♊ JEMIN.AI

AI Digital Twins for Medical Data Analysis

About Us

Jemin.ai make digital twins that model and understand the real world in fine detail, because we realize that everything and everyone is unique. Since 1988, our AI experts have been building digital twins of the real world using neural network Artificial Intelligence. This example is based on work we did for a pharmaceuticals manufacturer.

Business Analysis

Early clinical trials data often has a small number of data points and many influencing factors. Our digital twins are very effective with this kind of data, identifying the efficacy of a drug and external factors that might boost efficacy.

Data Design

As with all digital twinning, the first task is to frame the question in a way that artificial intelligence can answer. This usually comes down to identifying how data can be broken down into comparable units and understanding what drives the differences between them. With clinical trials data, the comparable units are trial subjects. The performance measure is improvement in health as measured by clinical tests. Driving factors include real/placebo, age, weight, severity of initial condition and so on. A data table is then designed with each row being a trial subject and the columns being health improvement and the driving factors.

Data Sourcing

Data may need to be combined from various sources. Being an organized trial, the data is mostly obtained from the subjects during the trial. Other data, such as demographic factors, may need to be sourced separately.

Cleaning & Filling

Data is rarely clean on arrival. Some will be missing, but can be interpolated or even estimated as a digital twinning process in its own right. Data will also be subject to errors, noise and known exceptional circumstances. While artificial intelligence techniques can identify many exceptions, charting the data and eyeballing it is often the easiest solution.

Data Mapping

The last data pre-processing stage is mapping. Text data must be converted to categories. Highly skewed data must be squashed so it is more evenly distributed. Some data may need to be adjusted to make the rows directly comparable, for example dose per kilogram of body weight.
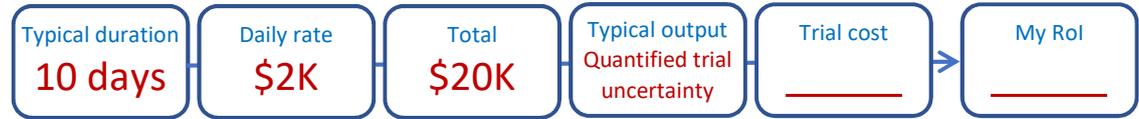
Build Twin

Finally, the AI is ready to do its work. Our neural network algorithms, which we have perfected over three decades, excel at extracting insights from real-world data, no matter how ugly and ill-conditioned. A digital twin of health improvement is created, but importantly for clinical trials, also a triplet, the digital twin of uncertainty, which indicates how conclusive the results are and whether further early-stage trials will be needed.

Delivering Results

Once the digital twin is built, it can be interrogated: Did the treatment have the desired effect? Is there anything that characterizes a negative outcome? What dose size is most effective? The twin and triplet can be exported as a C++ or Excel function for optimizing the outcome of future trials.

Return on Investment

Typical duration	Daily rate	Total	Typical output	Trial cost	My RoI
10 days	$2K	$20K	Quantified trial uncertainty	_____	_____

Contact

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