



VM global
leadership
SUMMIT
2017

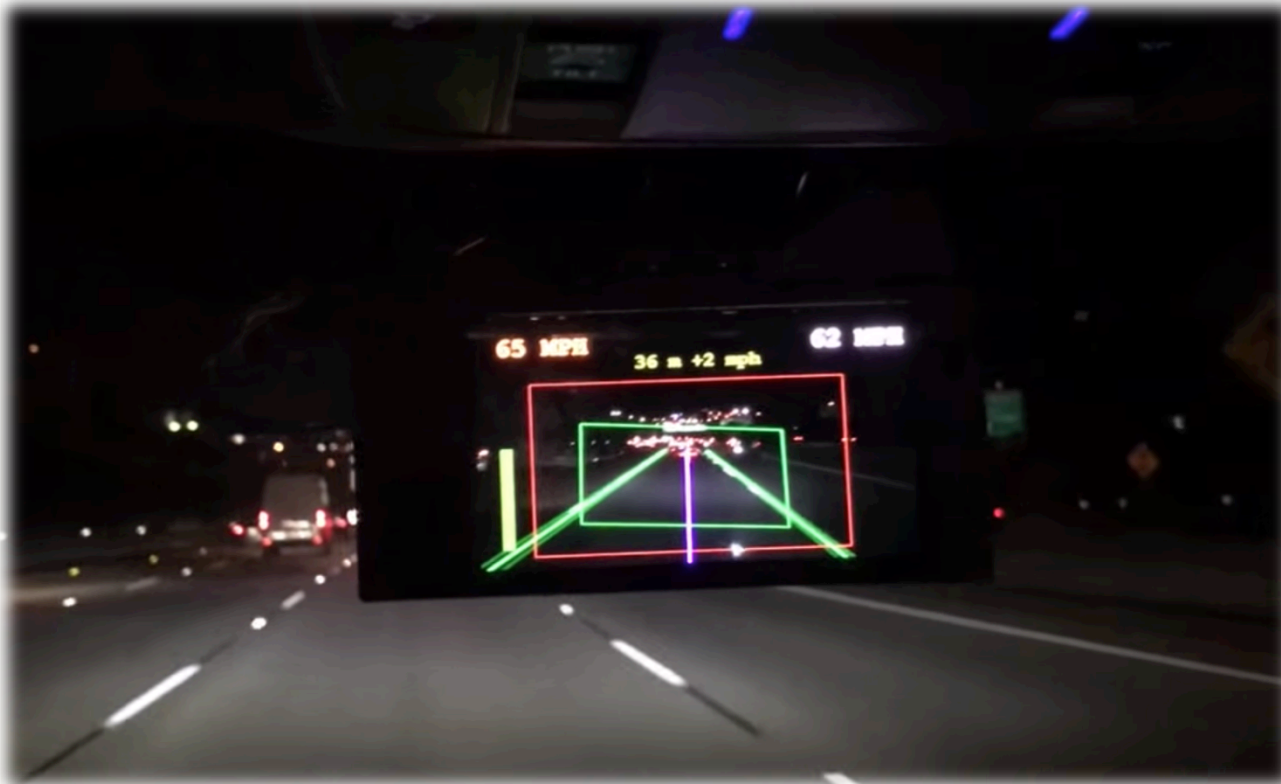


AIeye

Artificial Intelligence
Supercharging Knowledge and Decision Making

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Chief Clinical Editor and Head of
Clinical Content, Review of Optometry



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My Introduction to AE

Registry/data base started by two doctors who spent over 40 years combined in the field of DED

Became algorithm source - enlightening and often against our knowledge bias

Ophthalmic Resources



Ocular Surface Disease Analyzer

* N/T = Not tested

Patient Number

Age

Questionnaire Score

Gender

Female Male

Is this an initial visit?

Yes No

Contact Lens Wearer

Yes No

Digital Device User

No Less than 4 hours More than 4 hours

Platelet Therapy

Yes No



Ophthalmic Resources

Lashes

+ Staph Blepharitis

0 1 2 3

+ Demodex Blepharitis

0 1 2 3

+ Seborrhic Blepharitis

Yes No

Meibomian Gland Evaluation

+ Meibomian Expression

0 1 2 3 N/T

+ Lid Erythema/Lid Margin Scalloping

0 1 2 3 N/T

+ Meibography

0 1 2 3 N/T

+ Frothy Tear Film

Yes No

Conjunctiva

+ Chemosis

0 1 2 3

+ Injection

0 1 2 3 4

+ Chalasis w/NaFl



Ophthalmic Resources

Ocular Surface Disease Analyzer

Notice: Further testing would enhance the treatment algorithm recommendations

It is recommended that some of the following treatments be provided to the patient:

HydroEye Nutrition

Yes No

Bruder Mask

Yes No

Retaine MGD

Yes No

OCuSOFT Platinum

Yes No

It is also recommended that some of the following IN-OFFICE treatments or ocular prescriptions be written:

Topical Corticosteroids (Provided no contraindications e.g steroid responder)

Yes No

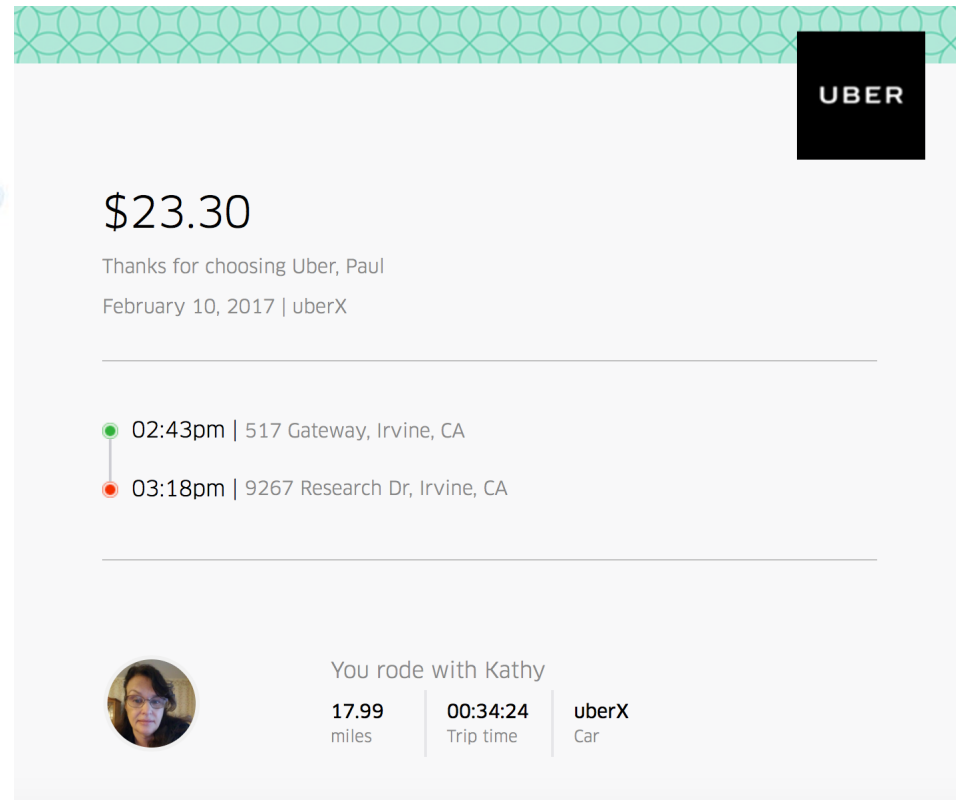
Cyclosporine (Restasis 90 day supply)

Yes

Future of ORI

Millions of data points and patient response

Link end user to end products



The image shows a screenshot of an Uber ride receipt. At the top right is the Uber logo. The main amount is \$23.30. Below it, it says "Thanks for choosing Uber, Paul" and "February 10, 2017 | uberX". The trip details are: 02:43pm | 517 Gateway, Irvine, CA (green dot) and 03:18pm | 9267 Research Dr, Irvine, CA (red dot). At the bottom, it says "You rode with Kathy" next to a profile picture. Below the name are three columns: "17.99 miles", "00:34:24 Trip time", and "uberX Car".

UBER

\$23.30

Thanks for choosing Uber, Paul
February 10, 2017 | uberX

02:43pm | 517 Gateway, Irvine, CA

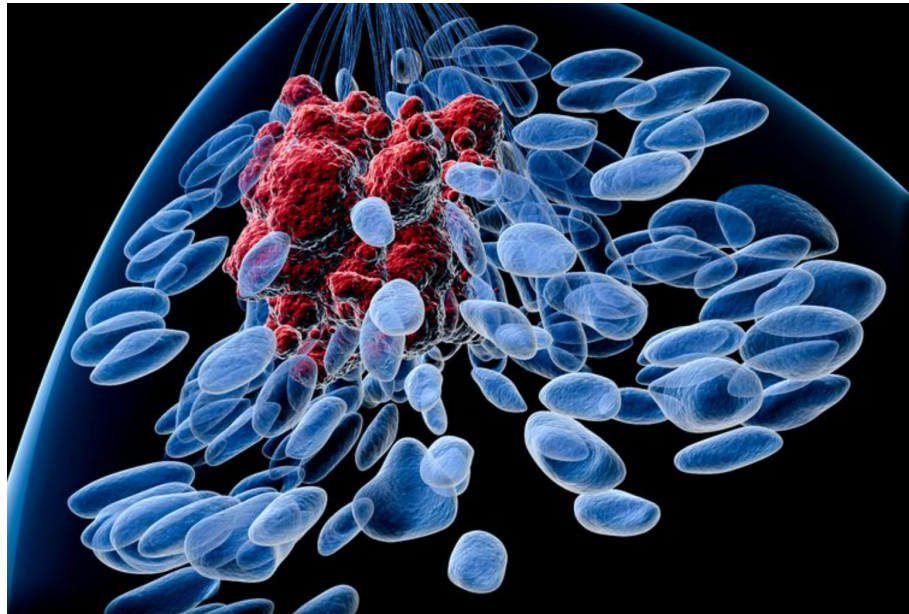
03:18pm | 9267 Research Dr, Irvine, CA

You rode with Kathy

17.99 miles	00:34:24 Trip time	uberX Car
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AI and Medicine



J Med Eng Technol. 2002 Jul-Aug;26(4):152-7.

Computerized detection of breast cancer with artificial intelligence and thermograms.

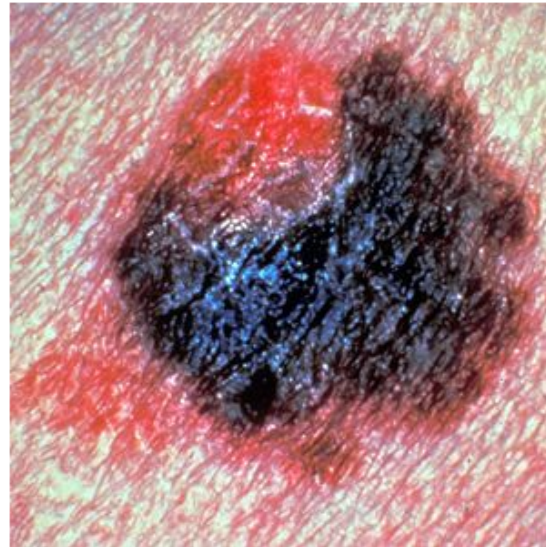
[Ng EY1](#), [Fok SC](#), [Peh YC](#), [Ng FC](#), [Sim LS](#).

Ann Ital Chir. 2012 Jan-Feb;83(1):1-5.

Artificial intelligence against breast cancer (A.N.N.E.S-B.C.-Project).

[Parmeggiani D1](#), [Avenia N](#), [Sanguinetti A](#)

AI and Medicine: Zebra Technology Imaging

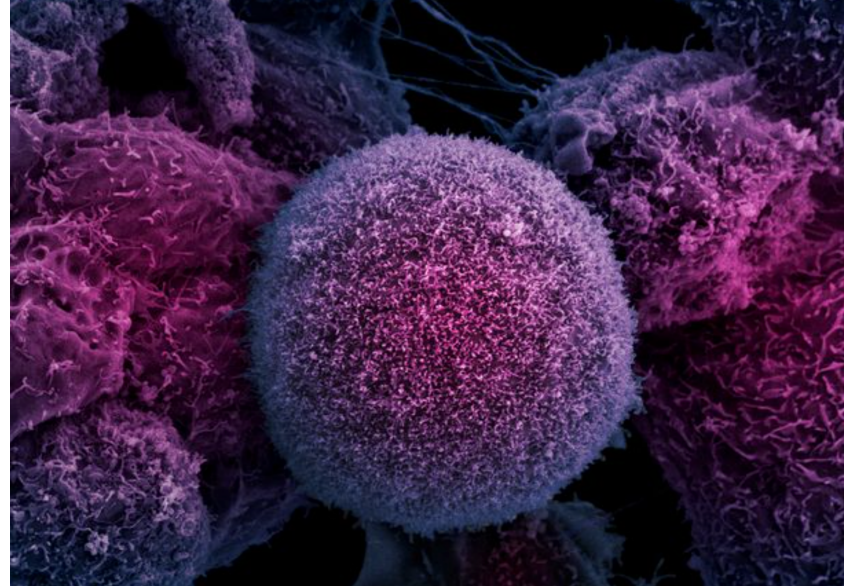


**This AI can spot skin
cancer as accurately as
a doctor**

Cancer | 25 Jan 2017



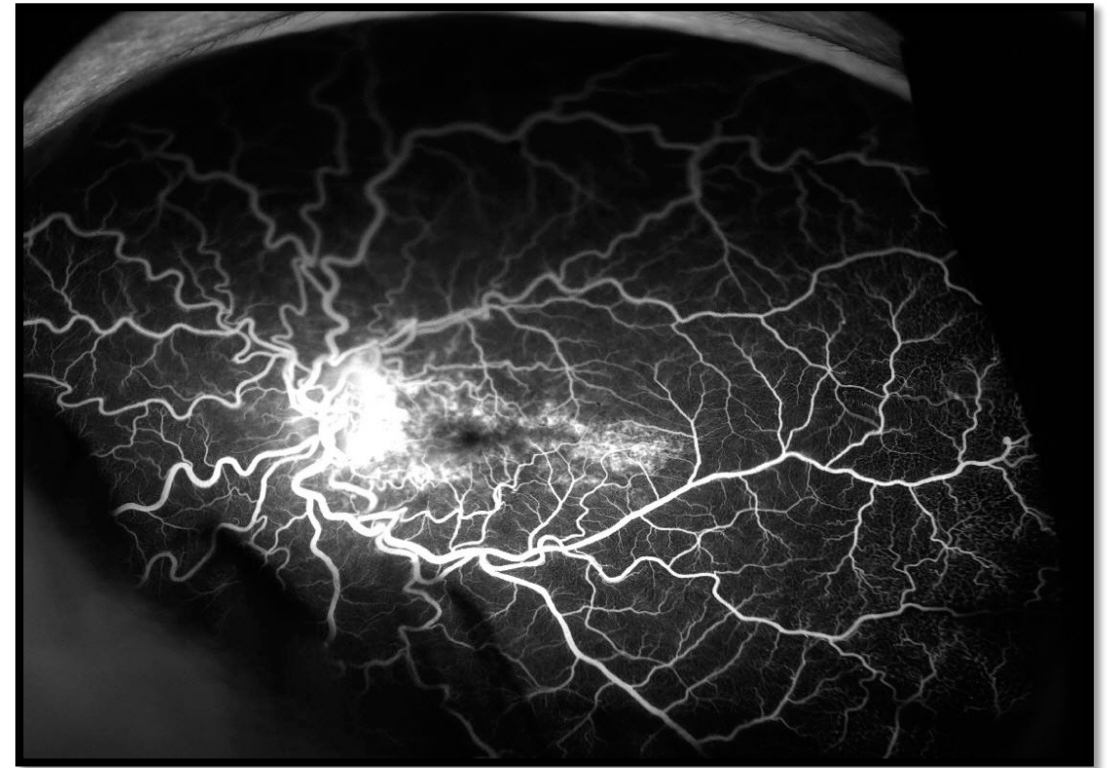
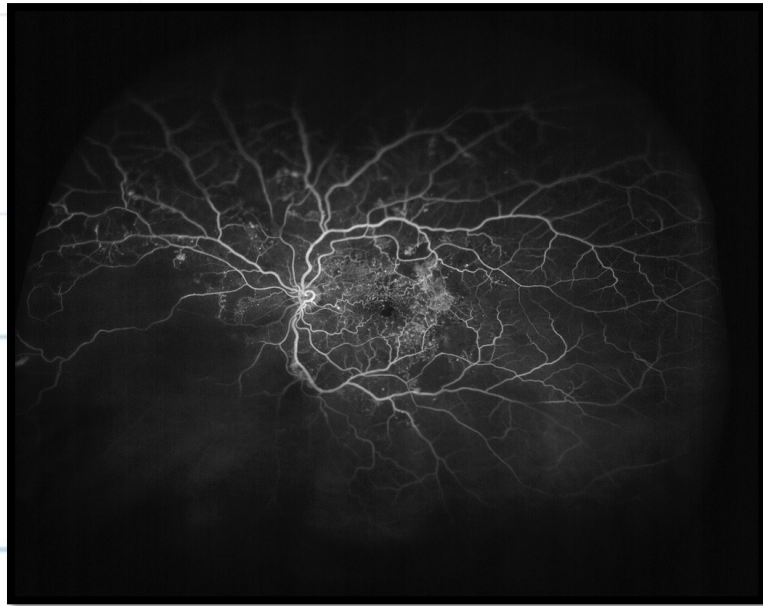
AI and Medicine



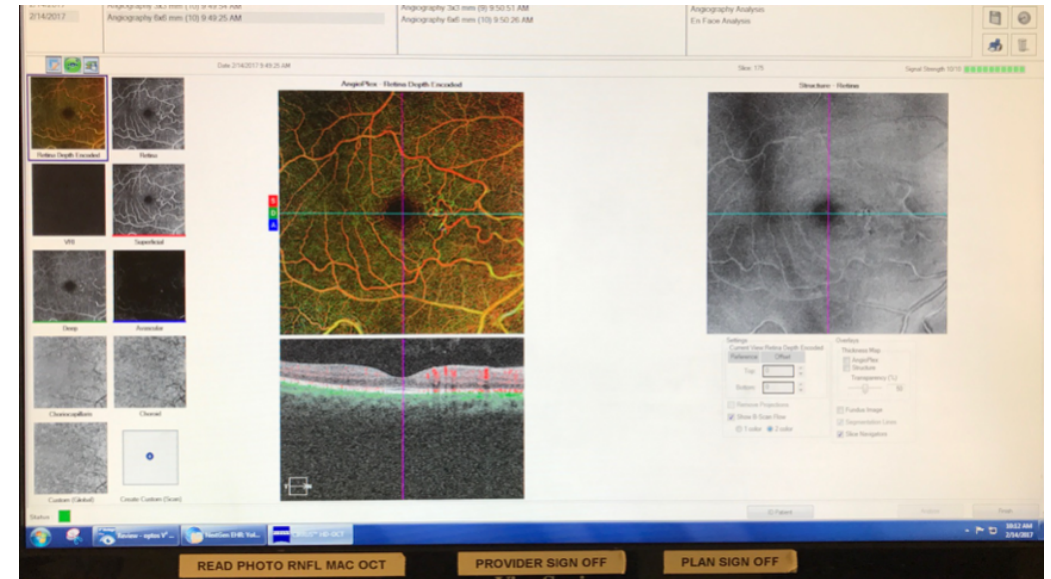
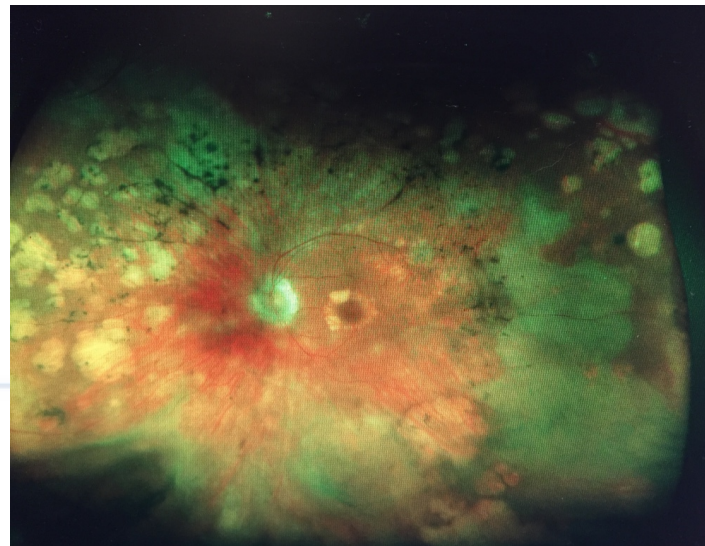
Onuiri Ernest E., Awodele Oludele and Ebiesuwa Oluwaseun. Early Detection and Diagnosis of Prostate Cancer using Artificial Intelligence Concept. *International Journal of Computer Applications* 149(6):42-46, September 2016

Joseph A. Cruz and David S. Wishart
Applications of Machine Learning in Cancer Prediction and Prognosis
Cancer Inform. 2006; 2: 59–77.

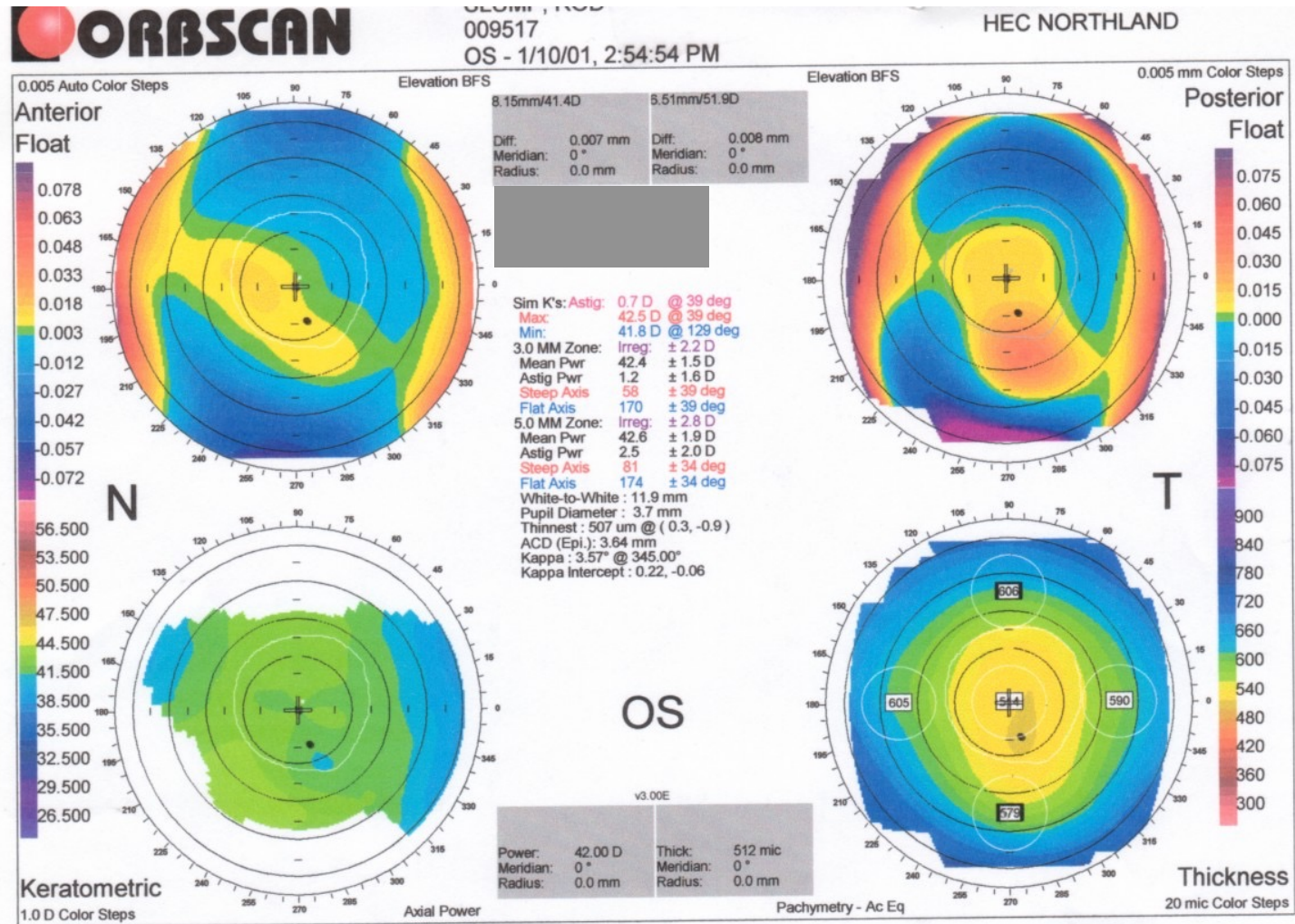
AI and the Eye



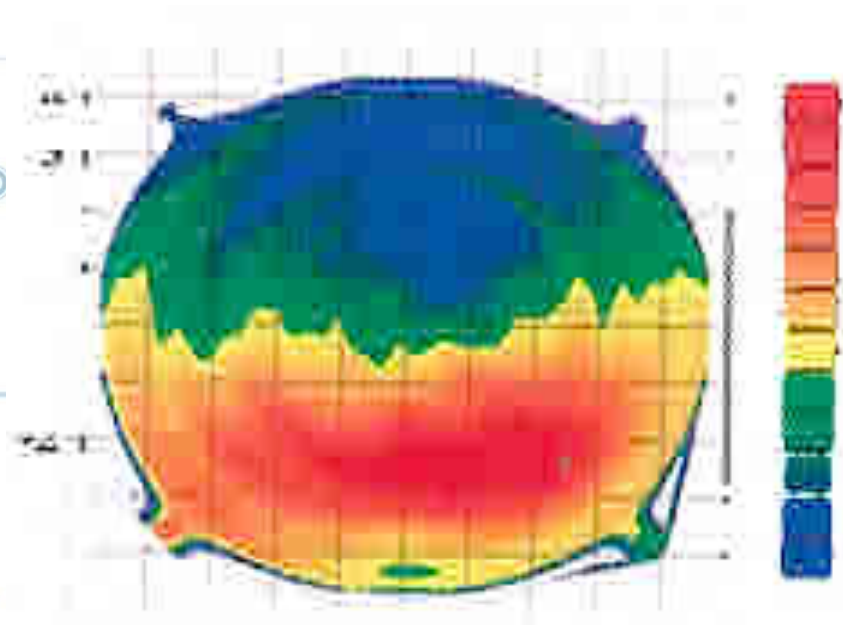
AI and the Eye



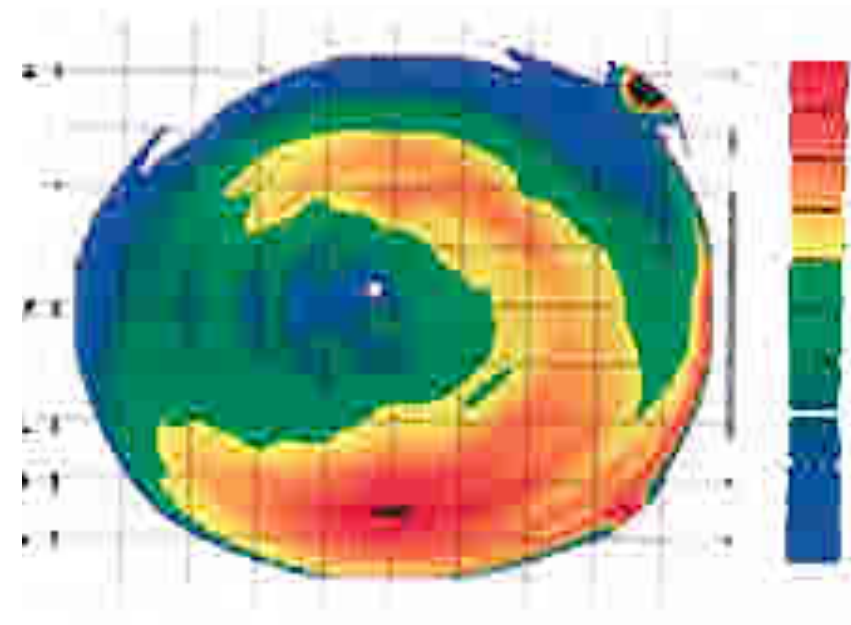
AI and the Eye



AI and the Eye



normal



keratoconus

AI and the Eye

Video interview with
Pearse A. Keane, MD, FRCOphth Consultant
ophthalmologist, Moorfields Eye Hospital,
London/Google DeepMind



AI and the Eye

Kovin Naidoo, OD, PhD, FAAO
CEO, Brien Holden Vision Institute

Vision care's involvement in AI via plans
for the newly-formed Microsoft Intelligent
Network for Eyecare (MINE)

AI and the Eye

Microsoft India, in collaboration with L V Prasad Eye Institute launched the initiative which includes:

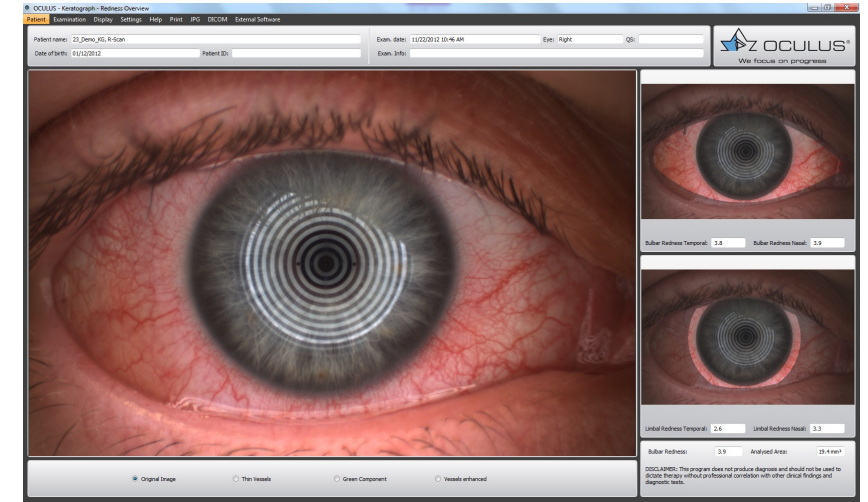
Brien Holden Vision Institute (Australia)
Bascom Palmer Eye Institute - University of Miami (USA),
Flaum Eye Institute - University of Rochester (USA)
Federal University of Sao Paulo (Brazil)

The partner organizations will collaborate and collectively work on diverse datasets of patients across geographies to come up with machine learning predictive models for vision impairment and eye disease

Telemedicine

Collect enough data on red eyes for example to help determine the likely diagnosis

- itching vs. dryness
 - level of pain
 - swelling/chemosis
 - Discharge
-
- injection grading, tortuous vessels etc.
 - Guide the doctor for remote examination



Cool Doctors TeleMed

John Gelles, OD, FIAO, FCLSA
Chief of Emerging Technologies, Cool Doctors

The screenshot displays the CoolDoctors TeleMed interface. On the left is a dark sidebar with the CoolDoctors logo and navigation options: My Patients, My Appointments (1), Manage Schedule, Messages (4), Legal, and Help. A Settings button is at the bottom of the sidebar. The main content area has a teal header with a menu icon and a user profile for Dr. Paul Karpecki. Below the header, patient details are listed: Gender: Male, Date of Birth: 12/26/1947, Living In: Los Gatos, California, USA, Phone no: 4082052494, and Pharmacy Contact: 8881231234. An Insurance Info button is below these details. A row of icons for Video, Patient, Medical, Family, Doctor, and Photos is visible. Below that is a 'Patient Pharmacy Details' section with a close button. It contains a table with columns for Name, Address, City, State, Country, ZipCode, and Phone No. The table has one row: Express Scripts, Mail order, SF, California, US, 95033, 8881231234. Below the table is a 'Patient History' section with a refresh icon.

Gender : Male
Date of Birth : 12/26/1947
Living In : Los Gatos , California , USA .
Phone no : 4082052494
Pharmacy Contact : 8881231234

Insurance Info

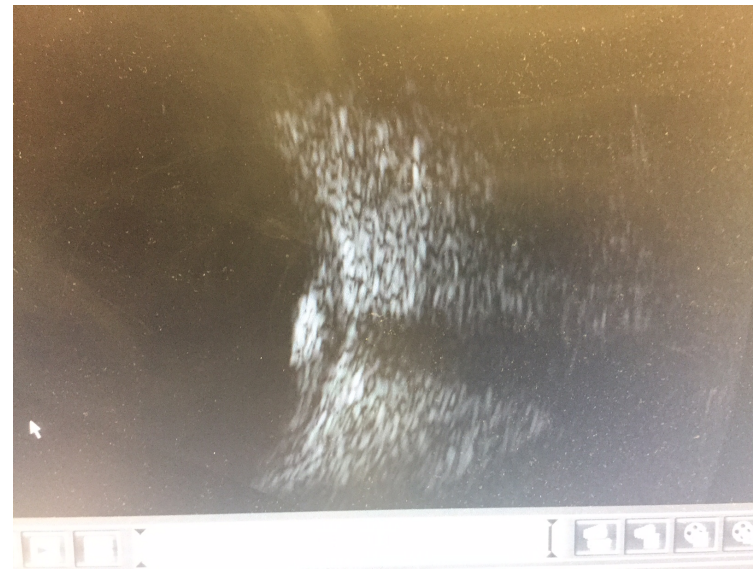
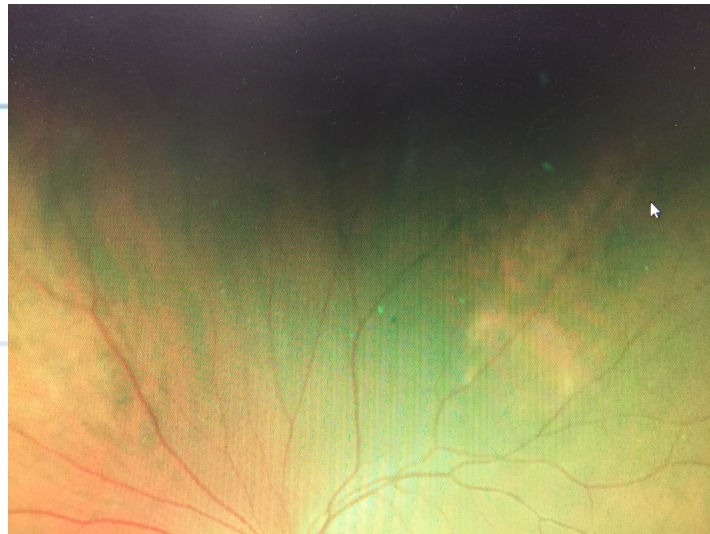
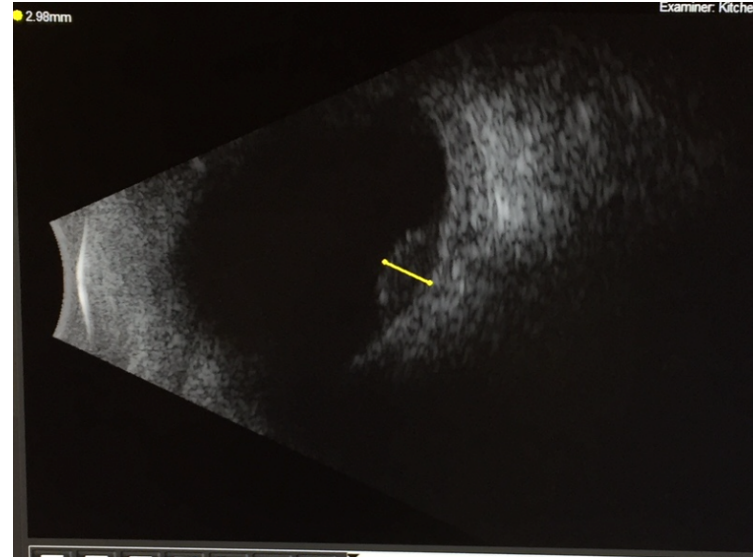
Video Patient Medical Family Doctor Photos

Patient Pharmacy Details

Name	Address	City	State	Country	ZipCode	Phone No.
Express Scripts	Mail order	SF	California	US	95033	8881231234

Patient History

AI and HI:



AI and HI: Medicine is also Art

