Lessons Learned from Covid-19 - AI Style

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Jacob Barhak

Sole Proprietor
Computational Disease Modeler
Software Developer

SPEAKERS



Jacob Barhak

Jacob Barhak Analytics, Sole Proprietor, Software Developer, and Computational Disease Modeler

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PYTHON SUMMIT

19.10 Online

20.10 Centrum Nauki Kopernik, Warszawa

Conflict of Interest and Disclaimer

- Payment/services info: Dr. Barhak reports non-financial support and other from Rescale, and MIDAS Network, other from Amazon AWS, Microsoft Azure, MIDAS network, other from The COVID tracking project at the Atlantic, other from John Rice and Jered Hodges,
- Financial relationships: Financial relationships: Jacob Barhak declare(s) employment / contract with MacroFab, United Solutions, B. Well Connected health, Pronto Telecommunications, Space Cowboy ADR / Rockdrill research, Alignerr, Ethos. However, none of these companies had influence on the modeling work reported.
- Jacob Barhak declare(s) employment and Technical Support from Anaconda. The author contracted with Anaconda in the past and uses their free open source software tools. Also the Author received free support from Anaconda Holoviz team and Dask teams.
- Intellectual property info: Dr. Barhak has a patent US Patent 9,858,390 - Reference model for disease progression issued to Jacob Barhak, and US patent 10,923,234 - Analysis and Verification of Models Derived from Clinical Trials Data Extracted from a Database.
- Other relationships: personal fees from United Solutions, personal fees from B. Well Connected health, personal fees and non-financial support from Anaconda.
- Also, from 2006-2012 Jacob Barhak was paid by the University of Michigan to develop software licensed under GPL license.
- However, despite all support, Dr. Barhak is solely responsible for contents of this publication.

Covid Pandemic Importance

- The Bad
  - 780 million confirmed infections & over 7 million deaths worldwide
  - Economic and social disruptions
- The Good
  - Lots of data gathered
  - New modeling techniques
  - Lots of experienced gained!

How to Keep the Experience Gained?

- Modelers active during the pandemic change jobs
- Software becomes old
- Systems forget

So how do we Prevent Repeating the Same Mistakes in a Future Pandemic?

Lessons Learned

- Many organizations, use lessons learned reports
- Academics publish papers
- The presenter co-authored this paper:
  Castiglione, F., Oshinubi, K. & Barhak, J. Lessons learned from modeling COVID-19 and steps to take at the start of the next pandemic focusing on ensemble models. Discov Public Health 23, 1109 (2026). https://doi.org/10.1186/s12982-026-02407-x
- However, there were many such "Lessons Learned" papers ...

How to Organize Many Lessons Learned

- 30 Lessons Learned type papers that include modeling have been selected
- Papers initially analyzed by AI, then by human.
- Over 350 lessons learned extracted
- Over 200 Recommendations / Actions for the future extracted
- Over 70 authors were contacted with requests to give webinars to explore the papers
- Only 4 webinars on the topic were given

Coping with Information Overload

Old Way	New way
Publish papers	Create a website & databsase
Create review papers	Dynamic database queries
Human cataloging	Fast sematic search & clustering
Talk to an expert	LLM / Agent chat
Organize conferences	Agent orchestration in rooms
Human consumer	Both human and AI consumer

The solution: lessonslearnedarchive.com

Python based website supported by Machine Learning and AI

- A database holding papers, lessons & recommendations/actions
- Semantic search
- Dynamic clustering of lessons / recommendations
- Agents can query the data
- Sophisticated agent orchestration to simulate a conference of agents

Advantages

- Dynamic & easily upgradable database - try to correct a paper...
- Experts are always available - try to email author...
- Lightning fast organization of lessons by category - try organizing manually ...
- Cost pennies - conferences and travel cost a lot more
- Extra benefit is having the expert discussion system that works independently

And this system can work for other Lessons Learned Topics...

Aknowledgements

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- Lessons learned webinar speakers: Andy Atkeson, Philip Gerlee, Yair Goldberg
- Glimprint
- The MIDAS network

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https://www.clinicalunitmapping.com/show/Lessons_Learned_AI_Latest.pdf

Feedback

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https://devai.dssconf.pl/user.html#!/lecture/DEV26-8dac/rate