



OPEN HEALTH

A humanized AI approach to congress insights

Hannah Tivey

Hi, everyone. My name is Hannah Tivey, Executive Director of Strategy and Innovation at OPEN Health. We're here today to discuss to use a humanized AI approach to elevate how we gather insights at congresses and specifically to share some exciting insights on how we put that approach into practice at the recent ESMO congress in Barcelona last month.

Before we dive in, a little context. Earlier this year, OPEN Health announced an exclusive partnership with fusion, a company that specializes in AI and machine learning solutions. With this partnership we have really demonstrated our ongoing commitment to delivering innovative and needs-based solutions for our clients.

And so I'm delighted today to be joined by Emma Winter, our Senior Vice President of Medical and Scientific Services and one of our in-house oncology experts, as well as Michael Bracchi, Chief AI Officer at fusion.

Hi, both. It's great to have you here; thank you so much for joining me. I'm looking forward to hearing more about this novel approach and your experience of working together.

The challenge and opportunity – why did we need to try something new?

Hannah Tivey

So Emma, seeing as you were there in person in Barcelona, let's start with you. Why do you think it's important to gather timely insights at congresses and in your experience, what are some of the challenges of doing so?

Emma Winter

Thanks, Hannah. Gathering insights at congresses is vitally important, both for the work that we do with the clients we partner with and also from our internal perspective. We need to keep up to date with the latest data in a particular therapy area and understanding the competitive landscape for our clients in terms of how their products are doing in specific indications versus others, and also in informing conversations that they have both at the congress and beyond with the scientific community (so doctors, nurses, patients as well). Really, a lot of those conversations are supplemented through the information that's presented and discussed at congresses.

We've done lots of congress reporting for our clients. I and internally one of the challenges that we face, especially at some of the big congresses like ESMO, is the vast amount of data, presentations and discussions that we need to cover in a short time frame. So it's around 4-5 days, but you can have thousands of opportunities to learn about different datasets and different opinions on specific therapy areas. There are lots of different oncology indications that are covered, so it's impossible to get to everything while we're at the congress, and it can be very time consuming as well to listen to all the different presentations to think, "OK, what's the key information?" and then digest it.

It's also quite hard to predict what's going to be most important. We have some inkling from which datasets are not disclosed until nearest the time; late-breaking abstracts tend to be those that have the most impact, and where different datasets sit within the program, so for example we have presidential sessions that generally are reserved for the most practice-changing data. So we can make a best guess; however, there can be surprises that come up both in terms of the data, and how that data is received by the scientific community, so it can be very difficult to do.

Also there is a thirst for having bite-sized information as quickly as possible, so we have to balance the fact that there's a vast amount we need to digest in order to get it to that bite-sized format, and that takes time, with the fact that people are very used to having information in a more easily digestible, visually engaging format.

Hannah Tivey

I remember those days as a medical writer being on site and being challenged with attending all these sessions and distilling it super quickly. It's really hard. So the next question is what did you hope to achieve by collaborating with fusion?

Emma Winter

Previously, we would attend these congresses on investment, and this is what we were doing here. We weren't going for any specific product or client company; rather, we were there to just see what was happening at ESMO. Traditionally we would then, a couple of weeks after the congress, write up a report to share internally with our teams and externally with the community.

But the difficulty with that is that by the time that we've come back and written up the notes, shared [them] and dealt with any questions, it's 2, 3, sometimes 4 weeks after the congress, and by then we've missed the opportunity to use that information to drive conversations while we're still there, and also to immediately follow up with individuals that we may want further information from.

The aim here was to understand if we can do things differently and still get something that's meaningful and valuable in a much quicker time frame. This is where we thought, OK, if we partner with fusion, would we have the ability, not only go to sessions and absorb the data, but also to understand in almost real time what the reactions of the community are to the information that's being shared? And could we then combine that information together to create something with a greater breadth of coverage than we'd be able to achieve ourselves?

Hannah Tivey

So Michael can AI and machine learning help Emma achieve what she was hoping to achieve?

Michael Bracchi

Yes. And really I see this helping in two key ways:

Firstly, it can help in terms of efficacy. One of the things that we did at ESMO was to look at scientific share of voice and how that's evolving over time for each of the pharma companies that were there. That in itself is quite difficult to do in a holistic way, but there's lots of places where this conversation is happening online now, particularly in places like social media and SERMO, as well as on the ground. So, this represents a large dataset for us to learn about what's happening at congresses and what's resonating. AI is giving us the power to do these types of natural language processing analyses much more effectively by its enhanced pattern recognition capabilities.

And secondly, there's the automation piece. As we're building these systems to do these types of analyses, we're getting closer and closer to a point where we're able to extract near real-time insights on what's happening and what's resonating, to understand what are those key revelations coming out of the congress that are making it into the online space, and what specifically is being talked about? Once those frameworks and pipelines are set up, then there's no reason why that can't be done in real time.

So I think those two things have really enhanced what we were able to achieve.

Hannah Tivey

Fantastic. It all sounds very exciting. I can't wait to hear more about what you actually did, but it sounds like there is even more potential further down the line as well, and this is really an opportunity for us to refine what we're doing. So Emma, maybe you can start with talking me through the process, and the steps that you actually took. How did you collaborate with Michael and the fusion team to deliver this?

Emma Winter

Absolutely. It started before the congress; we made sure that we connected and got agreement that Michael was happy to go on this journey with us for this particular congress.

From a scientific programme perspective, myself and a colleague, Sally, went through the programme, we looked at specific days — which sessions were likely to have key data presented at them and we did that across the breadth of the different indications that were being covered. We aimed to cover most of the major tumour types and different types of mechanism of action as well, to try and make it as representative of the whole congress as possible. We created a spreadsheet with all that information which we shared with Michael, as well, discussing key search terms and agreeing what sort of platforms we'd pull information from.

Then it was all systems go when we were actually at the congress to make sure we were covering the sessions. We were making notes in a shareable place so that we could collaborate and identify key themes, then when it came to the end of the day, we could quickly start to craft the summary in terms of our takeaways or highlights.

At the same time, the machines were doing their scan of the landscape to understand what topics or companies were being talked about. We then reviewed what the machines had found in terms of topic modeling and share of voice assignment to see if there were any gaps in our on-the-ground analysis or any new avenues for us to explore to ensure this was clear and contextualized in the written summary we created. All this happened within a 24-hour period, before we then published the daily digest on social media and with people on site at the congress as well.

Hannah Tivey

Thanks for the overview, Emma. I'm particularly interested in the bit you mentioned about the machines doing what they were doing. Michael, maybe you can give us a top-line overview of the type of techniques that you use to gather some of these insights.

Michael Bracchi

So one that was mentioned is topic modelling, and topic modelling has been around for a while. But it's just getting much more powerful year on year at being able to eke out the prevalent topics or themes within any large text dataset — in this case, understanding and contextualising all the noise around the congress. A good analogy for topic modelling it is like a librarian, where the topic model itself is like the librarian. When the library is in order, all the books are clustered into their relevant themes and the relevant sections. And this is essentially what the model is trying to do. It's analysing all the text information that we're giving it en masse, and then it's building up a bunch of clusters. Ultimately, sorting each of the posts or blogs or news articles or whatever might be written around the themes of that congress, into their respective buckets. From there we can quantify to what extent certain themes are being talked about.

Another analysis we can do alongside topic modelling is sentiment analysis. We can look at sentiment over time as well as mapping it against what's actually happening on congress that day. There are lots of different ways to do it, but we chose to use an unsupervised machine learning approach, which has another huge advantage to it in that it is unbiased. So it's taking everything that we have, and it's running that kind of sorting algorithm if you like. Much like what the librarian is doing, but in a totally unbiased way. Which is obviously again something that's really hard to do when you're on the ground because you can't be in every place at once.

Hannah Tivey

Fabulous. I like the analogy of the librarian. It's like a librarian with superpowers. Can you give me an overview of what the output looked like and what value did that add? For example, Emma, when you were there on site, what did having these insights help with?

Emma Winter

Yeah, I mean, it was great in terms of when we're actually at the congress and we were going to the exhibition hall and engaging with different HCPs and pharma companies as we were able to show them a snapshot of what was being talked about. The combination of human intelligence and AI was the real value as we were able to show the text summaries from each day as well as having a visual output in terms of the share of scientific voice. From a pharma perspective, we were able to show them where they were on the leader board for share of scientific voice, which always is intriguing to them, and that opens up the discussion around what's driving share of scientific voice, and how do we mine the data further.

Hannah Tivey

Was there anything surprising that came out of the analysis?

Emma Winter

Emma Winter

We set out to try and be non-tumor specific in terms of what we were covering at the congress; however, when you looked at the information that was coming back from all the conversations that were happening online, actually there is a skew towards some of the tumor types where there is a large investment and a larger community of physicians working on those tumor types. So breast cancer and lung cancer came through very strongly every day. But what was really interesting to see was that some of smaller yet interesting datasets also came through in the online analysis as well. There were some novel mechanisms that were being looked at, too, as well as some practice-changing organ-sparing techniques for bladder cancer, for example, that came through both from what we heard and also from the community as well. So there was good concordance between what the machines found and what the people found, which is great.

There were some things that we weren't expecting to be so prominent that came out in the AI analysis. An interesting one was that Illumina came out as having quite a high share of voice compared to their footprint. When we drilled into the conversations there, it turned out to be due to their booth engagement at the congress, which included a Lego model which was leading to much discussion online and obviously then raises their share of scientific voice outside of any data that they may have been presenting at the congress. So it was good to be able to uncover some of these interesting reasons behind the different topics and data that we saw.

Hannah Tivey

It's really interesting to hear that there were things that built on what you already expected, but there were also a few surprises there, and it sounds like throughout the process you were having constant discussions.

Michael, how did you find working with an expert like Emma and how did that help you refine what you were doing from a technology perspective?

Michael Bracchi

It was really beneficial for us. Firstly, from a validation perspective, to see that there was concordance between what was happening in our analysis vs what was expected from experts like Emma and others there. And then on the flip side, when you start to look into what those more unexpected findings were with someone like Emma inputting to that it really does bring it to life. We're focused on building the technologies and running them in a way that is optimal, so it's nice to have that real-world validation from experts on the ground.

Hannah Tivey

Emma, how about you? What did Michael and the fusion team bring to you?

Emma Winter

I mean, they bought the machines, which was obviously really important to us in terms of being able to cover that breadth of data. But also they have a vast amount of expertise in working with these models. While they are the experts in setting up these models, they were open to suggestions or input into any refinements, so it was great to have that collaborative mindset. It helped us to mine the vast amounts of data in different ways to really uncover the meaning behind some of the findings that we had.

Hannah Tivey

And it's fantastic to hear that it was such a collaborative experience. It reinforces the idea of humanized AI and this symbiotic relationship that we have where we're bringing together our industry area and therapy area of expertise together with fusion's cutting-edge technologies.

It sounds like we've achieved a lot in a short space of time, but the obvious question is what's next?

Michael Bracchi

Well, I think with the exponential growth of AI technologies and increasing ease of use, we will be in a position to use some of the most powerful algorithms ever to be developed to do this work, so keeping us steered in the right direction and in how best to deploy these is key.

And I think that this has shown us those elements of the AI space that are super useful in this context and how we can enhance the overall approach.

Emma Winter

I think as well, we were trying to do something different to show that the technology can be used to gather daily insights across the whole congress. Moving forward this may be easier if we were covering one specific topic or product but we still need to work out the benefits and limitations of doing that day-by-day analysis versus a consolidated summary post congress. And it might be that it's worth looking at both, but we might look at slightly different things on a day-to-day basis versus what we look at, at the end of the congress. It will depend on how granular we want to get with the data. But yeah it's really exciting. There's a lot more that could be explored.

Hannah Tivey

To add to that as well, there's the whole discussion around what's best. Is it the Daily Digest as you said? Or is it a longer-term report that is more consolidated? I think going beyond that as well there is also this view of can we look across multiple congresses because there is also the perspective that having these insights can be used as a strategic planning tool helping us to understand what the key discussions that are happening and help us to inform what we do next. But equally, they can serve as a benchmark that can be used to measure impact and value as well. And that's something that I'm particularly interested in and look forward to working with you both on. So with that, is there anything else that you'd like to share about the project or your experience working together?

Michael Bracchi

One of the things we're currently looking at is introducing a self-service element. For ESMO we focused at quite a high level, which was right for that occasion, but if we can provide a platform for individuals to engage with the data or shape the analysis in a way that it could be leveraged in an actionable way, either in real time at congress or after the congress, is something we're really excited about.

Hannah Tivey

Thank you both. I think you've shown perfectly how, by combining our expertise together with the power of AI, we can really transform the way that we work and what we're able to deliver for our clients. So thank you very much for joining me. I look forward to seeing what comes next.



Emma Winter

Senior Vice President
Medical and Scientific Services
OPEN Health



Hannah Tivey

Executive Director
Strategy & Innovation
OPEN Health



Michael Bracchi

Chief AI Officer
fusion

OPEN Health unites world-class scientific, strategic, and creative expertise to solve complex challenges for biopharma. We are a flexible, global organization, creating high-performing strategic partnerships with our clients. We embrace our different perspectives and strengths to deliver innovative solutions that have a positive impact on commercial and patient outcomes.

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