Machine Learning at The Roskamp Institute – An Interview With Ph.D. Candidate Andrew Pearson

Andrew Pearson
Ph.D. Candidate

The use of artificial intelligence and machine learning have been making headlines across the globe as computers become more powerful and more people have access to growing collections of information. At The Roskamp Institute, Ph.D. student Andrew Pearson, working under the direction of Dr. Joseph Ojo, talked with *Brain Waves* about his journey to create a computerized brain to predict potential drug treatments for traumatic brain injury (TBI). By taking a list of hundreds of FDA approved drugs for other ailments such as diabetes, asthma, and anti-inflammatory purposes, and running them through a complex machine algorithm, Andrew was able to pinpoint drugs with beneficial qualities that meet target criteria for further investigation.

Tell us about what you're doing with machine learning at The Roskamp Institute.

We performed "next generation" RNA sequencing where we analyzed the genomic data (transcriptome) of immune cells and other cells in the brain, namely microglia and astrocytes and we performed this in animals that had experienced repetitive mild traumatic brain injury; also in animal models that mimic Alzheimer's Disease (AD) and Chronic Traumatic Encephalopathy (CTE) type pathology to identify potential links between the mechanics of TBI and Alzheimer's Disease.

So, machine learning really allows us to do a better job of pattern recognition and also to use a more unbiased approach. Machine learning uses the data to identify the important factors, or the important genetic signatures, that regulate the outcomes from TBI. What we can then do with these data, based on the targets that the machine learning had identified, is to take a series of drugs known to already target these structures and train a machine algorithm to predict new structures based on the efficacy of already existing drugs, in order to design and make new or better drugs that we could put into the clinical study pipeline.

Where do you see machine learning and neural networks playing out in the future of drug discovery?

Machine learning is very important just because of the amount of time that it takes to individually screen drugs against each other, and its ability to use solid evidence to sort through hundreds of thousands of candidate compounds before we even get to the stage of cell culture experiments in the lab – it saves countless amounts of time and money.

Obviously, the more data we get, and the more we learn about what structures work and what structures don't, we can continuously refine our approach and the machine will continuously learn as we go. The neural networks are really good at that.

Read more of this interview with Andrew Pearson on our website: *https://www.roskampinstitute.org/articles/machinelearning*

Roskamp CEO Featured on EDC Panel

On October 8th, the Bradenton Area Economic Development Council held its Annual Luncheon, featuring Dr. Fiona Crawford on a C suite panel together with Anish Patel, President of Radiant PowerCorp, and Tim Pernetti, COO of IMG Academy. The executives discussed insights on leadership, adapting in a crisis, lessons learned from 2020, current challenges, and their business outlooks for the immediate future. More than 300 local community leaders participated in the event, held at Manatee Technical College.

Seeking TBI and PTSD Study Volunteers

Are you suffering from Traumatic Brain Injury and/or Post-Traumatic Stress Disorder? The Roskamp Institute, Inc. is conducting a clinical research study to determine if a blood test can be developed to diagnose Mild to Moderate Traumatic Brain Injury.
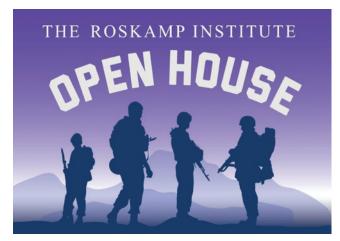
Call: Grace @ 941-256-8018 ext 3054

More info at https://www.roskampclinic.org/trials/ptsd/

Seeking Gulf War Illness Study Volunteers

Were you deployed in the Gulf War in 1990-1991? The Roskamp Institute, Inc. is conducting a clinical research study which involves one visit where a participant will complete several questionnaires, memory testing and provide a blood sample.

Call: David @ 941-256-8018 ext 3008

More info at https://www.roskampclinic.org/trials/gwi/

THE ROSKAMP INSTITUTE
OPEN HOUSE

VETERANS DAY EVENT 2021
PLEASE JOIN US VIA ZOOM!

The Roskamp Institute will be hosting this annual open house event virtually, with a special invitation to veterans and members of the military. Learn more about our research on TBI, GWI, and PTSD, plus a live Q&A with our top researchers on these topics. All are welcome to attend. **Check our website for details at www.RoskampInstitute.org/events.**

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