 42.32% errors observed in the benchmark works. This model developed offers useful insights to government agencies, development partners, and economic planners on the potent ways to manage population, birth, and death rates for improved resources allocation and well-being of populace throughout the country.

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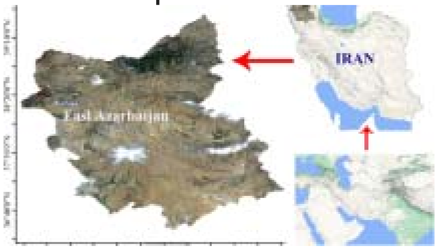

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Author information

Authors and Affiliations

1. **Kogi State College of Education, Ankpa, Nigeria**
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2. **Department of Computer Science and Communication, Ostfold University College, Halden, Norway**
   Sanjay Misra
3. **Federal University of Technology, Minna, Nigeria**
   Blessing Iganya Attah
4. **Centre for ICT/ICE Research, Covenant University of Technology, Otta, Nigeria**
   Jonathan Oluranti
5. **Shri Viswakarma Skill University, Gurgaon, Hariyana, India**
   Ravin Ahuja
6. **Kaunas University of Technology, Kaunas, Lithuania**
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