TAROM APPLIED TECHNOLOGIES LTD. | DIGITAL HEALTH

OPTOMED

סקירה אוטומטית בעזרת בינה מלאכותית
לאבחון ראשוני
DR, AMD, Glaucoma*

מצלמת פונדוס ידנית
פענוח אוטומטי בעזרת AI
תוצאות מיידיות ללא הרחבת אישונים

- ✓ גילוי מוקדם של מספר מחלות
- ✓ קיצור תורים לרופאי העיניים
- ✓ שיפור נגישות: נגיש בכל מקום
- ✓ חסכוני

* Glaucoma = Suspicious Papilla

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הפתרון

בדיקת סקר עיניים מהיר, אוטומטי, מבוסס בינה מלאכותית
בכל נקודת טיפול בידי עוזר רפואי מיומן

1 צילום כל עין

2 העברת התמונה לענן

3 קבלת פענוח

4 הפניה יעילה

- שלילי: שוב למעקב בעוד 12 חודשים
- חיובי: פנה לרופא עיניים

- ✓ ללא הרחבת אישונים
- ✓ הרופא נכנס לתמונה רק כאשר יש חשד

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תועלות בדיקת סקר עיניים בעזרת בינה מלאכותית

רופא העיניים

- מיקוד זמן המומחים בחולים
- הגדלת הענות לבדיקה

מטופל

- הגדלת נגישות ונוחות
- קיצור תורים

רפואה ראשונית

- מניעת מחלות וגילוי מוקדם
- שיפור זמינות הרופאים וחיסכון כספי

המבטח

- **הפחתת עלויות**
  בדיקות סקר, סיבוכים, גילוי מוקדם
- **מיטוב יעילות המערכת**
  אמין, עלות תועלת גבוהה

אתגר הבריאות

צורך גובר בבדיקת עיניים לאיתור DR, Glaucoma וAMD

- **אוכלוסייה מזדקנת וגידול בסיכון לליקוי אובדן ראייה**
  מעל 2ל מ' בני 55 ומעלה, 0.6 מ' חולי סוכרת ישראל
- **מחסור ברופאי עיניים** - תורים ארוכים
- **פחות מ50% מהזקוקים לכך עוברים בדיקת עיניים**
- **אבדן הראיה מהווה נטל עלויות עצום (בעולם מוערך על ל3 טריליון $)**

גילוי והתערבות מוקדמים מונעים פגיעה בראייה ב-80% ממחלות הרשתית

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הפתרון: 1 המצלמה + 2 פיענוח AI

הפתרון: 1. מצלמת פונדוס ידנית עם אופטיקה איכותית

- אין צורך בהרחבת אישונים
- רזולוציה של 12 מגה פיקסל
- מסך מגע בגודל 5 אינץ'
- מיקוד אוטומטי חכם™
- עיצוב אופטי בעל ניגודיות גבוהה™
- שדה ראייה של 50°, צבעוני וללא צבע אדום
- הדרכה אינטואיטיבית למשתמש
- רצפי הדמיה הניתנים לתכנות
- שילוב נתונים ואבטחה חלקים

High Quality Optics_ Hand-Held versus Table Top Cameras

	Optomed Lumo Handheld / Desktop	Topcon NW500 Tabletop	iCare DRS + Tabletop
Field of View	50°	**50°**	**45°**
Minimum Pupil Size	3 mm	2 to 2.5 mm	2.6 → 3.2 mm
Camera Sensor	12.3 MP	**12MP**	**10MP**
Optical Resolution	>60 lp/mm (ISO10940:2009)	**≥ 60 lp/mm** (center)	**70–100 lp/mm** (80px/deg)
Illumination (Aiming / Imaging)	IR LED (aiming) + white LED (imaging)		**White LED + IR LED (confocal LED scanning)**
Fixation Targets	9 Internal LED (for peripheral imaging)	**9 internal OLED** External LED	**10 internal**
Photography Type	Color, Red-Free, IR **High-Contrast Optical**	**Color, Red-Free,** Auto Mosaic (up to 90°)	**Color, Red-Free, IR**
Diopter Compensation	-20 D to +20 D (manual focus) -15 D to +10 D (autofocus)	-33 D to +40 D	Autofocus −15D to +15D
Portability	930 g + Desktop Base	20kg	11 kg
Connectivity & Data Transfer	WLAN, WPA2, Wi-Fi, USB DICOM, DICOM WEB, Cloud	**LAN, USB, DICOM integration**	LAN / DICOM / Cloud integration

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THE AI SCREENING SOFTWARE

High-Performance AI Screening aligned with International Referral Thresholds

	DR **Diabetic Retinopathy**	Diabetic Macular Edema	**AMD** **Age related Macular Degeneration**	AMD Drusen	Glaucoma * **Suspicious Papilla**
Medical Relevance	1st cause Blindness <60 30% diabetics suffer from DR	DR complication	3d Cause of vision impairment 200 M world Population	Earliest stage of AMD	1ST cause of blindness >60 75 M world population
Sensitivity	**99%**	96.8%	**96.5%**	95.2%	**92.5%**
Specificity	87%	96.3%	95.4%	94.5%	86.4%

. *Detects suspicion of Glaucoma / suspicious papilla : Because the diagnosis of glaucoma is very closely associated with a morphologic change in the optic nerve head, one screening parameter should be the morphology of the papilla.

These results fall within thresholds used in screening protocols to maximize detection of positive cases (high sensitivity) while minimizing over-referral (reasonable specificity). Such balance is essential in referral-based screening workflows favored by guidelines.
The algorithm mirrors clinical triage strategies: it outputs a **confidence index**, akin to Positive (resp. negative) Predictive Value for positive (resp. negative) diagnosis, reenforcing whether a case should be referred to an ophthalmologist when the score exceeds the diagnosis threshold.

Clinically Validated in many global peer-review studies → Clinical Studies

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OPTOMED

Endorsed by Renown Ophtalmology Professors

"We make the expertise accessible to promote prevention and make eye diseases screening easier"

Prof. Pascale Massin .
Ophtalmology , APHP hospitals Network. France.
Chairman of Francophone Club of Retina Specialists

"I encourage our community to regard AI as a help for tomorrow. This is a solution supported by doctors. Operational. Adjustable. Scalable"

Prof. Beatrice Cochener
Head Ophtalmology Dpt. Brest University Center. France.
President French Ophtalmology Academy

Prof Hautala has validated the superiority of the AI solution versus human and 20 other algorithms for Dr detection.

Prof. Nina Hautala
Chief Ophtalmology Oulu University Hospital , Finland. Specialized in retina, DR, screening programs DR. AMD. President of the Finnish Association of Ophthalmology

"The AI Handheld Solution improves access to diabetic eye screening"

Prof. Tunde Peto
Head Ophthalmology, Queen University Hospital Belfast. Ireland. Clinical Lead of the Northern Irish Diabetic Retinopathy (DR) Screening Program; Most UK influential Researcher in diabetics complications.

Successfully Implemented within Eye Centers around the world

euclid TELEHEALTH

Leading Screening Center
Canada
43,000 Exams/ year

Félix Bulnes HOSPITAL CLINICO

Public hospital
Chile
14,000 Exams/ year

GHMC

Gunma University Hospital
Japan
Dept. Ophtalmology

OYS | OULU UNIVERSITY HOSPITAL

Oulu University Hospital
Finland
Dept. of Ophtalmology

e-SANTÉ MARTINIQUE

Screening Network
DOM TOM_ France
20,000 Exams/ year

PHDIAT©
OPHtalmologie DIAbète Télémédecine
ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS

Telemedical Screening Network
APHP- France

Universitätsklinikum Carl Gustav Carus DIE DRESDNER.

University Hospital
Dresden – Germany

CLINIQUE HONORÉ CAVE

Screening Network
France
30,000 Exams/ year

GrandVision Spain

Optic retail chain
Spain
New service during eye exam

ST. JAMES'S HOSPITAL DUBLIN . IRELAND

St James Hospital
Dublin- Ireland

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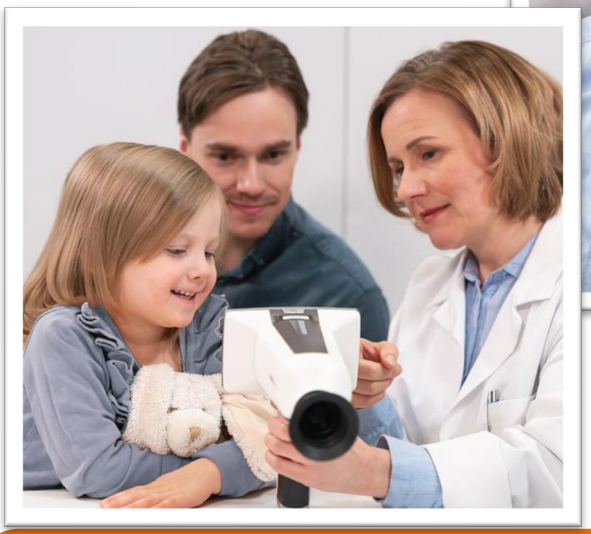
לראשונה בישראל

בדיקת סקר עיניים בעזרת פתרון מתקדם ואמין של OPTOMED + פענוח AI

חסכוני, רמה רפואית גבוהה, קל ליישום ולתפעול בכל נקודת הטיפול בעזרת איש צוות



לפגישת הדגמה תרום רפואה דיגיטלית

קארן באר-גבל 052 474 74 32

ג'קי עובדיה 054 467 67 54

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First AI-Powered Eye Screening Solution for Multiple Diseases,

Medical-Grade & Operable at any Point of care.
Hybrid (handheld and desktop)

Appendices

- Lumo Camera Technical Specifications
- Similar Performance versus Table Top Cameras
- Ai Eye screening versus Human grader
- List of Reference Clinical Studies
- Expanding clinical Indications

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Advanced Hybrid Fundus Camera (Handheld and Desktop)

Technical Specifications

Optomed Lumo Camera

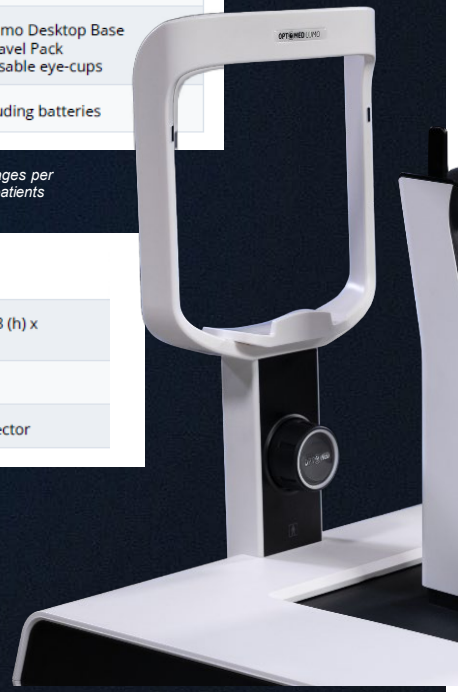
Type	Non-mydriatic digital fundus camera
Field of view	50° (total field of view 50° x 40°)
Camera sensor resolution	12.3 MP
Optical resolution	> 60 lp/mm (ISO10940:2009)
Fixation targets	9 pcs
Minimum pupil size	3 mm
Illumination types	Infrared LED for aiming Visible white LED for imaging
Display	5", TFT-LCD, 1280x720 pixels 16.7 M colors (Touch screen)
Image memory type	Internal 16 GB memory
File formats	JPEG
Data transfer	DICOM, DICOMweb
Exposure	Auto Exposure, Manual Exposure
Diopter compensation	-20 D to +20 D (manual focus) -15 D to +10 D (autofocus)
Type of photography	Color, Red-Free
Security features	PIN code protection Two-factor authentication Drive encryption (AES-256)
Connectivity	WLAN (IEEE 802.11a/b/g/n/ac, WPA2 2.4 GHz & 5 GHz), USB-C, USB 2.0 High Speed Device
Software	Optomed Client (Windows 10&11, Android, macOS, iOS and iPadOS)

Additional services	Optomed Portal Cloud-based AI service
Battery	7.2 V / 3450 mAh / 24.84 Wh Rechargeable Li-Ion battery
Usage time	6 hours*
Spare battery charging time	2 hours
Dimensions	141 (w) x 200 (h) x 240 (d) mm
Weight	930 g
Other	Optomed Lumo Charging Station Wrist strap
Optional Accessories	Optomed Lumo Desktop Base Optomed Travel Pack E-Safe disposable eye-cups
Warranty	2 years excluding batteries

Image capture of 4 patients per hour, 4 images per patient, camera in standby mode between patients

Optomed Lumo Desktop Base

Dimensions	409 (w) x 403 (h) x 460 (d) mm
Weight	5.05 kg
Connections	USB-C connector



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Comparable and Adequate Performance of Optomed Handheld Fundus Camera versus Leading Table-Top Fundus Cameras

900 Patients from endocrinology clinic of Akdeniz University . Turkey - 2024
(Proprietary AI software)

	Optomed Handheld	Canon CR2 AF	Topcon TRC-NW400
Sensitivity	**91-95%**	**95.5 - 96%**	**98-98.5%**
Specificity	97-99%	96 - 96.8%	96%

“The study demonstrates the potential of using non-mydriatic fundus cameras combined with artificial intelligence software in detecting diabetic retinopathy. Several cameras were tested and, notably, each camera exhibited varying but adequate levels of sensitivity and specificity. “

Head-to-head comparison of diagnostic performance of three non-mydriatic cameras for diabetic retinopathy screening with artificial intelligence
Mehmet Erkan Doğan1, Ahmet Burak Bilgin1, Ramazan Sari2, Mehmet Bulut3, Yusuf Akar2 and Mustafa Aydemir1 © The Author(s) 2024

216 Patients from University Hospital of Padova’s center for the management of diabetic retinopathy- 2022

Sensitivity

Specificity

“the Optomed Handheld Camera proved to be effective in recognizing referable cases in a real-life DR screening setting. **It showed comparable results to a standard table-top fundus camera in DR, DM and HR detection and grading.** The Aurora® can be integrated into telemedicine solutions and artificial intelligence services which, in addition to its portability and ease of use, make it particularly suitable for DR screening.”

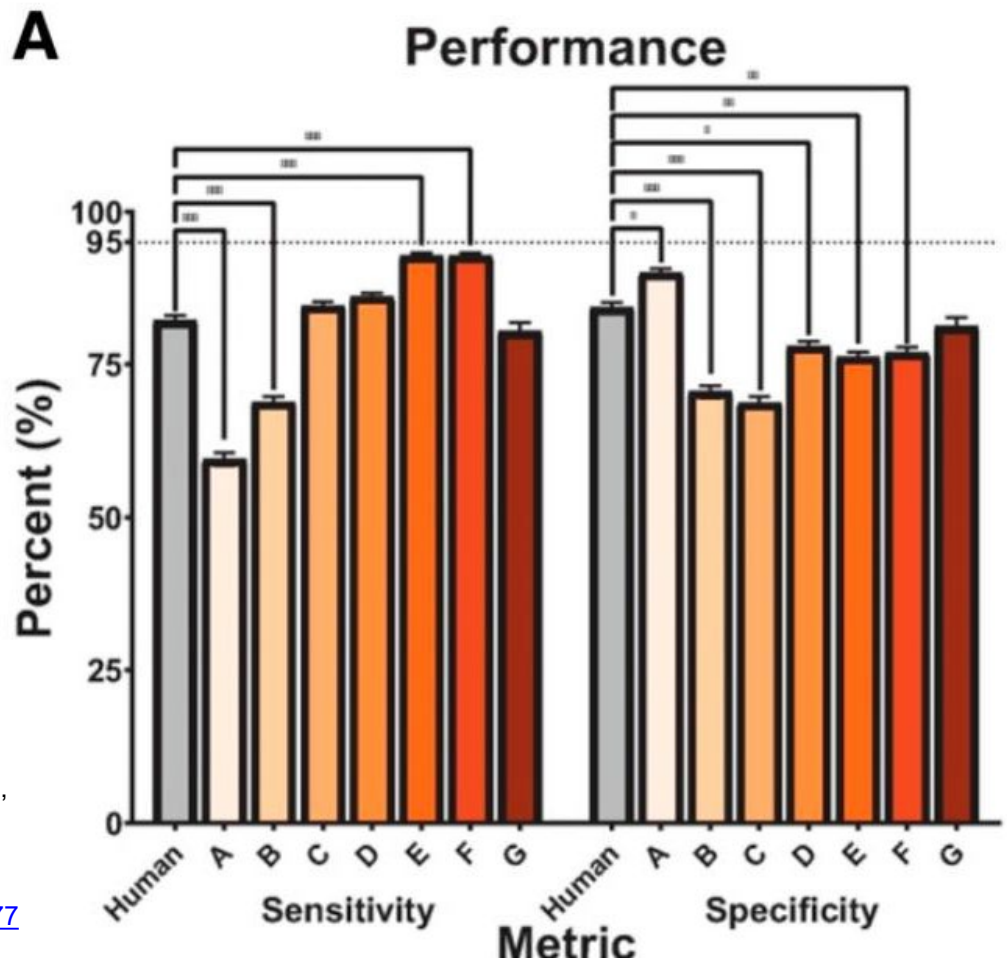
Handheld Fundus Camera for Diabetic Retinopathy Screening: A Comparison Study with Table-Top Fundus Camera in Real-Life Setting
Edoardo Midena[1,2], Luca Zennaro[1], Cristian Lapo[1], Tommaso Torresin[1], Giulia Midena[2], Elisabetta Pilotto[1], Luisa Frizziero[1].
2022 Apr 22;11(9):2352.. doi: 10.3390/jcm11092352.

Similar or Superior Performance versus Human grader

DR assessment study of more than 300,000 retinal images from a large multiethnic, non-European population,(23,000 US military veterans), totally independent of the acquisition camera, and clinical protocols.

The OphtAI two models E and F demonstrated

- ✓ **Best Sensitivity among AI solutions**
- ✓ **Safest Solution among AI solutions**
- ✓ **Better sensitivity than human screeners**



Lee,A.Y.,YanagiharaR.T.,Lee,C.S.,Blazes,M.,Jung,H.C.,Chee,Y.E.,Gencarella, M.D.,GeeH.,MaaA.Y.,CockerhamG.C.,LynchM.,BoykoE.J.,(2021). **"Multicenter, Head-to-Head, Real-World Validation Study of Seven Automated Artificial Intelligence Diabetic Retinopathy Screening Systems"**; Diabetes Care, 44(5): 1168-1175. https://doi.org/10.2337/dc20-1877

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Key Reference Clinical Studies

Performance for Optomed AI Retina-based screening Software.

- ✓ Quellec, G., Lamard, M., Lay, B., Le Guilcher, A., Erginay, A., Cochener, B., Massin, P. (2019). **Instant automatic diagnosis of diabetic retinopathy**. ArXiv/ Electrical Engineering and Systems Science / Image and Video Processing. arXiv:1906.11875 [eess.IV].https://arxiv.org/abs/1906.11875
  > Comparison OphtAI to Idx on Messidor2 database, showing OphtAI superiority to the first FDA-certified automated patient sorting software

- ✓ Lee,A.Y.,YanagiharaR.T.,Lee,C.S.,Blazes,M.,Jung,H.C.,Chee,Y.E.,Gencarella,M.D.,GeeH.,MaaA.Y.,CockerhamG.C.,LynchM.,Boyko E.J.,(2021)."**Multicenter, Head-to-Head, Real-World Validation Study of Seven Automated Artificial Intelligence Diabetic Retinopathy Screening Systems"**; Diabetes Care, 44(5): 1168-1175. https://doi.org/10.2337/dc20-1877
  >Aaron Lee Veteran affairs bureau challenge: **OphtAI most sensitive AI on 300,000 real life images**

- ✓ Roubelat FP, Soler V, VarenneF, Gualino V. **Real-world artificial intelligence-based interpretation of fundus imaging as part of an eyewear prescription renewal protocol.** J Fr Ophtalmol. 2024 Mar 8:104130. doi: 10.1016/j.jfo.2024.104130. Epuba head of print. PMID: 38461084.

Performance for Optomed Handheld Fundus Camera

- ✓ **Head-to-head comparison of diagnostic performance of three non-mydriatic cameras for diabetic retinopathy screening with artificial intelligence.** Mehmet Erkan Doğan1, Ahmet Burak Bilgin1, Ramazan Sari2, Mehmet Bulut3, Yusuf Akar2 and Mustafa Aydemir1 © The Author(s) 2024

- ✓ **Handheld Fundus Camera for Diabetic Retinopathy Screening: A Comparison Study with Table-Top Fundus Camera in Real-Life Setting .**Edoardo Midena[1,2], Luca Zennaro[1], Cristian Lapo[1], Tommaso Torresin[1], Giulia Midena[2], Elisabetta Pilotto[1], Luisa Frizziero[1]. 2022 Apr 22;11(9):2352.. doi: 10.3390/jcm11092352.

More studies on https://www.optomed.com/clinical-studies/

THE AI SCREENING SOFTWARE

Comprehensive AI Screening Solution Continuously Expanding to new Indications

- ✓ **Cataract**
- ✓ Nevi / Pigmented Tumor/Melanoma
- ✓ Branch Retinal Vein Occlusion (BRVO)
- ✓ Central Retinal Vein Occlusion (CRVO)
- ✓ Retinitis Pigmentosa
- ✓ Maternally Inherited Diabetes and Deafness (MIDD)
- ✓ Macular Hole
- ✓ Epiretinal Membrane
- ✓ Hypertensive Retinopathy
- ✓ High Myopia/Degenerative Myopia
- ✓ Anterior Ischemic Optic Neuropathy (AION)
- ✓ Laser Photocoagulation Scars
- ✓ + Retinal Abnormalities