Turning Scientific PDFs into Straightforward Processes

Automated knowledge extraction helps translate complex clinical trial protocols into a standard digital format

SIGNALPATH
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ABOUT SIGNALPATH | A Platform to Streamline Clinical Trials

When testing new medicines, drug makers conduct clinical trials with sites ranging from small practices to large health systems. SignalPath, a healthcare technology platform, is making managing those trials easier and more efficient.

Drug companies provide PDF protocol documentation for every trial with all the information required to conduct the trial safely and accurately. Without SignalPath, trial site employees would have to constantly reference each protocol to determine how to proceed. This could mean significant inefficiencies, higher costs, and trial variations that could hurt patients.

SignalPath's team of digitizers solves this problem by manually extracting key data such as the arms, visits, activities and instructions for a trial and translating them into a patent-pending digital format.

Stakeholders at all trial sites are then able to follow standardized processes on the SignalPath platform, boosting trial efficiency, quality and profitability. The platform ensures a site's coordination, finance, regulatory, and management teams are all on the same page.

CHALLENGE | Speed PDF Translation Without Sacrificing Quality

As SignalPath takes on more customers, it needs to scale the work of its digitizers to meet growing demand. Machine learning can automate elements of the extraction and translation process, dramatically decreasing the time required to digitize a protocol while simultaneously reducing errors.

SignalPath focused first on extracting structured elements like tables, working in partnership with machine learning experts at Infinia ML.

The plan was to help pre-populate certain elements for digitizers before turning attention to more complex parts of the protocols. For example, extracting the trial's disease focus is easier than extracting unique instructions about how to administer a study drug. Information that varies from trial to trial is the most difficult to identify and extract.

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Dr. Brad Hirsch, CEO & Co-Founder

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PARTNERSHIP | "Big Wins" So Far

Dr. Brad Hirsch, the CEO and co-founder of SignalPath, says early results have been extremely promising. "There were some big wins around getting the metadata in and parsing tables within the documents," he says. "The team has outperformed expectations. They've done a very good job in extracting elements of a table into codified text."

The initial technology is now in production, and Dr. Hirsch is confident that "it will really help our business." While some employee retraining is required, Dr. Hirsch notes that the technology is automatically populating fields that staff previously filled out manually. Digitizers are able to skip certain tasks, but "it is not an entirely new process."

OUTCOME | A Continued Partnership Tackles Greater Challenges

"I don't feel like we would have gotten a greater lift by partnering with a larger or more visible tech company," says Dr. Hirsch. "In fact, I believe the focus and collaboration with Infinia ML have made the project more successful than anything we could have achieved elsewhere. What we're trying to do is core to the operational execution of our ability to scale, and my priority is to identify who is going to get it done and make our business successful."

Now, SignalPath wants to further push the boundaries of how machine learning understands and extracts the nuanced parts of trial protocol documents. Success in the next phase will involve the digitization of less structured elements in free text.

The company plans to continue its partnership with Infinia ML as it moves forward. "One of the things I've liked about working with Infinia ML is that they're very upfront about what's possible," says Dr. Hirsch. "I appreciate the transparency and honesty about machine learning and deep learning today."

One of the highest costs of bringing a drug to market is performing clinical trials to prove the efficacy and safety of new drugs.

Our use of machine learning to digitize clinical trial protocols and provide protocol acuity are just some of the ways we're trying to simplify the overhead of running clinical trials drastically.

***LinkedIn post** from Chris Sotherden, Software Engineering Manager*