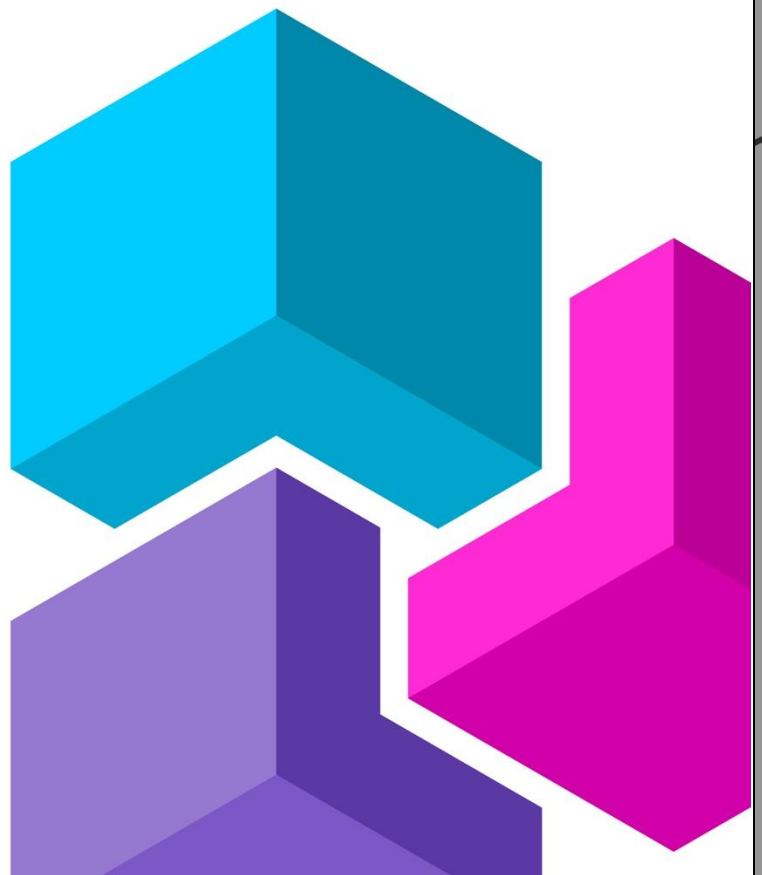


Foundations of AI in Healthcare

THE CHALLENGE

Part 1 of 3



The Context

Challenge

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SURGE OF UNUSUAL FLU-LIKE SYMPTOMS AT RIVERSIDE REGIONAL HOSPITAL.

A sudden surge of patients with severe flu-like symptoms has overwhelmed the Riverside Regional Hospital. Within two weeks, **nearly 400 new cases have been reported**, and the numbers are rising. Common symptoms include fever, cough, a variety of cutaneous rashes, shortness of breath, and unusual blood test results. Public health officials suspect a novel infectious agent, but the exact mode of transmission—whether via air, water, or contaminated food—remains unclear.

As the outbreak intensifies, the **emergency telephone regional system is flooded** with calls from anxious residents reporting their symptoms. These **calls are also registered**, but nobody has time to go through them and review the symptoms in this difficult time. To ease pressure on the call center, the emergency committee have **set up a dedicated email address, medical_info@riverside.info**, where patients can submit their symptoms, with onset time and daily course.

Patients often include **images of their rashes in their emails**, but often take the occasion to express their concerns on the situation and their complaints about the region's emergency slow emergency response and the lack of answers.

Luckily, **some information can be recovered from the Regional Healthcare Record (RHR) System**, which contains patient demographics (age, sex, postal code, employment), and includes past illnesses, chronic conditions, and prescriptions. Nonetheless, this system does not contain current outbreak-related data.

While most cases are mild, some require hospitalization and other require intensive care unit admission, but we don't know whether it depends on patient characteristics or environmental factors.

To collect data of the current emergency, **the regional system created the Emergency Response System (RES)**, which provide real-time updates on new admissions, lab results, travel and exposure history, clinical exams, but is entered manually thus can have some errors and missing data. It also tracks severity of disease, hospital stay, and clinical outcomes.



Your Mission

Challenge

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MISSION, ROLE, TASKS.

You are junior data analysts on the regional emergency response team and just started working with your new team.

Your primary task is to help the epidemiologists **gather, organize, and analyze this wide range of data** to identify the cause of the outbreak and guide patient care.

To help you break down the problem, we've outlined a set of guiding questions and/or suggested a structured approach for presenting your findings.

However, there is no single solution or structure to follow—so feel free to explore alternatives and share them with your fellow humans **via Alan (a.k.a The Discussion Forum)**! **Teamwork is essential**, and you might inspire—or get inspired by—your peers.

GUIDING QUESTION 1

 **What data are available? What are the main sources of data, and what are the differences among them?**

Suggested Approach:

Start by organizing your response into a table that identifies the different data sources, the type of data they provide, whether the data is structured or unstructured, whether image data is included, and the advantages/disadvantages of each source.

See Structure
In Excel

GUIDING QUESTION 2

 **What steps are needed to make data from different data sources easily comparable and ready for data analysis? What should you recommend from the beginning?**

Suggested Approach:

Try to outline with a few paragraphs the actions you will take to ensure the data's usability and reliability. While the situation is critical, it's important to take certain steps sooner rather than later when working with data.

Next Steps

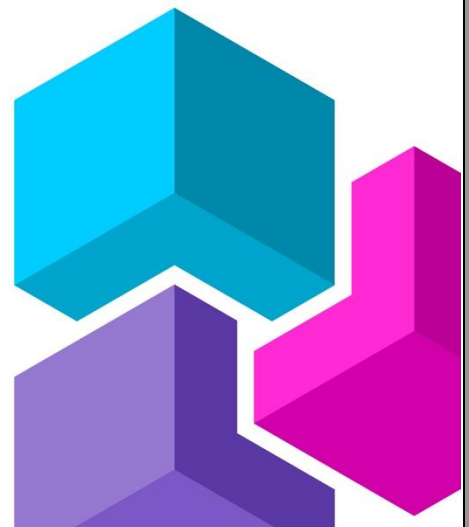
Challenge

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DON'T FORGET TO.

Now that you've analyzed the challenge and are working on a solution (or maybe you're still figuring things out), don't forget to:

- **Discuss and Reflect:** Share your ideas and solutions with your peers for feedback and inspiration via Alan (a.k.a. the Discussion Forum).
- **Self-Evaluate:** Complete our brief checklist (it's like a quiz, but it's not) to evaluate your work and get some hints. After submitting the checklist, you'll receive our proposed solutions to compare with your findings.



DATA, ALGORITHMS, AND ETHICAL CHALLENGES:

Exploring the AI Revolution in Medicine

Challenge

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