

AI Meets the Eye: A Multimodal Imaging Approach to Detect Ocular and Systemic Diseases



INTRODUCTION

- The human eye provides a unique and direct perspective into systemic health. Anatomical structures such as the retina, lens, and retina serve as early indicators for both localized and systemic diseases.
- Recent advancements in artificial intelligence (AI) have significantly improved the interpretation of ophthalmic images. These technologies now offer rapid, non-invasive, and scalable screening for a variety of health conditions.
- Existing research demonstrates that AI can reliably diagnose ophthalmic diseases such as diabetic retinopathy, glaucoma, and age-related macular degeneration (AMD). Furthermore, ocular imaging has shown potential for detecting systemic conditions, including dementia, stroke risk, and hypertension.

OBJECTIVE

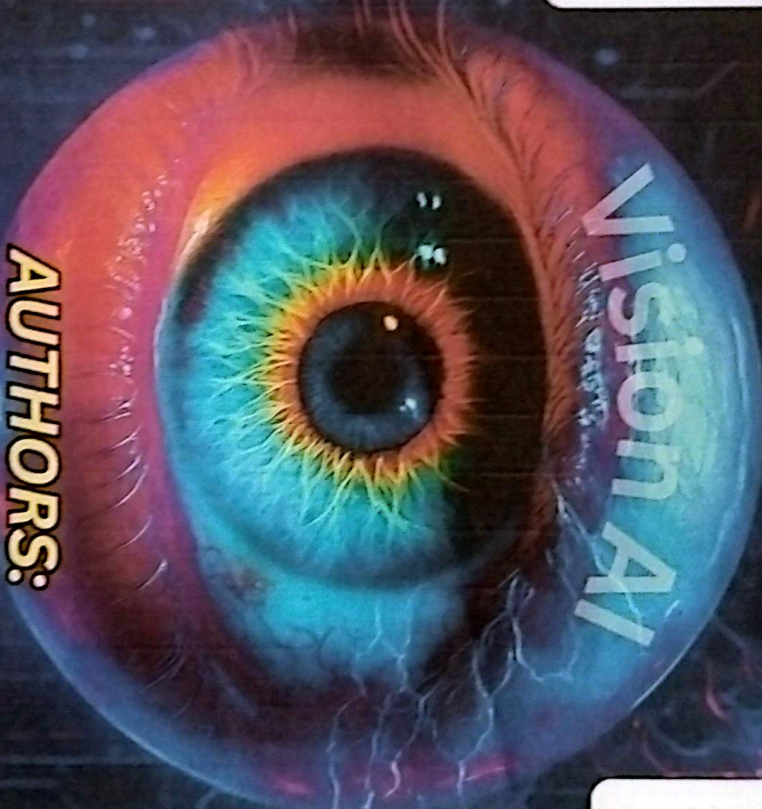
- This study aims to design and evaluate a high-resolution, AI-driven diagnostic platform capable of analyzing retinal, fundus, and axial images.
- The objective is to develop an integrated system that identifies not only eye-specific diseases but also early markers of neurological, metabolic, and inflammatory diseases.
- Ultimately, the goal is to broaden the diagnostic scope, making early detection of a range of systemic diseases accessible and efficient.

METHODOLOGY

- The proposed diagnostic system will leverage multi-modal, high-resolution imaging data.
- Functional photography.
- Circular coherence tomography (OCT) scans.
- Anterior segment images.
- A combination of Convolutional Neural Networks (CNNs) and ensemble deep learning models will be trained on annotated datasets. These datasets will encompass:
- Retinal diseases (e.g., diabetic retinopathy, hypertensive retinopathy, AMD).
- Lens conditions (e.g., pigment dispersion syndrome, cataract).
- Keratic opacities (e.g., keratic precipitates, scleritis).
- To enhance transparency and clinical acceptability, the study will incorporate explainable AI techniques, such as visual decision pathways and interpretable heatmaps, clarifying how the models arrive at their conclusions.
- Model performance will be rigorously validated against clinical diagnoses, employing standard metrics such as:
- Sensitivity.
- Specificity.

REFERENCES

1. [Reference 1]
2. [Reference 2]
3. [Reference 3]
4. [Reference 4]
5. [Reference 5]
6. [Reference 6]
7. [Reference 7]
8. [Reference 8]
9. [Reference 9]
10. [Reference 10]



AUTHORS:

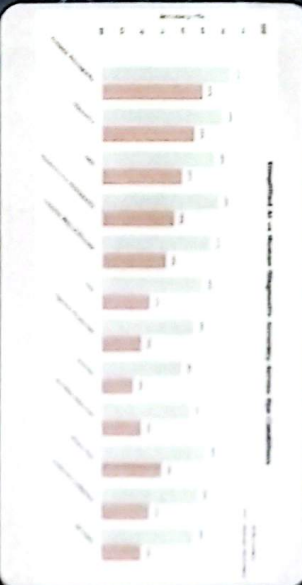
NABEEL AHMED CHOCHAN **HAYAN ATIF**
nabeelmedchohan15@gmail.com hayanhayan0321@gmail.com

CO-AUTHORS:

SUMAN FAROOQ CHOCHAN, HAMINA REHMATULLAH,
MUHAMMAD TAUHA MAJID, PASHA SOHAL.

RESULTS

- Preliminary evidence from the literature indicates that AI-based analysis of retinal images can achieve:
- Sensitivity rates exceeding 90%.
- Specificity approaching 98% for disease detection.
- AI models have also demonstrated the ability to identify early biomarkers of cardiovascular and neurodegenerative disorders via analysis of microvascular changes in the retina.
- This AI-driven platform is anticipated to surpass traditional screening methods, particularly in underserved settings and regions lacking specialist



DISCUSSION AND ADDITIONAL INSIGHTS

- The integration of explainable AI is crucial. By visualizing decision pathways and providing interpretable results, clinicians can better trust and adopt these systems in practice.
- The multi-input approach—combining Fundus, OCT, and anterior segment images—enables comprehensive coverage of both common and rare ocular and systemic diseases.
- In underserved or remote areas, where ophthalmologists or specialists may be scarce, such an AI-based system could significantly improve equity in healthcare access.
- The scalability and efficiency of this technology also align with public health goals, enabling large-scale population screening and early intervention strategies.

CONCLUSION

- This research proposes a robust AI-based tool for comprehensive ocular and systemic disease screening.
- By merging high-resolution imaging with interpretable AI models, the project seeks to redefine early disease detection, facilitate telemedicine, and advance preventive healthcare.
- The anticipated impact includes enhancing accessibility and innovation in population-level screening, ultimately transforming the eye into a reliable gateway for broader health assessment and early intervention.

ALT TEXT: A glowing sci-fi eye surrounded by digital scans, symbolizing AI eye diagnostics.

1. INTRODUCTION:
 The Ecological system is being adverse effects of climate change, caused by global warming (increased temperature) due to the increment of industrialization and increased frequency of transportation.

Why we chose Pakistan?
 Because it is the fifth most vulnerable country being climate change in the world (IPCCAR)

2. OBJECTIVES AND QUESTIONS

- Industrialisation
- Transportation
- CO2 emission
- Temperature
- Natural

3. Materials and methods

- Data collection
- Data analysis
- Conclusion

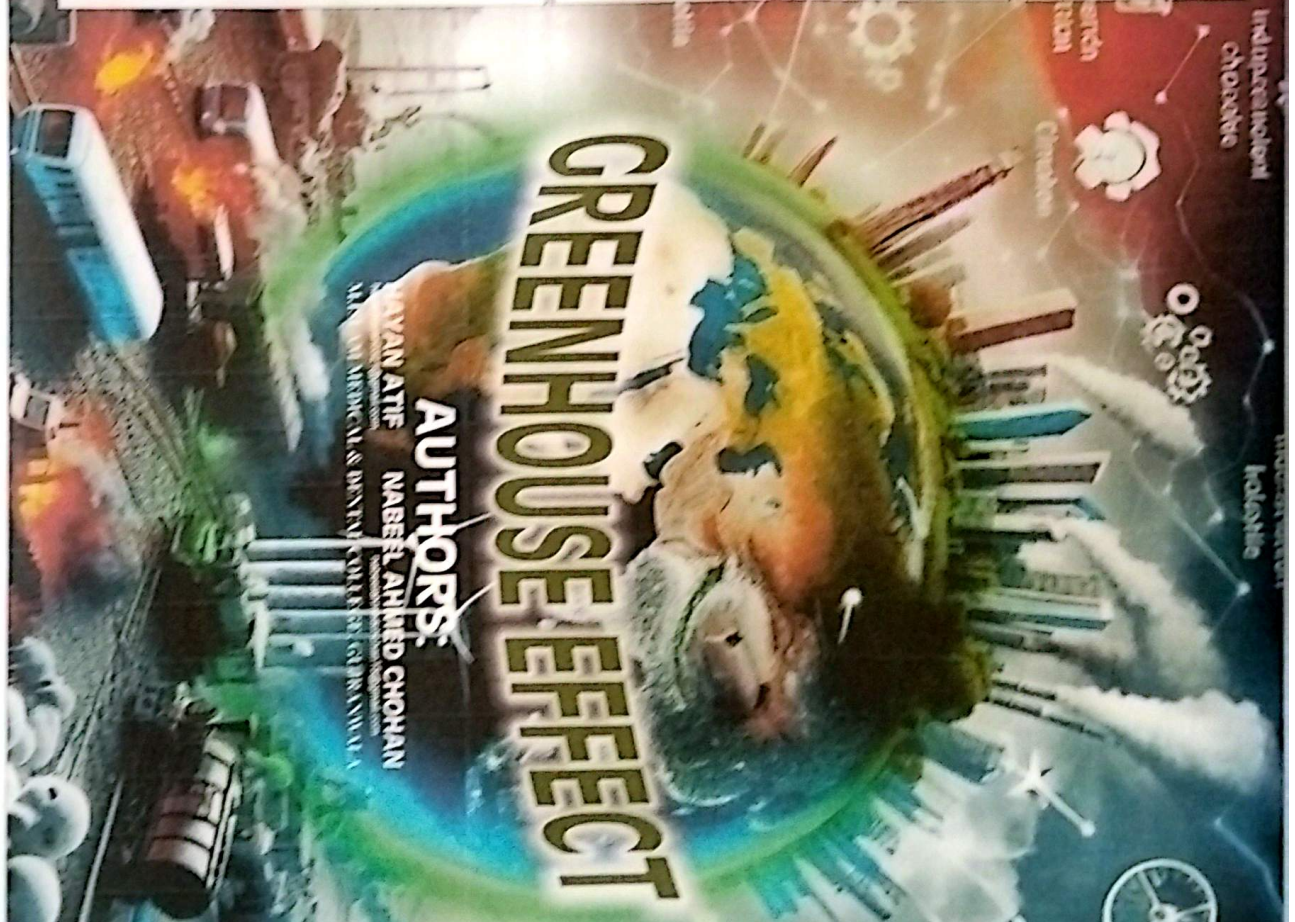
4. CONCLUSION

1. Introduction:
 The ecological system is being adversely affected by climate change, caused by global warming (increased temperature) due to the increment of industrialization and increased frequency of transportation.

2. Objectives and Questions:
 Why we chose Pakistan? Because it is the fifth most vulnerable country being climate change in the world (IPCCAR)

3. Materials and Methods:
 Data collection
 Data analysis
 Conclusion

4. Conclusion:
 The ecological system is being adversely affected by climate change, caused by global warming (increased temperature) due to the increment of industrialization and increased frequency of transportation.



AUTHORS:

SHIVAN ATIF
 NABEEL AHMED CHOHAN
 MAHMOUD MEDICAL & DENTAL COLLEGE GREEN VALLEY

GREENHOUSE EFFECT



Abstract
 The greenhouse effect is a natural process that warms the Earth's surface. When the Sun's rays reach the Earth, some of the energy is reflected by clouds and the Earth's surface. Some is absorbed by the Earth's surface and warms it. The Earth's surface then radiates energy towards the Earth in the form of longwave radiation. Some of this energy is absorbed by greenhouse gases in the atmosphere, which then radiates energy towards the Earth's surface, warming it.

The greenhouse effect is a natural process that warms the Earth's surface. When the Sun's rays reach the Earth, some of the energy is reflected by clouds and the Earth's surface. Some is absorbed by the Earth's surface and warms it. The Earth's surface then radiates energy towards the Earth in the form of longwave radiation. Some of this energy is absorbed by greenhouse gases in the atmosphere, which then radiates energy towards the Earth's surface, warming it.

As the sun warms the Earth, some of the energy is reflected by clouds and the Earth's surface. Some is absorbed by the Earth's surface and warms it. The Earth's surface then radiates energy towards the Earth in the form of longwave radiation. Some of this energy is absorbed by greenhouse gases in the atmosphere, which then radiates energy towards the Earth's surface, warming it.

As the sun warms the Earth, some of the energy is reflected by clouds and the Earth's surface. Some is absorbed by the Earth's surface and warms it. The Earth's surface then radiates energy towards the Earth in the form of longwave radiation. Some of this energy is absorbed by greenhouse gases in the atmosphere, which then radiates energy towards the Earth's surface, warming it.

4. RESULT:
 Caused by increased carbon dioxide (greenhouse gas) emissions, due to increased industrialization and frequency of transportation leading to adverse temperature and related problems.

KEYWORDS:
 Greenhouse effect, climate change, global warming, industrialization, transportation, carbon dioxide, greenhouse gases, temperature, related problems.



PARALLEL PERILS: EXPLORING THE NEXUS OF COVID-19 AND FOSSIL FUELS ON CLIMATE CHANGE

AUTHORS:

Latiba Malik
 Sulman Farooq Chohan
 M ISLAM MEDICAL AND DENTAL COLLEGE, GURUWALLA

KEYWORDS TAKEN

INTRODUCTION: Climate change refers to the long-term alterations of temperatures and weather patterns. It can be either natural or due to anthropogenic activities. Emissions that cause climate change occur from all across the world and from everyone, although certain countries emit significantly more. In 2020, the seven largest emitters (China, the United States, India, the European Union, Indonesia, the Russian Federation, and Brazil) accounted for roughly half of all world greenhouse gas emissions. Currently, 81.6% (6,287,268,636 people) of the world's population live in areas where ambient air quality does not reach the WHO annual PM2.5 guideline. This is a pressing issue that requires immediate attention and action. We will focus on how Covid-19 and fossil fuel combustion are linked with climate change.

China's Strategic Objectives and Emissions Reduction:
 The Ministry of Ecology and Environment released its "Implementation Plan for China's Eighteenth Five-Year Plan and Carbon Peak by 2030". The strategy proposes green bonds and economic advancement. On-coming CO2 and air pollution is crucial for China's green transformation. China has implemented various measures to reduce CO2, SO2, NOx, PM10, PM2.5, VOCs, NH3, and O3 emissions and air pollution. China's Air Pollution and O3 Management Plan, 2013-2022.

- SO2 emissions increased at a slower rate, by 56% between 2015 and 2017.
- CO2 emissions climbed by only 20% between 2011 and 2021, despite a 51% increase in GDP.
- Since 2005, SO2 and PM2.5 emissions have fallen due to overall emission control measures.
- After 2013, PM2.5 emissions have declined.

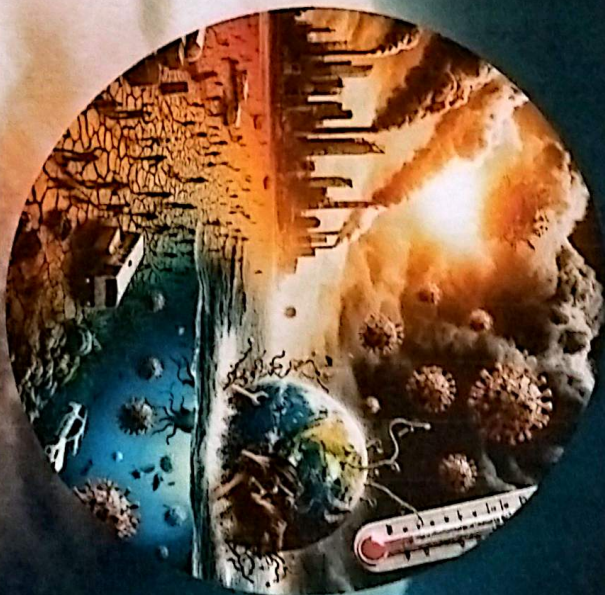
Global Impact:

- China reduced air pollution by 47% in seven years, comparable to the US's 44% reduction over 30 years since 1970.
- China's greenhouse gas emissions from fossil fuel combustion may be up to 14% lower than previous thought.
- Heavily benefits include a 44% reduction in total fuel PM2.5 emissions between 2012 and 2017, which saved 1.5 million lives per year.
- China has seen a surge in manufacturing, offsetting a drop in demand for carbon-intensive steel and cement.
- The increase in emissions in 2023, tall compared with unprecedented reductions of low-carbon energy operator capacity, mainly wind and solar.
- While the power sector being China's second-largest emitter and other significant industries, such as cement and steel, steadily raising CO2 emissions, this drop in power-sector emissions might cause a persistent, structural emissions decline for the country as a whole.

Rwandan's Fintechic Approach:

Rwandan hopes to reduce emissions from food-storing activities by switching to smarter electric vehicles. These smart cars help to improve air quality and reduce environmental damage caused by pollution. Rwanda hopes to be carbon-neutral by 2050.

The poster aims to promote public awareness about the negative impacts of climate change produced by fossil fuel burning and Covid-19. Therefore, encourage people to alter their mode of transportation. For example, instead of using gasoline-powered automobiles, use bicycles and electric cars. Moreover, it will encourage them to use public transport instead of using personal transport. It will further encourage them to use PPEs made of biodegradable material.



CONCLUSION: In a nut shell, climate change is one of the most critical issues of our day, requiring immediate and concerted action at all levels of society. The overwhelming scientific consensus highlights the truth of the effects on our planet, ranging from rising temperatures and extreme weather events to ecological changes.

As we face the complexities of climate change, it is critical that we recognize both the gravity of the crisis and the opportunities for innovation, collaboration, and positive change. Transitioning to a low-carbon economy, investing in renewable energy sources, implementing sustainable land-use practices, and encouraging international collaboration are just a few of the important actions required to lessen the consequences and create a more resilient future.

REFERENCE ARTICLES

1. The Role of COVID-19 pandemic in reducing greenhouse gas emissions: A review of the literature.
2. Impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
3. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
4. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
5. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
6. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
7. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
8. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
9. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.
10. The impact of COVID-19 on global greenhouse gas emissions: A review of the literature.

Reciprocal relationship between Covid-19 and climate change:
 The connection between fossil fuel combustion and air change.
 Covid-19 connections to fossil fuel combustion.
 Climate change mitigation measures.

CLUES:

COVID-19 AND CLIMATE CHANGE INTERLINK:

- Waste disposal by incineration: Due to a lack of toilets, crematoriums were hundreds of times more active than in 2019.
- Disposal of PPE: Disposal of personal protective equipment (PPE) during the Covid-19 epidemic has environmental repercussions. The refinement and production of polymers, particularly those used in PPE, entails significant amounts of greenhouse gases. Single-use plastics end up in landfills, accounting for more than 15% of total methane emissions.

How Covid-19 was affected by climate change?

- Significant correlation found between average temperature, minimum temperature, and air quality.
- Humidity and temperature significantly influence COVID-19 spread and mortality.
- Warm weather expedited to reduce COVID-19.
- Air temperature aids virus propagation.

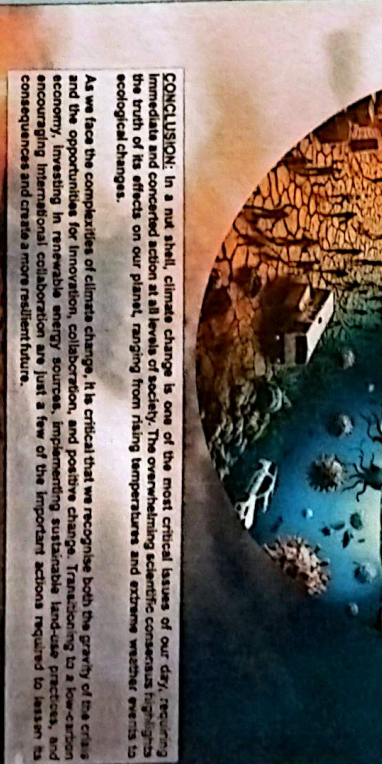
Positive Impact of Covid-19 on climate change:

- Transport emissions are responsible for the majority of the global drop. Surface mobility, such as car trips, plummeted by around half during the peak of the Covid lockdowns.
- Therefore, reducing the concentration of CO2 in the air.

EFFECTS:

Some Important Implications of climate change:

1. Higher Average Temperatures:
 - IPCC reports 1.1°C warming since pre-industrial period.
 - Model-based estimate: 4°C rise by 2100 due to anthropical climate change causes.
 - Despite slight increase, marine heatwaves occur each summer.
2. Extreme weather events:
 - Evolution of weather systems leading to intense, unpredictable events.
 - Increased harshness of droughts, hurricanes, floods.
3. Impact on Natural Environment:
 - Forest fires become more intense as climate conditions change. For example California's Wildfire when occurred in 2020.
 - Desertification: Certain locations become more arid and susceptible to desertification.
 - Gases and ice sheets are decreasing worldwide.
 - Part and animal ranges alter due to environmental adaptations.



[The poster illustrates the link between COVID-19, fossil fuels, and climate change.]