



# IMVC 2024

# CONFLUENCE

Patents: 10,582,189 - 11,158,060 - 11,176,675 - 11,328,822 - 11,298,062 - 11,347,831 - 17/890,289

THE PROBLEM

# Diagnostic Errors

\$100B in cost savings with improved Dx accuracy

↓ Mis-Diagnoses (FP) & Missed Diagnoses (FN)



40 Million  
People  
Worldwide

12M Americans affected annually

Delayed diagnoses accounts for 10%  
of patient deaths

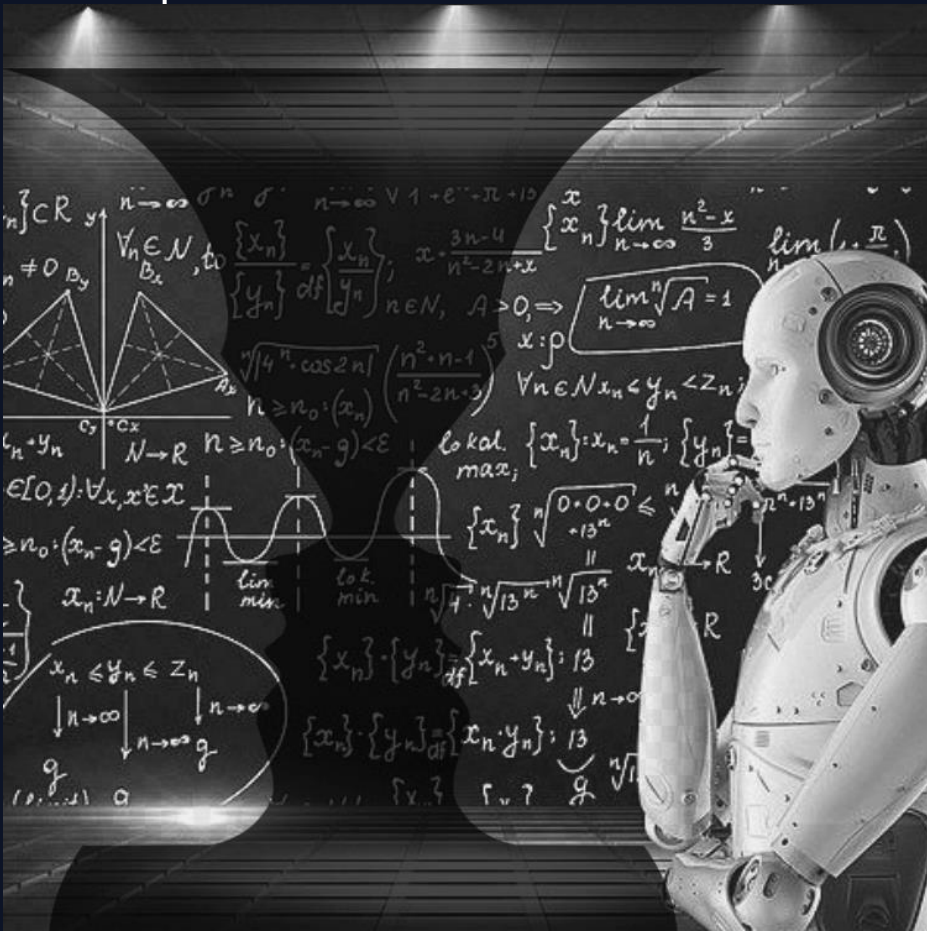
Globally, errors occur at a rate  
of 3%-5%



# What is Deep Learning for ALL?

**Human-in-the-Loop**

**INCREASE MEANING FOR  
BOTH HUMANS AND AI**



# Our Approach

**ENHANCING** image inputs

**Advance Image Intelligence**

**BUILDING** knowledge outputs



# APPLY LesionOptix ViZEZE Tool

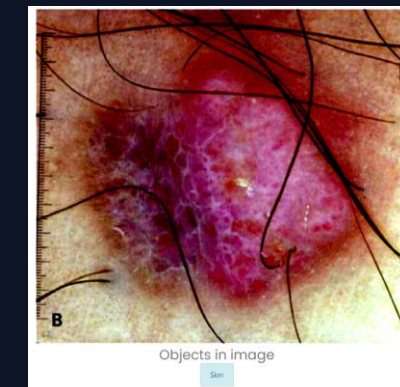
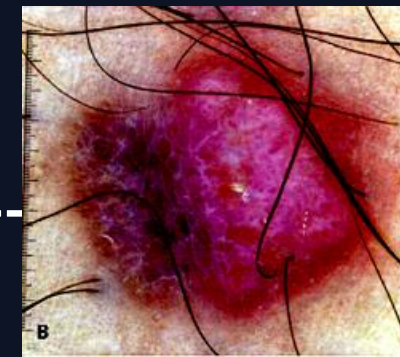
ambiguity



AI

HUMAN

clarity



# Deep Learning for ALL

UNLOCK Hidden Data

ASK Better Questions

REFINE Ground Truths

REDUCE Diagnostic Errors

↓ Mis-Dx (FN)

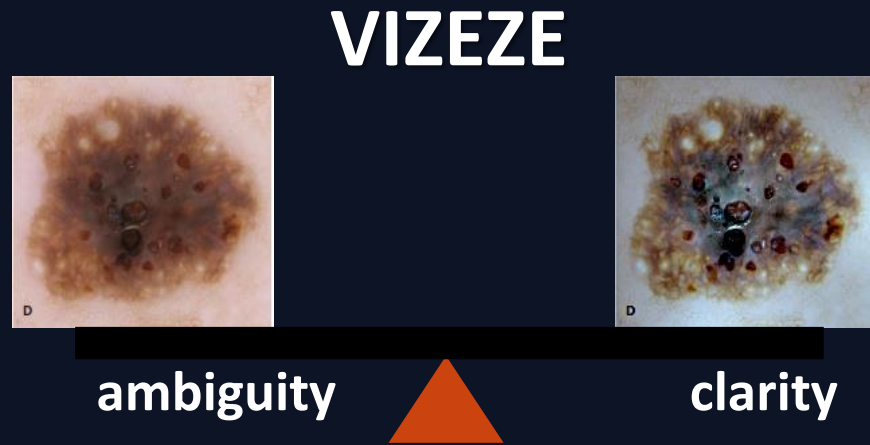
↓ Missed Dx (FP)



SUPPORT Early Detection



# Image Intelligence Tools



## Serial Color Reduction Segmentation (SCORES)

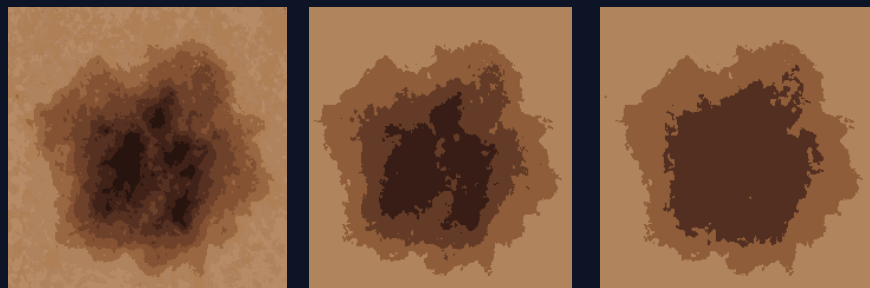


Figure-Ground Contexts

## Stitch n' Peel (SnP)



Reduces Volume & Complexity  
of Pixel Content

# DERMATOLOGY - SKIN CANCERS

## Early Detection



**Stages 0-I  
95-99% Cure**

**Melanoma  
SCC, BCC**

**10%-30% from  
Existing Nevi**

**Stage IV  
Drops to 22%**

**Melanoma  
2<sup>nd</sup> Deadliest  
Form of Skin CA**

**70%-90% are  
de novo in Origin**

**25X Difference in  
Treatment Costs  
& Lawsuit Claims**

**Prevalence &  
Detection Varies  
with Skin Type**

**↑ Heterogeneity  
and Individual  
Variation**



# RELATIONSHIPS – FEATURES – LANGUAGE – KNOWLEDGE

## ABCDE+EFG

Asymmetry

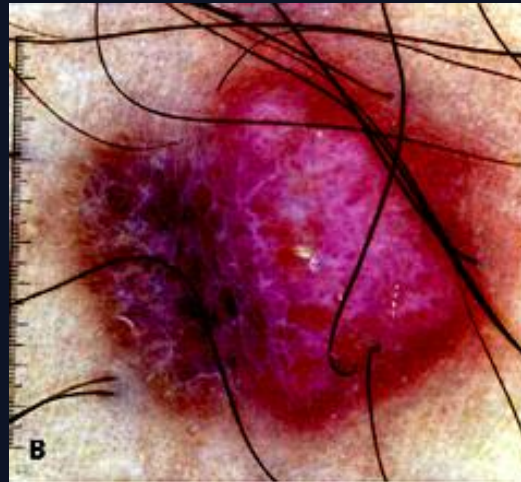
Border

Color

Different

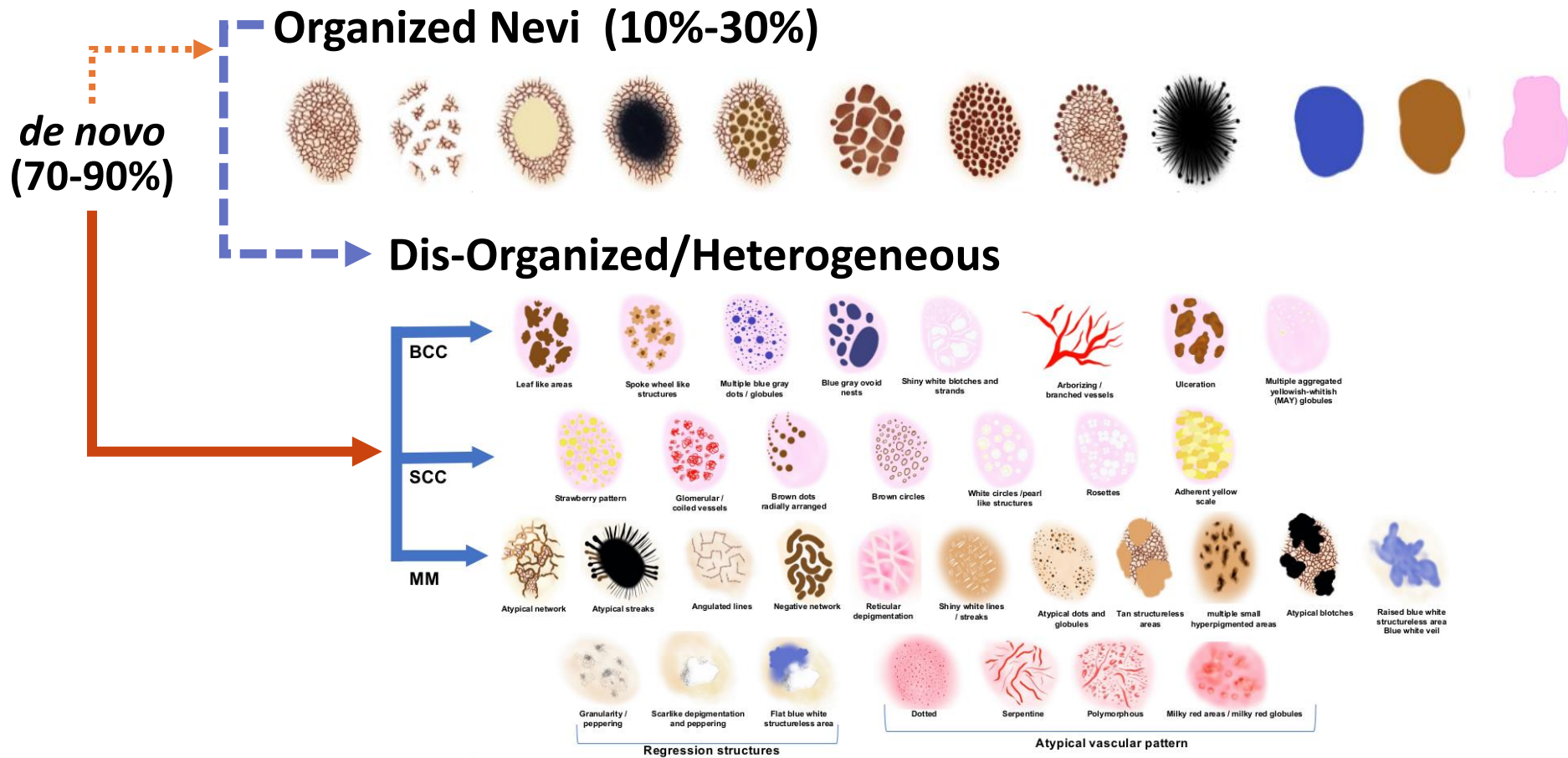
Evolving

EFG (Elevated, Firm, Growing)




# INTERIOR & EDGE ATTRIBUTES

Marghoob, Ashfaq A., Richard Usatine, and Natalia Jaimes. "Dermoscopy for the family physician." *American Family Physician* 88.7 (2013): 441-450



# Deep Learning for ALL Early Disease Detection



- **BUILDING IMAGE INTELLIGENCE**
  - **ASKING BETTER...DIFFERENT QUESTIONS**
  - **EVOLVING GROUND TRUTHS**
  - **DECREASING DIAGNOSTIC ERRORS**
- 

# LesionOptix IMAGE INTELLIGENCE TOOLS

## GUIDING PRINCIPLES/RULES



### CONSERVE

image authenticity/context



### LEVERAGE

embedded Gestalt properties  
figure & ground - symmetry



### ENHANCE

visualization/detection



### ADVANCE

perceptual & cognitive capacity



### REDUCE

image complexity & pixel volume



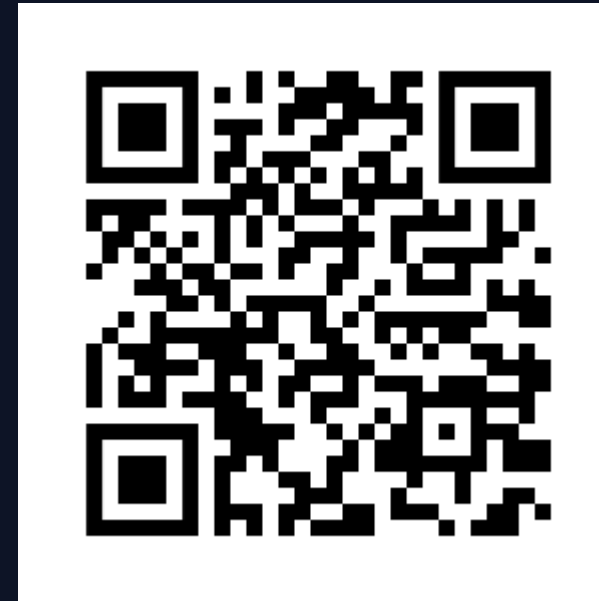
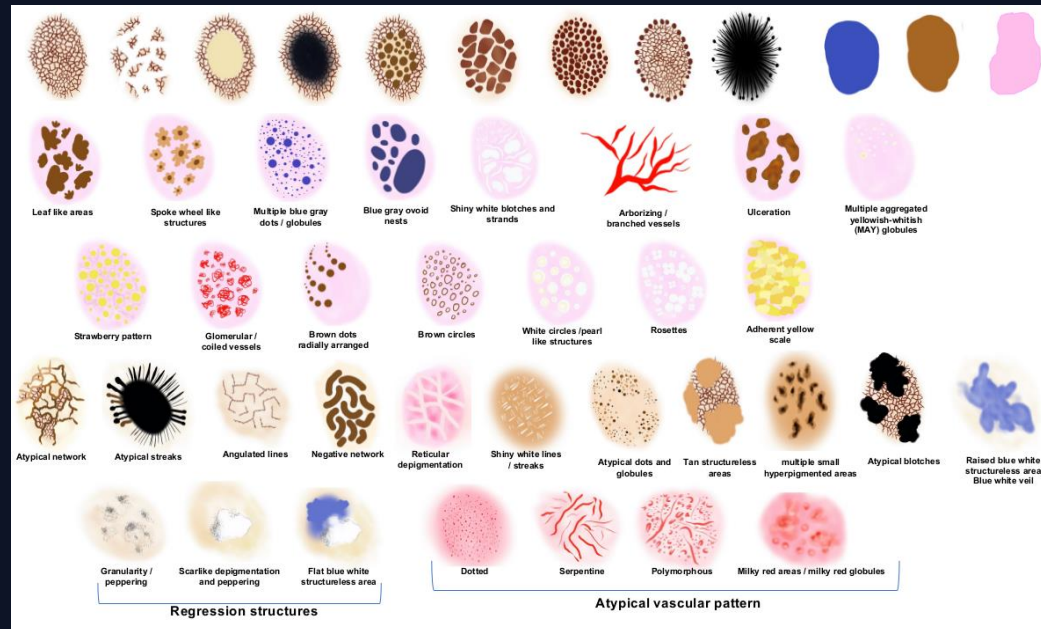
### COMBINE

ambiguity & clarity

INCREASE MEANING FOR BOTH HUMANS AND AI

# Skin Lesion Activity

Cluster || Sequence || Transform



[https://conflu3nce.com/tada\\_activity.htm](https://conflu3nce.com/tada_activity.htm)



# CONFLU3NCE TEAM

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Thank you

