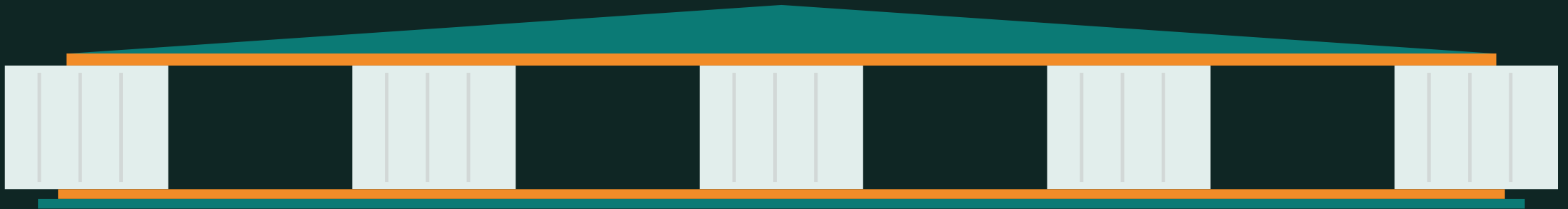


PH.D. • THESIS DEFENCE

Deep Learning for Early Detection of Diabetic Retinopathy

PhD Thesis Defence

Research Scholar Name • Prof. Supervisor Name • Computer Science



Agenda

01

Background

02

Research questions

03

Methodology

04

Findings

05

Contribution

Background and motivation

- ▶ Diabetic retinopathy is a leading cause of preventable blindness
- ▶ Screening needs specialists who are scarce outside cities
- ▶ Automated screening could reach far more patients

RESEARCH GAP

Few models are validated on low-cost camera images from rural clinics.

01

RESEARCH QUESTIONS



Research questions

01

RQ1

Can a lightweight model
match specialist grading?

02

RQ2

How robust is it to low-
quality images?

03

RQ3

Does it help clinicians in real
screening camps?

Related work

Theme	Key findings	What is missing
Theme A	Established baseline methods	Limited to lab settings
Theme B	Recent data-driven approaches	Small, narrow datasets
Theme C	Field studies	No comparative evaluation

Summarise your literature here.

02

METHODOLOGY



Research design



Collect

Images from partner clinics



Label

Graded by two specialists



Train

Compact CNN with
augmentation



Validate

Field trial in screening
camps

Data and sample

18,000

retinal images

6

partner clinics

3

field camps

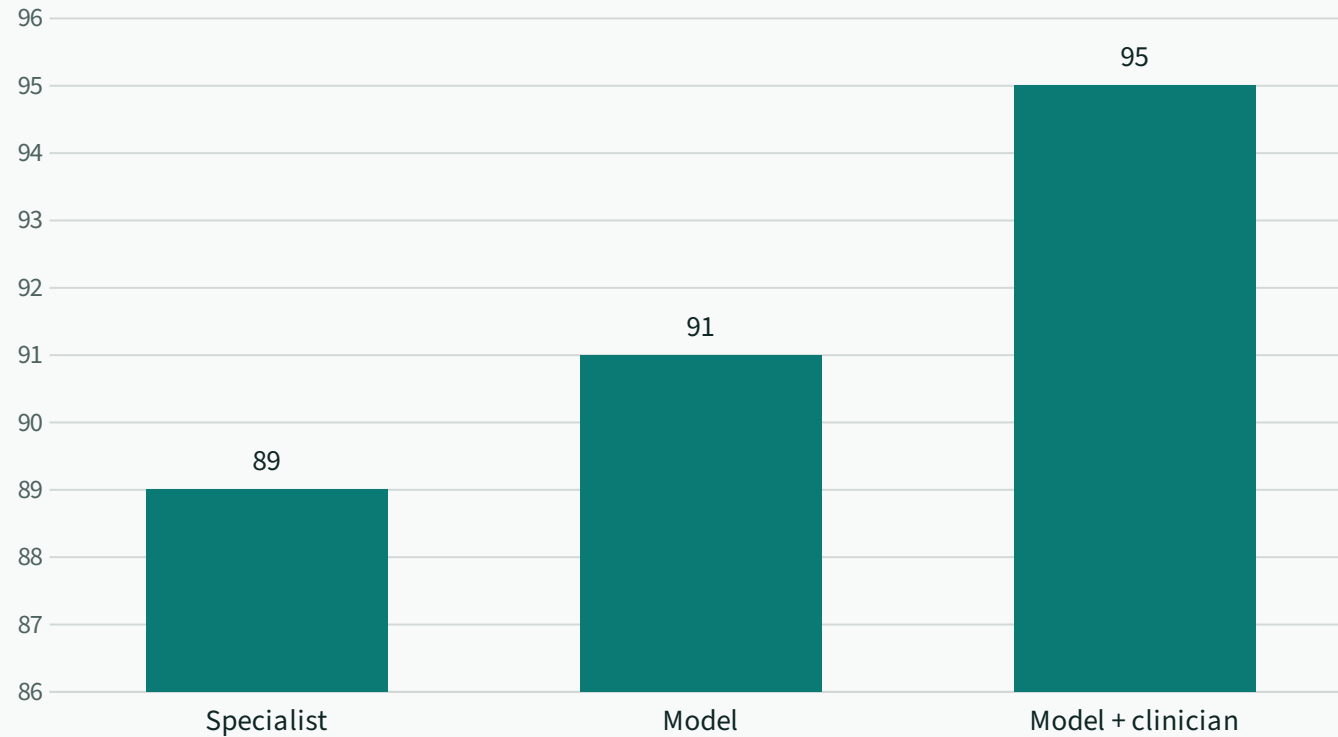
Describe your own dataset.

03

FINDINGS



Key result



The model matched specialists, and the combination performed best (sample data).

Sample data for illustration — replace with your own figures.

Findings vs hypotheses

Hypotheses

- ✓ Model reaches specialist level
- ✓ Works on low-cost cameras
- ✓ Clinicians trust it

What we found

- Matched specialists overall
- Needs image-quality check
- Trust grew with explanations

04

CONTRIBUTI ON



Contributions

01

Dataset

A labelled rural-clinic image set.

02

Model

A compact, accurate classifier.

03

Evidence

Field validation in real camps.

Limitations and future work

- ▶ Single region; needs wider validation
- ▶ Image quality varies across devices
- ▶ Long-term outcome tracking is future work

Publications

- ▶ Paper 1 — journal name, year (published)
- ▶ Paper 2 — conference name, year (accepted)
- ▶ Paper 3 — journal name (under review)

Thank you

I welcome your questions.

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