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Automated Detection of Retinal Diseases Using Artificial Intelligence-Enhanced Ocular Coherence Tomography Imaging: Bibliometric Analysis

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Abstract

Artificial intelligence (AI) has revolutionized optical coherence tomography (OCT) imaging for the better detection of retinal diseases like diabetic retinopathy (DR), age-related macular degeneration (AMD), and glaucoma. Here, bibliometric analysis of AI in OCT is presented. We conducted a systematic search in the Web of Science Core Collection (WoSCC) database up to January 22, 2025 with the help of AI and OCT-related terms. The journal articles and reviews on the topic were examined based on publication trends, author productivity, institution affiliation, and keyword co-occurrence. Visualization was performed through VOSviewer software (1.6.20). A total of 765 articles were analyzed with an increasing trend in publications, led by the USA (30.7%), China (23.3%), and the UK (11.1%) in research production. The most cited institution was the Medical University of Vienna (9.0%), and the most productive journal was Scientific Reports (7.3%). The most common keywords were "Optical Coherence Tomography", "Deep Learning", and "Diabetic Retinopathy" with frequency of 469, 297, 221, respectively. Our review of AI-enhanced OCT for retinal diseases was both comprehensive and systematic, identifying key trends and current research hotspots. As research productivity in this field continues to grow, the focus is increasingly shifting toward developing more accurate AI-driven imaging techniques to improve the diagnosis of various retinal diseases. Future work should prioritize algorithm validation and clinical implementation to facilitate widespread adoption.

Keywords: Artificial Intelligence, Optical Coherence Tomography, Retinal Diseases, Deep Learning, Diabetic Retinopathy.

1. INTRODUCTION

Optical Coherence Tomography (OCT) is a non-invasive imaging technique that is based on principles of light coherence to generate high-resolution cross-sections and three-dimensional imaging of biologic tissue, predominantly in ophthalmology [1]. OCT was launched in 1991, transforming retinal disease diagnosis and treatment by enabling clinicians to see retinal, choroid, and optic nerve head structure in detail to a precision of micrometers [2]. Time-Domain OCT (TD-OCT) was initially employed but subsequently was succeeded by advances in Spectral-Domain OCT (SD-OCT) and more recently Swept-Source OCT (SS-OCT), providing imaging at higher velocities and resolution, penetration to more depths of ocular tissue, and detection of retinal pathologies [3,4]. An added advancement, OCT Angiography (OCTA), has allowed imaging of retinal and choroidal vasculature in a non-invasive manner, offering a useful tool to detect vascular anomalies in disease such as diabetic retinopathy (DR) and age-related macular degeneration (AMD) [5,6].

While such imaging advances, OCT imaging results in large volumes of high-order data that require expert analysis. Analysis is time-consuming and also vulnerable to human operator variables, compromising diagnosis precision and treatment decisions [7]. In response to such challenges, artificial intelligence (AI) has become a game-changer in ophthalmology, most prominently in OCT imaging analysis using automation [8]. AI programs, most using deep learning combined with convolutional neural networks (CNNs), have been found to be highly accurate in detection of retinal disease and their diagnosis to a precision to or even higher than that of human experts [9,10]. AI-assisted analysis permits detection of disease such as DR, AMD, macular edema, and glaucoma at an earlier time point, improving patient outcomes through earlier treatment [11,12].

The integration of AI in OCT imaging is also very promising in improving diagnostic efficacy, reducing the workload of ophthalmologists, and enhancing high-quality eye care provision to resource-restricted areas, in particular [13]. AI is also capable of helping in disease progression analysis and measurement of treatment response via automatic retinal layer segmentation, pathologic change measurement, and detection of subtle abnormalities that would otherwise be invisible to human vision [14]. However, variance in the dataset, algorithm interpretability, and large-scale clinical validation requirements remain fundamental challenges to large-scale clinical adoption [15].

To support the advancement of OCT imaging integrated with AI, the objective of this study was to conduct a bibliometric analysis and review to explore emerging trends and hotspots in the last couple of years assessing authors, institutions, countries, and journals in this field.

2. METHODS & MATERIALS

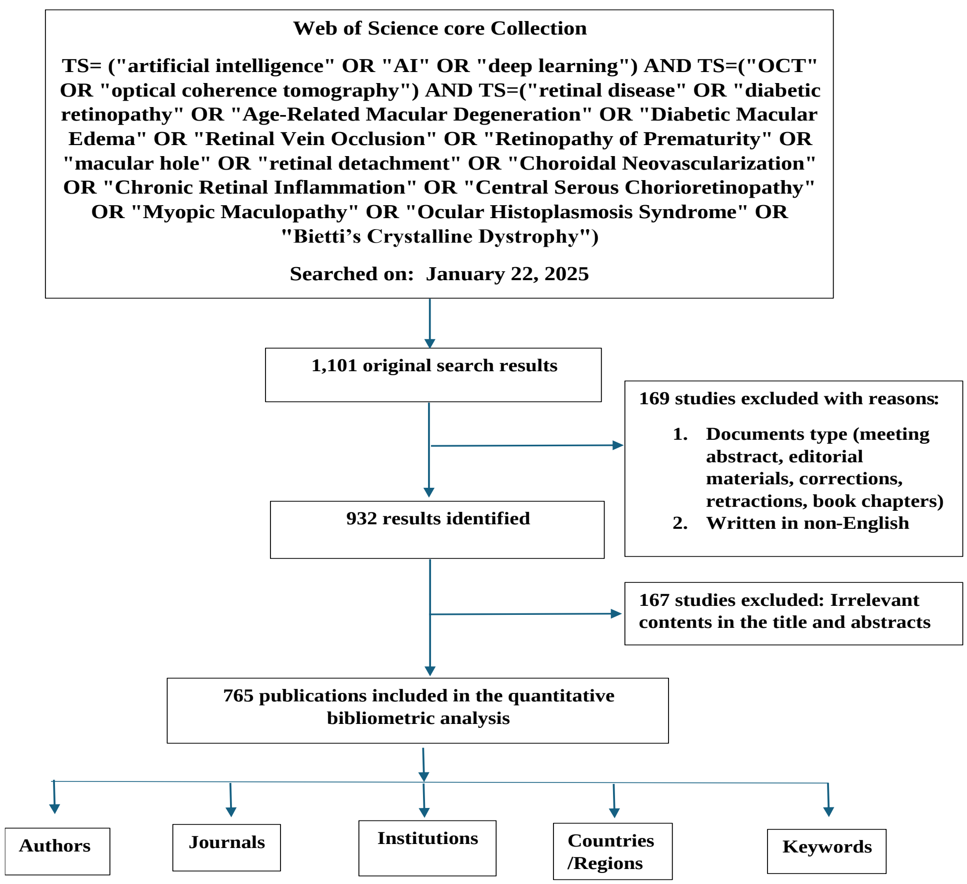
2.1. Data collection

The preliminary stage of the systematic literature screening was conducted using the Web of Science Core Collection (WoSCC) database on January 22, 2025. WoSCC was selected for its comprehensive citation indexing, standardized and well-structured records, compatible with bibliometric software such as VOSviewer. To ensure a thorough and exhaustive search, the strategy implemented a combination of specific keywords, including the following search terms: TS= ("artificial intelligence" OR "AI" OR "deep learning") AND TS=("OCT" OR "optical coherence tomography") AND TS=("retinal disease" OR "diabetic retinopathy" OR "Age-Related Macular Degeneration" OR "Diabetic Macular Edema" OR "Retinal Vein Occlusion" OR "Retinopathy of Prematurity" OR "macular hole" OR "retinal detachment" OR "Choroidal Neovascularization" OR

"Chronic Retinal Inflammation" OR "Central Serous Chorioretinopathy" OR "Myopic Maculopathy" OR "Ocular Histoplasmosis Syndrome" OR "Bietti’s Crystalline Dystrophy"). The selection criteria restricted the included publications to journal articles and review papers, no restrictions were applied to the date of publications. To ensure accurate inclusion of relevant studies on using AI for retinal disease detection in OCT imaging, all selected literature underwent a screening process based on their titles and abstracts. Any disagreements were addressed through discussion until a consensus was reached.

The initial search resulted in 1,101 articles, from which 932 studies remained after excluding those of which were not articles nor reviews and non-English articles. Ultimately, 765 articles underwent analysis after excluding those not related to the use of AI in OCT images to detect retinal diseases. **Figure 1** provides a comprehensive overview of the screening process.

Figure 1. Data screening flowchart.



2.2. Data analysis

Complete records and cited references for all publications were systematically retrieved from WoSCC, including bibliometric details such as title, keywords, authors, affiliated countries and institutions, journals, citation counts, publication year, and references. Bibliometric analysis and visualization were conducted using VOSviewer (version 1.6.20, Centre for Science and Technology Studies, Leiden University, The Netherlands) and Microsoft Excel 2019. VOSviewer (version 1.6.20) was utilized to identify key contributors, including the most prolific authors, journals, institutions, and countries. Additionally, it was employed to visualize highly cited references and conduct keyword co-occurrence analysis, providing a comprehensive overview of the scholarly landscape in the field.

VOSviewer (version 1.6.20) is a bibliometric software tool designed for creating and visualizing bibliometric maps, presenting data in distinct clusters with varying density colors [16]. These maps can be constructed based on citation, bibliographic coupling, co-citation, or co-authorship relations. Additionally, VOSviewer offers text mining functionality to construct and visualize co-occurrence networks of important terms extracted from scientific literature [17].

Microsoft Excel 2019 was utilized to generate a trend chart illustrating annual publication trends and to compile the necessary tables for this study.

Results

2.3. Study distribution (2017-2025)

Research on the use of AI-enhanced OCT for detecting retinal diseases began in 2017. By end of January 2025, a total of 765 articles on this topic were identified. Over the years, a notable and consistent increase in the number of publications was observed, with the number of articles surpassing 200 for the first time in 2024. **Figure 2** shows the annual trend in publications.

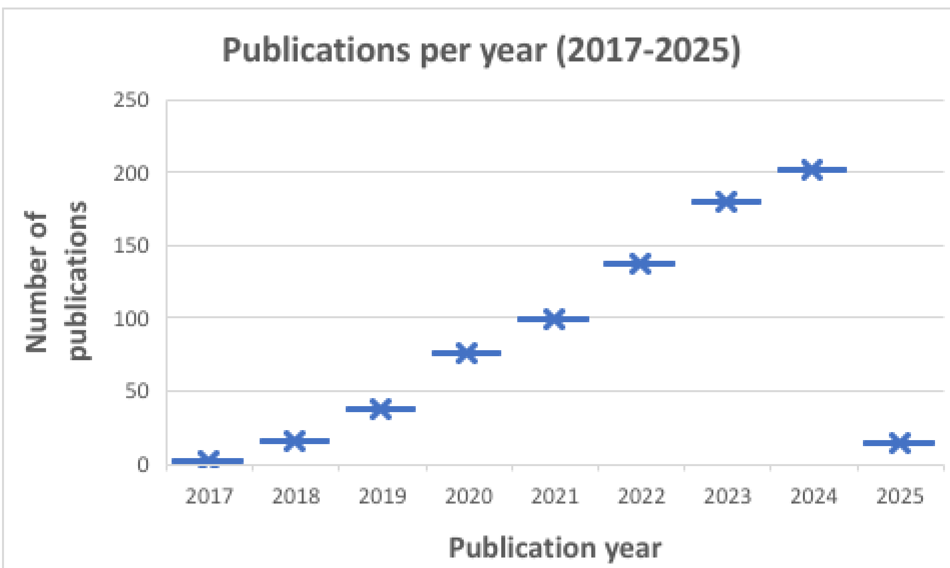


Figure 2. Number of publications worldwide from 2017 to end of January-2025

2.4. Authors

A total of 3,793 authors contributed to the publication of 765 papers. The top ten authors were responsible for 33.2% of the total publications. Among them, Ursula Schmidt-Erfurth (56 articles, 7.3%), Hrvoje Bogunovic (53 articles, 6.9%), and Gregor S. Reiter (29 articles, 3.8%) were the top three contributors, all were affiliated to the Medical University of Vienna. Interestingly, the most cited authors in this group are Pearse A. Keane from University College London, Hrvoje Bogunovic, and Ursula Schmidt-Erfurth, with 3,089, 1,546, and 1,517 citations, respectively (**Table 1**).

To visualize the author network, a map was created using VOSviewer (version 1.6.20), where authors are represented as nodes. Larger nodes indicate a higher number of publications, as shown in **Figure 3**. Additionally, thicker lines represent stronger connections between authors. The figure highlights the collaborative network within the field, with notable connections such as Ursula Schmidt-Erfurth—whose node is the largest—collaborating with authors like Gregor S. Reiter and Hrvoje Bogunovic.

Table 1. The top ten most prolific authors in retinal diseases detection using AI enhanced OCT.

Rank	Authors	Institution	Documents	Total citations
1	Ursula Schmidt-Erfurth	Medical University of Vienna	56 (7.3%)	1,517
2	Hrvoje Bogunovic	Medical University of Vienna	53 (6.9%)	1,546
3	Gregor s. Reiter	Medical University of Vienna	29 (3.8%)	411
4	Pearse a. Keane	University College London	21 (2.7%)	3,089
5	Sophie Riedl	Medical University of Vienna	20 (2.6%)	411
6	Yali jia	Oregon Health & Science University	18 (2.4%)	465
7	Aaron y. lee	University of Washington	15 (2.0%)	1,028
8	Wolf-dieter Vogl	Medical University of Vienna	15 (2.0%)	519
9	Thomas s. Hwang	Oregon Health & Science University	14 (1.8%)	315
10	Carol y. Cheung	The Chinese University of Hong Kong	13 (1.7%)	323

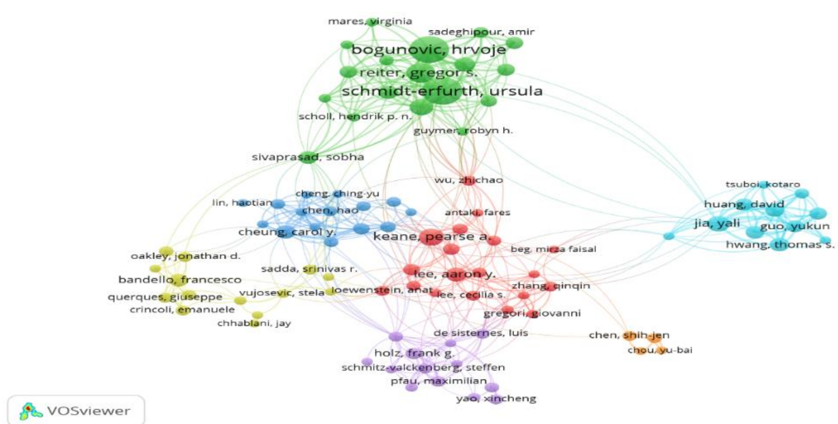


Figure 3. Visualization map of the top ten most prolific authors in retinal diseases detection using AI enhanced OCT.

2.5. Institutions

The top three institutions with the highest number of publications are: The Medical University of Vienna in Austria, with 69 publications (9.0%) and the highest number of citations at 2,749; Moorfields Eye Hospital in the UK, with 27 publications (3.5%); and Oregon Health & Science University in the USA, with 22 publications (2.9%). Notably, among the top ten institutions, Austria is represented by a single, highly prolific institution, while the USA is represented by three. Singapore, the UK, and China each have two institutions among the top ten most prolific in retinal disease detection using AI-enhanced OCT, as shown in **Table 2**. In **Figure 4**, the nodes represent institutions, with node size correlating directly to the number of publications for each institution. The figure also highlights the extensive collaborations between these institutions.

Table 2. The top ten most prolific institutions in retinal diseases detection using AI enhanced OCT.

Rank	Institution	Country	Documents	Total citations
1	Medical University of Vienna	Austria	69 (9.0%)	2,749
2	Moorfields Eye Hospital	United Kingdom (UK)	27 (3.5%)	461
3	Oregon Health & Science University	United States (USA)	22 (2.9%)	1,520
4	Singapore National Eye Centre	Singapore	21 (2.7%)	894
5	The Chinese University of Hong Kong	China	19 (2.5%)	464
6	University College London	United Kingdom (UK)	19 (2.5%)	1,779
7	Duke-NUS Medical School	Singapore	18 (2.4%)	357
8	Duke University	United States (USA)	18 (2.4%)	910
9	Chinese Academy of sciences	China	17 (2.2%)	356
10	University of Illinois Chicago	United States (USA)	17 (2.2%)	410

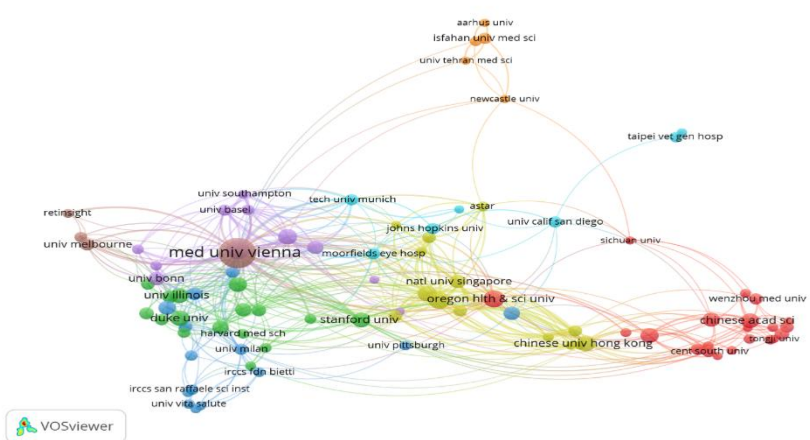


Figure 4. Visualization map of the top ten most prolific institutions in retinal diseases detection using AI enhanced OCT.

2.6. Countries

Our analysis revealed that articles on retinal disease detection using AI-enhanced OCT have been published by researchers in 67 countries. The USA leads the field with 235 publications (30.7%) and a total of 9,762 citations, followed by China with 178 publications (23.3%) and United Kingdom

(UK) with 85 publications (11.1%). **Table 3** displays the top ten countries based on the number of published articles. Using VOSviewer, a map of these countries was visualized, as shown in **Figure 5**. This map illustrates the number of publications and highlights the extensive collaboration between countries such as the USA and England, or the USA and India.

Table 3. The top ten most prolific countries in retinal diseases detection using AI enhanced OCT.

Rank	countries	Total documents	Total Citations
1	United states (USA)	235 (30.7%)	9,762
2	China	178 (23.3%)	5,581
3	United Kingdom (UK)	85 (11.1%)	4,305
4	India	77 (10.1%)	1,939
5	Austria	72 (9.4%)	2,816
6	Switzerland	51 (6.7%)	581
7	Germany	50 (6.5%)	3,451
8	Italy	48 (6.3%)	305
9	Singapore	37 (4.8%)	2,069
10	South Korea	35 (4.6%)	552

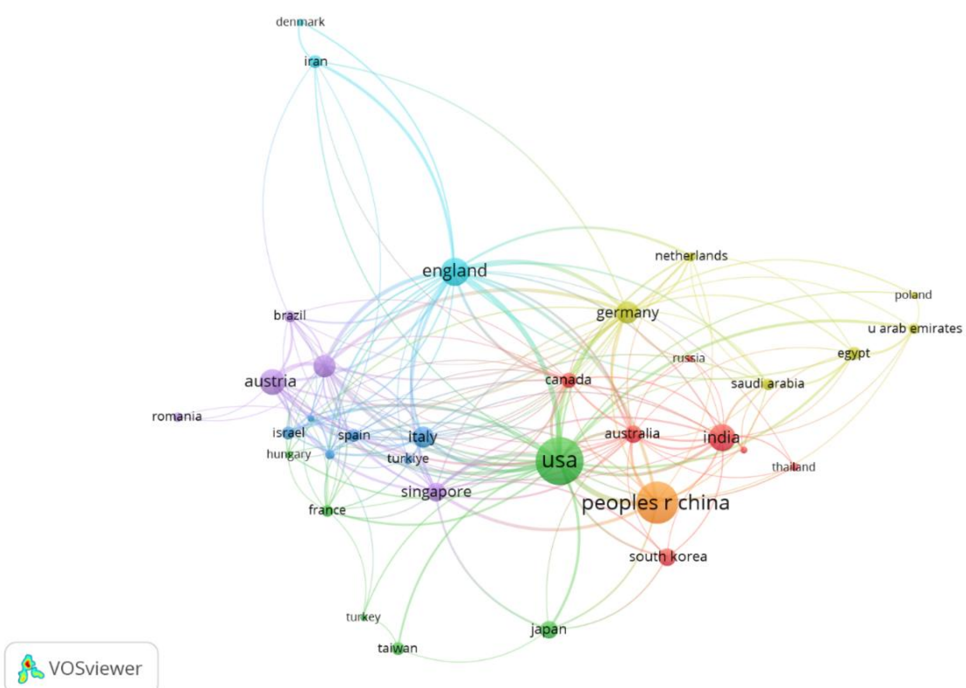


Figure 5. Visualization map of the top ten most prolific countries in retinal diseases detection using AI enhanced OCT.

2.7. Sources

Publishing journals serve as the pillars of research, reflecting both current advancements and foundational knowledge. A total of 765 articles were published across 218 journals. The top ten most productive journals are listed in **Table 4**. The leading three journals include *Scientific Reports* with 56 articles (7.3%), *Translational Vision Science & Technology* with 47 articles (6.1%), and *Diagnostics* with 26 articles (3.4%). Notably, *Biomedical Optics Express* stands out as the most cited journal in the field of retinal disease detection using OCT enhanced by AI, with a total of 1,432 citations. Most of the top ten journals are classified in the Q1 or Q2 quartiles and have impact factors ranging from 2.3 to 3.8, with *Scientific Reports* leading the list. These journals, along with their collaborative networks, are visually represented in **Figure 6**.

Table 4. The top ten most productive journals in retinal diseases detection using AI enhanced OCT.

Rank	Source	Documentation	Citations	Impact factor (IF)	Quartile in category
1	Scientific Reports	56 (7.3%)	878	3.8	Q1
2	Translational Vision Science & Technology	47 (6.1%)	832	2.6	Q2
3	Diagnostics	26 (3.4%)	229	3.0	Q1
4	Biomedical Optics Express	25 (3.3%)	1,432	2.9	Q2
5	Retina-the Journal of Retinal and Vitreous Diseases	22 (2.9%)	275	2.3	Q2
6	Ophthalmology Science	21 (2.7%)	176	3.2	Q1
7	Eye	20 (2.6%)	179	2.8	Q1
8	British Journal of Ophthalmology	14 (1.8%)	892	3.7	Q1
9	IEEE Access	14 (1.8%)	161	3.4	Q2
10	PLOS One	14 (1.8%)	161	2.9	Q1

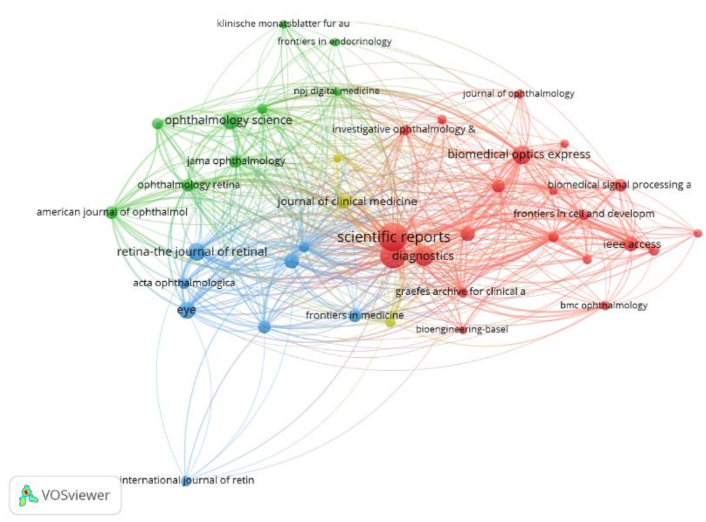


Figure 6. Visualization map of the top ten most productive journals in retinal diseases detection using AI enhanced OCT

2.8. Keywords

Keywords were extracted and analyzed from the relevant literature. The four most frequently occurring keywords each surpassed 200 mentions: Optical Coherence Tomography (469 occurrences), Deep

Learning (297 occurrences), Artificial Intelligence (221 occurrences), and Diabetic Retinopathy (220 occurrences). These keywords are detailed in **Table 5**, which lists the top 20 keywords in the field. A network visualization analysis of these keywords is displayed in **Figure 7**, with each cluster represented by a distinct color, highlighting specific research frontiers within the field.

Table 5. The top 20 keywords in retinal diseases detection using AI enhanced OCT.

Rank	Keyword	Occurrence	Rank	Keyword	Occurrence
1	Optical Coherence Tomography	**469**	**11**	Visual-acuity	**71**
2	Deep Learning	**297**	**12**	Degeneration	**68**
3	Artificial intelligence	**221**	**13**	Images	**66**
4	Diabetic-retinopathy	**220**	**14**	Validation	**65**
5	Macular degeneration	**127**	**15**	Prevalence	**64**
6	Diabetic macular edema	**110**	**16**	Ranibizumab	**62**
7	Age-related macular degeneration	**107**	**17**	Retina	**62**
8	Segmentation	**103**	**18**	Quantification	**60**
9	Classification	**102**	**19**	Automated detection	**59**
10	Machine learning	**75**	**20**	Fluid	**54**

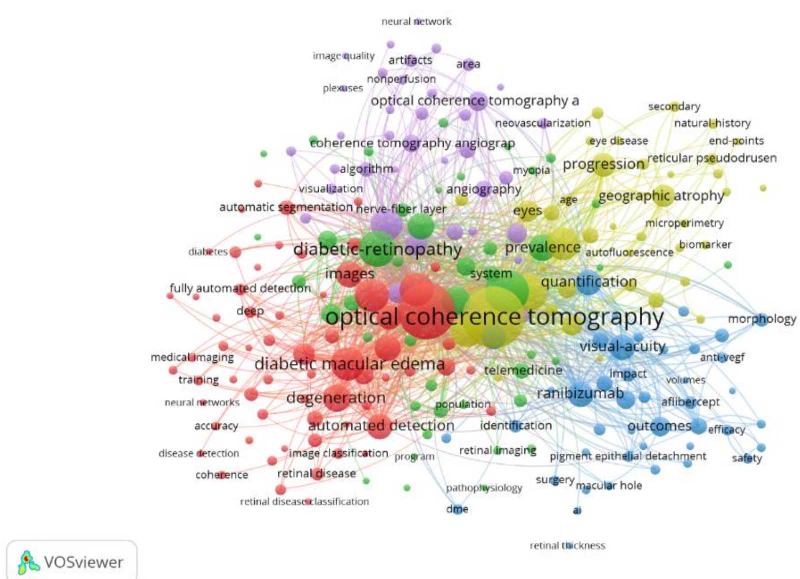


Figure 7. Network analysis map of the top keywords in retinal diseases detection using AI enhanced OCT.

DISCUSSION

2.9. Annual publications

In this study, a bibliometric analysis was conducted on 765 publications on AI-enhanced OCT for retinal disease detection. Over recent years, the number of annual publications on this topic has steadily increased, reflecting the rapid advancement and growing adoption of AI in retinal diagnostics. This trend aligns with findings from another bibliometric study, which also reported a gradual rise in AI-related research on retina [18], further highlighting the expanding interest in this field.

2.10. Authors

The most prolific authors in this field include Ursula Schmidt-Erfurth, Hrvoje Bogunovic, and Gregor S. Reiter from the Medical University of Vienna, Austria. Their extensive contributions to AI-driven retinal disease detection, particularly using OCT-based methods [19,20,21], highlight their influence in the field. Identifying leading researchers such as these can help foster collaborations, enhancing productivity across institutions. Notably, Sophie Riedl and Wolf-Dieter Vogl, also among the top ten most prolific authors, are from the same institution, underscoring the Medical University of Vienna's strong research foundation in AI applications for retinal diseases.

2.11. Countries and organizations

The top three countries in the field of ophthalmology were the USA, China, and the UK. In terms of institutions, the leading organizations were the Medical University of Vienna (Austria), Moorfields Eye Hospital (UK), and Oregon Health & Science University (USA). Interestingly, while the Medical University of Vienna and its affiliated authors dominated the field with their publications, Austria ranked only fifth among the top ten most prolific countries. This highlights the significant impact a single institution can have, as opposed to having multiple institutions within a country. For example, the USA had three institutions, while China and the UK each had two institutions in the top ten, while Austria had just one institution leading the field.

Furthermore, these top three countries also led in terms of citations, reflecting their qualitative impact compared to other countries, including Austria. Austria, known for its high prevalence of visual impairment and blindness—particularly among children and young adults [22]—may explain the increased interest among ophthalmologists in using AI for the early detection of various eye and retinal diseases [23].

2.12. Journals

In terms of the most productive journals, the majority were ranked in Q1 or Q2 quartiles and had an IF above 2. This indicates a growing quality in the published articles within the field. Such trends can help guide researchers, both in terms of where to focus their reading and where to consider publishing their work. Notably, *Scientific Reports* emerged as the most productive journal in our analysis, although another study ranked it 9th in terms of publication trends related to AI in ophthalmology [24]. On the other hand, *PLOS One*, which ranked as the least productive journal among our top ten, was identified as the third most productive journal among the top 15 in a different study (24).

2.13. Hotspots and frontiers

Deep Learning and Medical Imaging in Retinal Disease Diagnosis

The first cluster of keywords include the following: "deep learning," "convolutional neural network," "diabetic macular edema," "medical imaging," and "retinal disease", which highlights the intersection of advanced AI techniques and ophthalmology. Deep learning and convolutional neural networks (CNNs) are leading innovations in AI, enabling more accurate and efficient analysis of medical images [24]. These methods are particularly crucial in the detection and diagnosis of diabetic macular edema [25], a primary cause of vision impairment among diabetic patients [26]. Medical imaging plays a pivotal role, providing the essential data that AI systems utilize to identify retinal diseases with greater precision and speed

[24]. As a broad category, retinal disease encompasses several conditions, including diabetic macular edema, all of which benefit from the integration of deep learning algorithms, enhancing both early detection and treatment outcomes. This cluster demonstrates how the fusion of deep learning, especially CNNs, with medical imaging is revolutionizing the diagnosis of retinal diseases, offering clinicians advanced tools for improving patient care.

AI-Driven Screening for Diabetic Retinopathy and Glaucoma

This cluster encompasses the keywords “artificial intelligence,” “diabetic retinopathy,” “glaucoma,” “prevalence,” and “screening”, illustrating the growing role of AI in the detection and management of common eye diseases. Artificial intelligence is increasingly being applied to enhance the diagnosis and monitoring of diabetic retinopathy and glaucoma [27,28], two leading causes of blindness worldwide [29,30]. The prevalence of these conditions emphasizes the urgent need for efficient diagnostic tools, as they affect a significant portion of the global population. Screening plays a critical role in identifying these diseases early, especially since many patients with diabetic retinopathy or glaucoma may not show symptoms until the disease has progressed [31]. AI-driven screening tools offer the potential to improve the accuracy, speed, and accessibility of screenings, allowing for earlier interventions and better management of these conditions [32]. This cluster highlights the importance of leveraging artificial intelligence in addressing the high prevalence of diabetic retinopathy and glaucoma through enhanced screening processes.

Anti-VEGF Treatments in Neovascular AMD Management

This cluster includes the keywords “visual acuity,” “ranibizumab,” “anti-VEGF,” and “neovascular age-related macular degeneration”, which are all closely linked to advancements in the treatment and management of retinal diseases, particularly age-related macular degeneration (AMD). Visual acuity, a key measure of sight, is often used to assess the effectiveness of treatments for neovascular age-related macular degeneration (nAMD) [33], a leading cause of blindness in older adults [34]. Ranibizumab, an anti-VEGF (vascular endothelial growth factor) therapy, has become a cornerstone in the treatment of nAMD [35]. Anti-VEGF drugs work by inhibiting the growth of abnormal blood vessels in the retina, which is a hallmark of nAMD [36]. The use of ranibizumab and other anti-VEGF (as bevacizumab) therapies has significantly improved visual acuity outcomes in patients with nAMD, offering the potential to stabilize or even improve vision [37]. This cluster underscores the impact of anti-VEGF treatments in managing neovascular AMD, enhancing the quality of life for patients by preserving or improving vision, particularly in older populations affected by this debilitating condition.

OCT and AI in Diagnosing and Managing AMD and Geographic Atrophy

This cluster includes the keywords “optical coherence tomography”, “age-related macular degeneration”, and “geographic atrophy”, reflecting the significant role of advanced imaging techniques in the diagnosis and management of retinal diseases. OCT has revolutionized the way clinicians visualize and monitor the retina, providing high-resolution images that are crucial for diagnosing AMD and its progression [38]. AMD, particularly its late-stage form, geographic atrophy (GA), leads to the degeneration of retinal cells, causing irreversible vision loss [39]. OCT is particularly valuable in detecting the early signs of AMD and tracking the development of GA, enabling more accurate assessments of disease progression and treatment outcomes [40]. As geographic atrophy represents a major complication of advanced AMD, the ability to monitor its spread through OCT enhances our understanding of the disease and informs therapeutic strategies. This cluster highlights the critical role of OCT in early detection and ongoing management of AMD and GA, helping clinicians make timely interventions to preserve vision in affected patients, and develop it by developing a certain AI technique in these methods.

AI and Advanced Imaging in Diabetic Retinopathy Diagnosis and Management

This cluster of keywords: "angiography", "diabetic retinopathy", "optical coherence tomography", "artificial intelligence", and "visualization" highlights the intersection of advanced imaging techniques and AI in addressing DR, a leading cause of blindness among diabetics. Angiography, including fluorescein and indocyanine green angiography, helps visualize retinal blood flow and detect microvascular changes in DR [41]. When combined with OCT, which provides high-resolution, cross-sectional retinal images, these methods enable more accurate and detailed assessment of DR. AI plays a transformative role by automating the analysis of OCT and angiography images [42], allowing for early detection of subtle signs of DR. The integration of AI-driven tools with advanced visualization techniques enhances clinician's ability to interpret complex retinal data, making diagnosis and monitoring more efficient [43]. This combination facilitates personalized treatment plans, where AI can predict disease progression and optimize interventions tailored to individual patients, potentially reducing the risk of vision loss. As AI continues to evolve, it is expected to automate routine tasks, improve access to diagnostic services, and empower clinicians with better decision-making tools. This cluster reflects a promising trend in ophthalmology, where technological advancements are driving significant improvements in the early detection, monitoring, and management of diabetic retinopathy, ultimately contributing to better patient outcomes and reducing the global burden of vision impairment from diabetes.

3. CONCLUSION

To the best of our knowledge, this is the first bibliometric analysis focused on articles examining the use of AI-enhanced OCT imaging for retinal disease detection. Since 2017, there has been a notable increase in research in this area. The United States has made the largest contribution to the field, with the Medical University of Vienna being the most productive institution. Scientific Reports emerged as the journal with the highest contribution, and Ursula Schmidt-Erfurth was identified as the most prolific author. Research trends continue to center on the application of AI across various OCT techniques for the diagnosis and study of different retinal diseases.

4. LIMITATION

This study had several limitations. First, only the WoSCC was included, despite being one of the most commonly used databases in bibliometric analyses; other databases such as PubMed, Scopus, and Cochrane were not considered although including these databases might yield additional records. Second, we restricted our analysis to articles published in English, excluding research published in other languages, this restriction may exclude around 5-10% of relevant non-English publication, which may result in language bias. Finally, the quality of the included studies was not assessed, meaning that articles of varying quality were treated equally in our analysis.

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الكشف الآلي عن أمراض الشبكية باستخدام التصوير المقطعي لتماسك العين المعزز بالذكاء الاصطناعي: التحليل الببليومتري

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الملخص

الخلفية والاهداف : أحدث الذكاء الاصطناعي ثورة في تصوير التماسك البصري المقطعي، مما يُحسّن الكشف عن أمراض الشبكية، مثل اعتلال الشبكية السكري، والتنكس البقعي المرتبط بالعمر، والجلوكوما. يُقدّم هذا التحليل الببليومتري للذكاء الاصطناعي في التصوير المقطعي البصري. أجرينا بحثًا منهجيًا في قاعدة البيانات "شبكة العلوم الأساسية" حتى 22 يناير 2025، باستخدام مصطلحات الذكاء الاصطناعي والتصوير المقطعي البصري. دُرست المقالات والمراجعات المنشورة في المجلات العلمية حول هذا الموضوع بناءً على اتجاهات النشر، وإنتاجية المؤلفين، والانتماء إلى المؤسسات، وتزامن الكلمات المفتاحية.

منهجية الدراسة : أُجري التصور باستخدام برنامج فوس فيوور (1.6.20). حُلّلت 765 مقالة، مع اتجاه متزايد في المنشورات، بقيادة الولايات المتحدة الأمريكية (30.7%)، والصين (23.3%)، والمملكة المتحدة (11.1%) في إنتاج الأبحاث.

النتائج : كانت الجامعة الطبية في فيينا هي المؤسسة الأكثر استشهادًا (9.0%)، بينما كانت مجلة "التقارير العلمية" الأكثر إنتاجية (7.3%). كانت الكلمات المفتاحية الأكثر شيوعًا هي "التصوير المقطعي البصري التوافقي"، و"التعلم العميق"، و"اعتلال الشبكية السكري"، بترددات 469 و297 و221 على التوالي.

الاستنتاجات : اتسمت مراجعتنا للتقنيات المُحسّنة بالذكاء الاصطناعي لعلاج أمراض الشبكية بالشمولية والمنهجية، حيث حددت الاتجاهات الرئيسية ومجالات البحث الحالية. ومع استمرار نمو إنتاجية البحث

الكلمات الدالة: الذكاء الاصطناعي، التصوير المقطعي البصري التوافقي، أمراض الشبكية، التعلم العميق، اعتلال الشبكية السكري