



Zhu_BMI500_HW11.ipynb
文件

Write a summary of findings for the attached code and report including – Key insights,
– Comparative model performance,
– Relevance to model-based machine learning,
– Suggestions for future modeling improvements. (MAKE IT SHORT AND CONCEISE)



The notebook appears to simulate an infectious disease spread within a population using an agent-based model, and evaluates the impact of social distancing by adjusting the movement probability of individuals. Here's a concise summary of the findings and suggestions:

Key Insights:

- The simulation quantitatively demonstrates how social distancing measures can significantly reduce the peak number of infections and delay the peak time of an epidemic.
- Varying the movement probability (representing different levels of social distancing) shows that stricter measures (lower movement probability) result in lower infection peaks and more prolonged infection durations.

Comparative Model Performance:

- Models with higher movement probabilities show quicker spread and higher peaks of infection, stressing the healthcare system.
- Lower movement probabilities effectively flatten the curve, reducing both the rate and extent of the infection spread.



Relevance to Model-Based Machine Learning:

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Relevance to Model-Based Machine Learning:

- This simulation aligns with model-based machine learning by using a predictive model to simulate different scenarios and outcomes based on parameter variations.
- It serves as a practical example of how agent-based modeling can be utilized for making informed public health decisions.

Suggestions for Future Modeling Improvements:

- Integrate more realistic social interactions and mobility patterns to reflect real-world scenarios better.
- Explore the impact of other interventions, like vaccination and targeted lockdowns, alongside social distancing.
- Consider a multi-agent learning approach where agents adapt their behavior based on the spread of the disease within their local environment.

These findings and suggestions can help guide public health policies and improve future epidemic modeling. [\[↗\]](#)



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