Artificial Intelligence

BenevolentAI Uncovers POTENTIAL CORONAVIRUS TREATMENT, ENTERS PHASE III TRIALS

▶ *Trend Watch: AI and ML innovations to cope with COVID-19 on the rise*

Earlier this year, BenevolentAI set up a specialist scientific team and launched an investigation using its drug discovery platform to identify approved drugs that could potentially stop the progression of COVID-19, inhibit the cytokine storm, and reduce the inflammatory damage associated with this disease. BenevolentAI's research findings proposed baricitinib as a potential treatment with both anti-viral and anti-inflammatory properties for COVID-19 patients admitted to hospital before the development of critical lung damage.

The drug is now part of NIAID's Phase III Adaptive COVID -19 Treatment Trial, or ACTT, which is designed to investigate various experimental treatments for the disease.

The speed with which the drug entered clinical trials reflects the urgency of the global pandemic and the significance of AI and advanced tech-nologies in facilitating the discovery of treatments and their potential impact on patients. Baricitinib has been approved for the treatment of rheumatoid arthritis and is being studied for other indications. The drug was developed by Eli Lilly and Incyte.
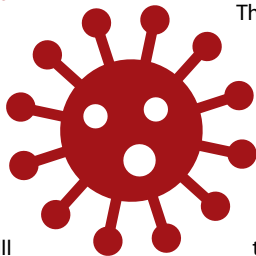
BenevolentAI reported that it focused its AI drug discovery and development platform on understanding the body's response to COVID-19, rather than focusing solely on drugs that could affect the virus directly.

Professor Justin Stebbing from Imperial College, London, who has been collaborating on this work between Eli Lilly and BenevolentAI says, "This research is notable for its incredible speed from computer to bench and bedside within a few months."
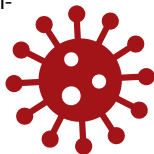
Brandeis AI Platform Interprets 50,000 COVID-19 ARTICLES TO FIND DISEASE PATTERNS
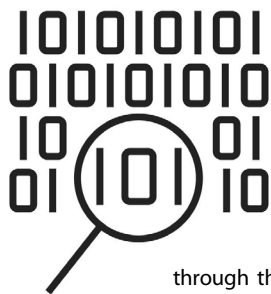
Computer science and linguistics Professor James Pustejovsky is leading a Brandeis team in creating an AI platform called Semantic Visualization of Scientific Data — or SemViz — that can sort through the growing mass of published work on coronavirus and help biologists who study the disease gain insights and notice patterns and trends across research that could lead to a treatment or cure.

Professor Pustejovsky, an expert in theoretical and computational modeling and language, is partnering with colleagues at Tufts University, Harvard University, the University of Illinois, and Vassar College. Biologists on the front lines of coronavirus are trying to find connections between genes, proteins, and drugs, and how they interact with the virus in the cells of the human body.

SemViz combs through the existing papers and manuscripts, which now includes more than 50,000 academic articles, and enables scientists to make connections and generalizations that are not obvious from reading one paper at a time.

SemViz creates a visualization landscape that helps biologists make both global and specific connections between human genes, drugs, proteins, and viruses. It is essentially a computer-based "reading machine" that interprets tens of thousands of research articles on coronavirus and presents the results of this process to biologists in a form that is visually accessible and easily analyzed and interpreted. It is more informative than a search engine, because it uses a host of language understanding tools and AI that can be applied to different domains — economics, news, science, literature as well as text types — tweets, articles, books, and email.

This tool gives a rapid way for biologists studying coronavirus to see a global overview of inhibitors, regulators, and activators of genes and proteins involved in the disease. For example, this could help discover therapies that decrease the expression of the receptor for the virus in patients' lungs. SemViz can be the roadmap that scientists use to sort through large amounts of research to find these kinds of functions and relationships.

France Launches AI Voice Assistant TO HELP CORONAVIRUS PATIENTS

French researchers have launched a voice assistant that can help callers suffering from potential coronavirus symptoms and direct them toward emergency services or their doctors using artificial intelligence.

According to a Reuters report, people in France can now call the AlloCovid service developed by the French research institute Inserm, the University of Paris, and French railway company SNCF.

On the line, a female voice greets callers with "Bonjour, I'm your virtual AlloCovid assistant ... Are you ready to start the questionnaire?"

Callers are asked for their postcode but not their name. Depending on their symptoms and pre-existing conditions they are directed to the right professionals.

Developers hope the voice assistant, which is more easily accessible to older people who prefer telephones over mobile apps or filling forms, will help authorities detect new infection clusters when France exits lockdown.

The system can handle 1,000 calls at a time. Callers' information is sent anonymously to health authorities and kept for seven days before being destroyed.

"To the best of our knowledge, this is the first time artificial intelligence is being used to serve public health," says Professor Xavier Jouven, who leads the project.

Eversana Hires Brigham Hyde, Ph.D., TO LEAD NEW D&A PLATFORM

Eversana has appointed Brigham Hyde, Ph.D., as president of its new platform, Data & Analytics (D&A). Dr. Hyde is leading the company's expansion into advanced data and analytics services, acquisitions, and joint ventures, as well as future D&A platform and product development.

Eversana's data and analytics business will offer integrated patient level data, commercial analytics services, AI- and ML-based predictive capabilities, and patient solutions analytics. The offering focuses on driving client value through data and technology-based solutions that leverage AI/ML to drive next-best-action frameworks to improve patient experience and outcomes.
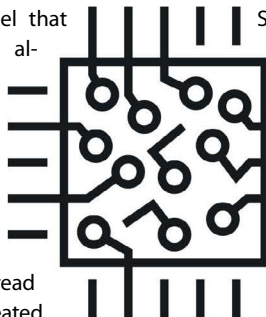
Dr. Hyde joins Eversana after co-founding Concerto HealthAI, where he most recently served as president.

Model Quantifies the Impact of Quarantine Measures ON COVID-19 SPREAD

MIT students developed a model that combines a machine learning algorithm based on data on the spread of COVID-19 with a neural network to help predict when infections will slow down in each country. Student researchers developed the model to determine the efficacy of quarantine measures and better predict the spread of the virus. This model was created through a class project requiring students to develop a physical model for a problem in the real world and developing a machine learning algorithm to address it.

Using this model, researchers were able to draw a direct correlation between quarantine measures and a reduction in the effective reproduction number of the virus. The model is the first to use data from the coronavirus itself and to integrate the two fields of machine learning and standard epidemiology.

The model finds that in places like South Korea, where there was immediate government intervention in implementing strong quarantine measures, the virus spread plateaued more quickly. In places that were slower to implement government interventions, like Italy and the United States, the "effective reproduction number" of COVID-19 remains greater than one, meaning the virus has continued to spread exponentially.

Most models used to predict the spread of a disease follow what is known as the SEIR model, which groups people into susceptible, exposed, infected, and recovered. Armed with precise data from each of these countries, the research team took the standard SEIR model and augmented it with a neural network that learns how infected individuals under quarantine impact the rate of infection. They trained the neural network through 500 iterations so it could then teach itself how to predict patterns in the infection spread.

The team plans to share the model with other researchers in the hopes that it can help inform COVID-19 quarantine strategies that can successfully slow the rate of infection.

"Our model shows that quarantine restrictions are successful in getting the effective reproduction number from larger than one to smaller than one," says George Barbastathis, the MIT mechanical engineering professor who assigned the class project. "That corresponds to the point where we can flatten the curve and start seeing fewer infections."

Lore IO Announces COVID-19 Data Onboarding Initiative to Accelerate Time-to-Market FOR PHARMACEUTICAL COMPANIES WORKING TO COMBAT CORONAVIRUS

Lore IO, providers of an AI-powered common data model that enables unified data views and faster vendor onboarding, developed a COVID-19 Data Onboarding Initiative, a program designed to help pharmaceutical organizations shorten development cycles to speed drug readiness. The program, which is free of charge to pharma and biopharma manufacturers, allows organizations to onboard data from up to three unique sources in only 30 days instead of months, which is the time it typically takes using traditional methods.
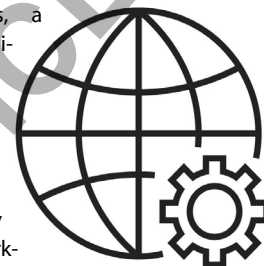
Lore IO's COVID-19 Data Onboarding Initiative will help established and emerging biopharma companies further accelerate the development and operationalization of enterprise data warehouses and commercialized analytics during pre-drug launch phases. The program focuses on expediting the onboarding and transformation of three vendor sources of industry data, which allows the user to create a unified view of the data for analysis and accelerate the execution of their go-to-market plan.

"Today, simplifying and automating vendor data onboarding is essential for streamlining the time it takes to bring critical drugs to market but, to do so often requires the ability to implement AI-driven business rules to establish a common and repeatable data model approach," says Janardan Prasad, chief business officer at Lore IO. "It's never been more important to share our technology in the fight against the coronavirus, and Lore IO is committed to helping organizations who are moving fast to develop therapies and devices to combat COVID-19. Our initiative is designed to help them integrate disparate vendor data efficiently and effectively so they can shorten the time it takes to bring potentially lifesaving drugs to market."

Cactus Communications Launches GLOBAL COVID RESEARCH REPOSITORY

Cactus Communications, a global scientific communications and technology company, has launched a global research repository to combine both human curation and AI to create a cross-disciplinary resource for everyone working on the COVID-19 pandemic and the SARS-CoV-2 virus. The platform, called covid19.researcher.life, leverages Cactus's AI and concept extraction capabilities, along with its large editorial team and network of subject specialists, to offer researchers a single platform for all COVID-19-related research, insights, commentary, and expert recommendations. The site not only offers researchers access to the latest research and information on COVID-19 but also allows them to collaborate and share potential hypotheses and challenges with researchers from other disciplines.

The AI-powered solution can process high volumes of research output every day and present insights in a manner that can be consumed by researchers across disciplines.

The COVID-19 platform will help researchers from various disciplines easily access and digest this information, supported by expert opinion. The platform collates research and datasets from different countries, irrespective of the language in which they were published; allows researchers to ask questions and pose hypotheses to other researchers; and curates expert-driven editorial content that simplifies and explains the latest research. Going forward, the platform will allow webinars, podcasts, and a crowd funding platform for research.

The new site also provides policymakers, governments, and laypeople access to evidence-based answers to questions around COVID-19. There will also be an opportunity for interested members of the public to help by suggesting answers to problems that researchers and practitioners are struggling with.

"At this time, when we are facing a global pandemic, we need all hands on deck," says Abhishek Goel, co-founder and CEO of Cactus. "Across the world, researchers in many disciplines are working hard to find solutions that will shepherd the world out of this crisis. Yet, for the first time, we are faced with a crisis that necessitates researchers who normally work in siloed disciplines to tap into each other's expertise and adopt a multidisciplinary approach. And we want to help them do this."