

Google Trains AI TO SPOT DIABETIC RETINOPATHY

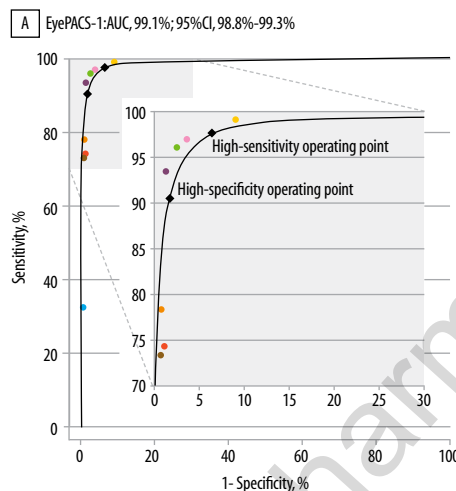
► **Trendwatch:** From eye sight to brain injuries, technology enables better care.

A few years ago, Google technologies began working on ways to improve the diabetic retinopathy (DR) screening process, specifically by taking advantage of recent advances in machine learning and computer vision.

Since the disease is most readily diagnosed by examining a picture of the back of the eye, the Google team developed a dataset of 128,000 individual images, each examined by three to seven ophthalmologists from a panel of 54. By marking damaged areas of the eye — microaneurysms, hemorrhages, and the like — and then feeding that data into a machine learning system, Google managed to build a highly reliable diagnostic tool. When tested with 12,000 images, the system's diagnosis was "on-par with that of ophthalmologists" according to the Google Research Blog post.

The team hopes to expand the scope of this system to be able to diagnose the disease from more complex 3D images (those generated from Optical Coherence Tomography) in addition to the conventional 2D fundus photographs that it currently uses. The team is also looking into automating the diagnostic process to better serve patients in remote locations who might otherwise not have access to trained specialists. But first, Google

will need to conduct studies using larger clinical groups and, eventually, obtain FDA approval.



Performance of the algorithm (black curve) and eight ophthalmologists (colored dots) for the presence of referable diabetic retinopathy (moderate or worse diabetic retinopathy or referable diabetic macular edema) on a validation set consisting of 9963 images. The black diamonds on the graph correspond to the sensitivity and specificity of the algorithm at the high sensitivity and high specificity operating points.

Novo Nordisk and Glooko Partner to Develop DIGITAL HEALTH SOLUTIONS FOR PEOPLE WITH DIABETES

Novo Nordisk and Glooko are working together to deliver jointly developed and branded digital health solutions for people with diabetes. The nonexclusive collaboration combines Novo Nordisk's knowledge of diabetes with Glooko's digital platform and data analytics expertise.

The companies aim to deliver personalized, digital services to support people with diabetes in areas including treatment adherence and blood glucose management. The partnership's joint offerings will also assist healthcare professionals to engage and manage patients with the aid of population-wide data reporting. By integrating these offerings within its Digital Health Platform developed with IBM Watson Health, Novo Nordisk aims to generate increasingly valuable insights into diabetes management and treatment outcomes.

Glooko is a leading population health platform for diabetes management.



Wearable Breast Pump Will Allow Mothers to be MOBILE WHILE PUMPING

Willow, the first smart wearable breast pump, wants to make it easier for mothers to pump their breasts — so easy in fact, they can do it anywhere, anytime.

The Silicon Valley company launched its hands-free breast pumps at CES 2017. The pair of tear-drop-shaped devices fits in a woman's bra and silently pumps — no awkward tubes required. John Chang, founder and CTO of Willow, told CNNMoney the product was inspired by his wife and three children.

The system includes a companion app that tracks the amount of milk pumped from each breast, how frequently someone pumps, and how long sessions last.

Willow will retail for \$430 when it launches this spring. ^{PV}

Smart Body Armor COULD GAUGE BRAIN DAMAGE FROM EXPLOSIONS



ONR researchers use gel surrogates to test helmets and armor for the military.

The U.S. Navy's Office of Naval Research wants to enable medics to assess brain trauma injuries immediately after a soldier encounters a blast, not weeks later as is the case today. It's developing Blast Load Assessment Sense and Test, (BLAST) a sensor system that could determine whether or

not an explosion's shockwave is likely to have injured a soldier's brain. BLAST uses coin-sized sensors that are tough enough to survive an explosion, can be worn on helmets and body armor and are able to record blast pressure. This pressure can be downloaded with a specialized scanner — design possibilities include a handheld barcode-style scanner or a stationary one modeled after airport metal detectors. By using a special algorithm to convert data into a "go or no-go" injury thresh-

old, BLAST indicates if exposed warfighters can stay in the fight, or need a TBI-focused medical exam with the third component: a neurofunctional assessment tool.

Still in the lab, its first field tests should start within 18 months.

Temperature Maintenance of Pharmaceuticals in Distribution

15-16 March 2017 – Barcelona, Spain

Providing an holistic approach to temperature controlled shipping to help address transportation obstacles and regulatory compliance

Temperature Maintenance of Pharmaceuticals in Distribution is back! The 13th annual edition will once again bring together industry peers to discuss and discover potential solutions to the biggest challenges within temperature control, transportation obstacles or regulatory compliance. With a strong speaker panel, real case studies, and our first Interactive Exercise, this edition is not to be missed. It will also be co-located with the well-known Clinical Trial Supply Europe event.

Key 2017 Speakers

Ludovic Menedeme, Head of Global Distribution - **UCB Pharmaceuticals**

Patrick Pichler, Head of Distribution Quality - **Merck Serono**

Werner Doering, Senior Manager Transport Strategy - **Shire**

Roman Mijnhart, Director Quality Supply Chain - **Genzyme**

Francisco Rizzuto, Cargo Specialist - **IATA**

Savvas Koulouridas, General Manager - **Fagron Hellas**

Key 2017 Topics

Assessing the need for regulatory bodies and pharma companies to collaborate and increase flexibility within the GDP requirements

Implementing logistics qualification plans to help overcome future transit and regulatory issues

Highlighting best practices to ensure your ambient products remain within temperature range

Panel Discussion: Analysing the consideration required for both Air freight and Sea freight to help find the most risk free and suitable form of transport for your product

Increasing supply chain optimization by highlighting considerations to help implement distribution centres globally

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