

SkinAtlas: Data-Driven Dermatological Analysis of Skin Aging



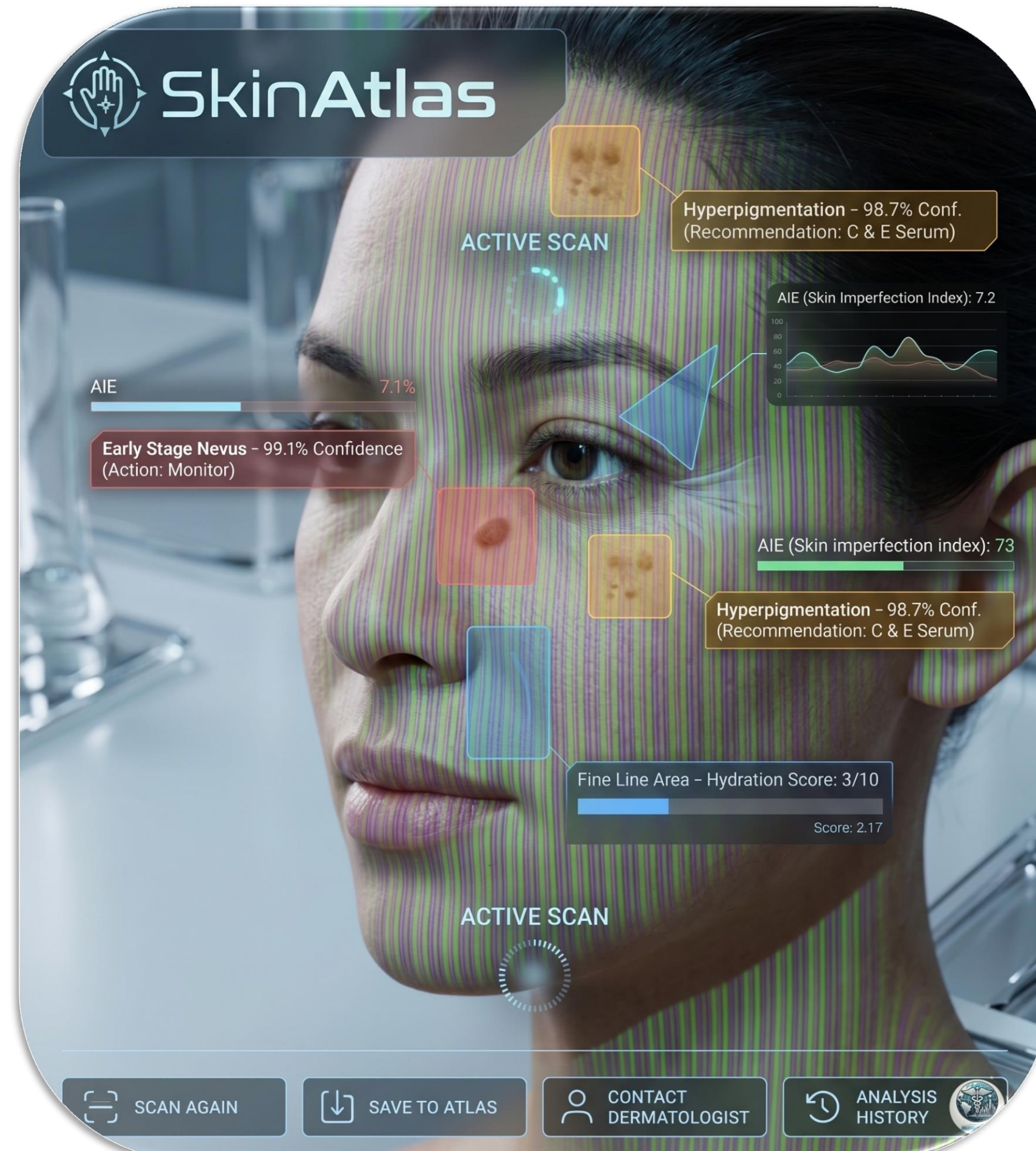
Angelina Amabi Perez Aranda MBBS^{1,2}, Mehrdad S. Beni PhD^{2,3}, Junlin Liao PhD¹, Gary Tse MD PhD^{2,3}



Center of Burn, Plastic & Wound Repair, The First Affiliated Hospital, Hengyang Medical School, University of South China, Hunan, China¹, XRAdion Dynamics Limited Hong Kong, China², School of Nursing and Health Sciences, Hong Kong Metropolitan University, Hong Kong, China³

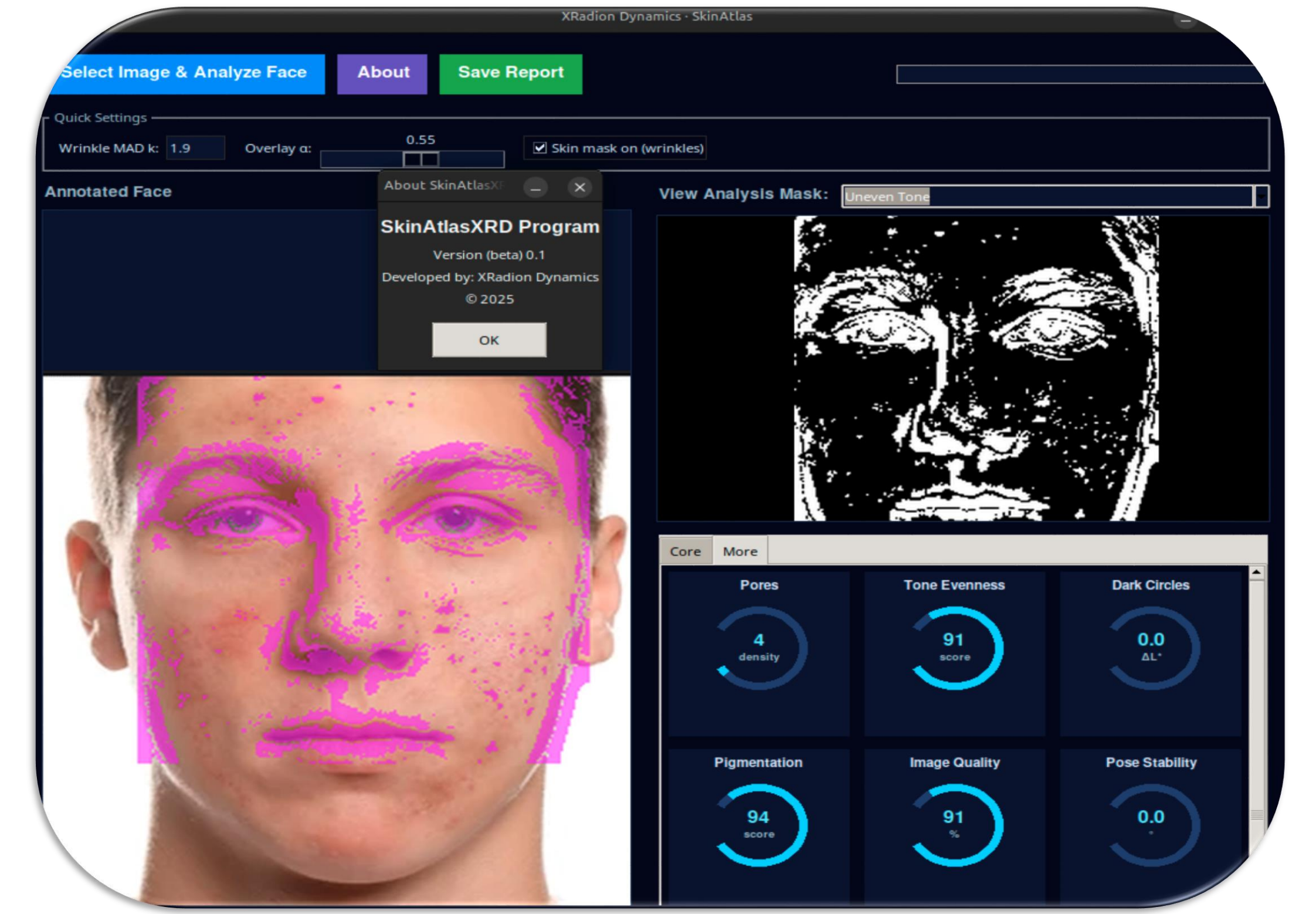
SkinAtlas is an AI-driven tool that offers personalized primary skincare recommendations.

Integrating health monitoring with personalized skincare, this framework provides routine, cost-efficient screening for early dermatological anomalies, optimizing preventative patient care through regular clinical assessments.



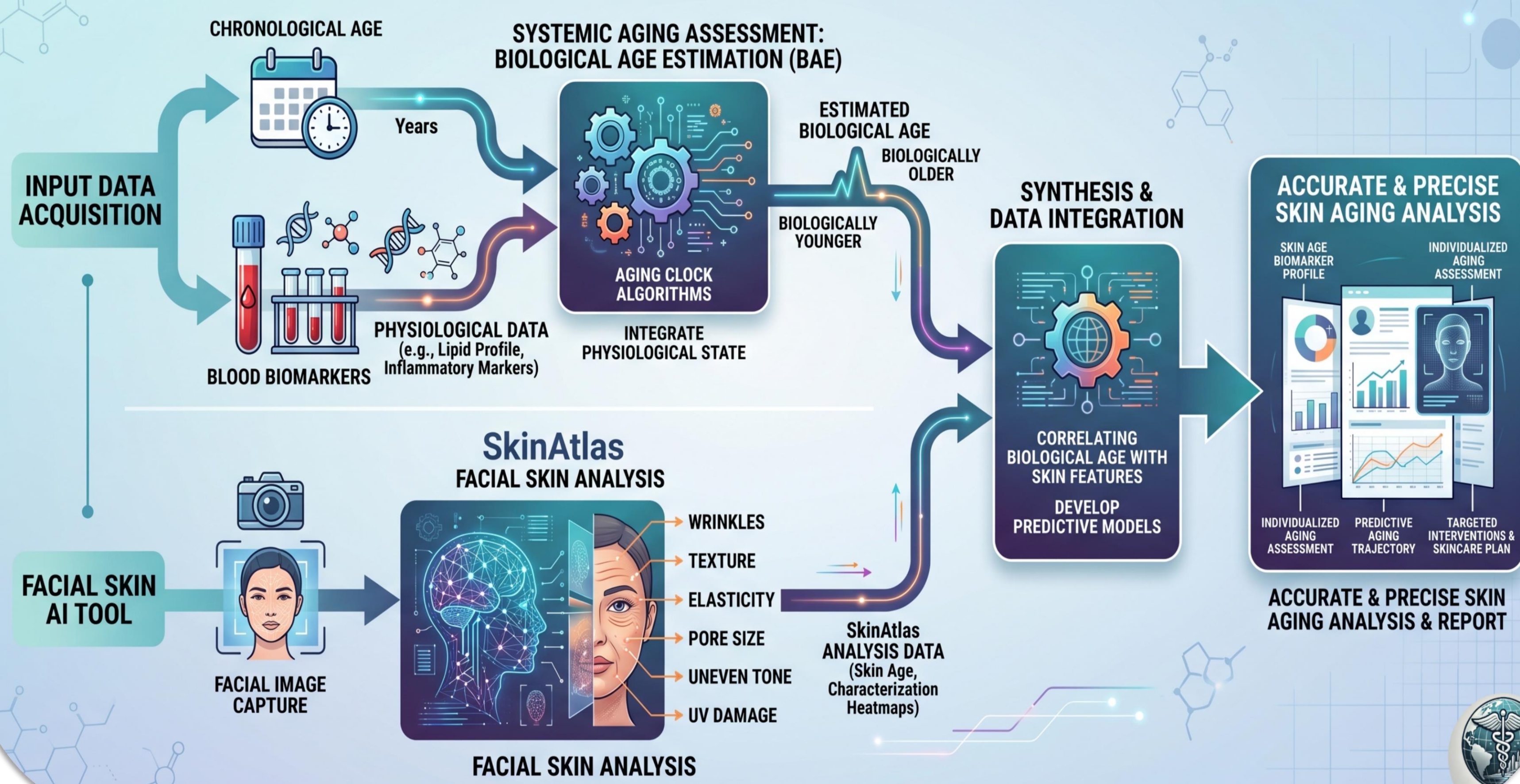
SkinAtlas Future User Interface Design

SkinAtlas delivers instant insights by detecting cosmetic features such as wrinkles, spots, and oiliness, with the capability to expand into clinical grading for conditions like acne, photoaging, melasma, and more.



SkinAtlas Version 0.1 (beta)

MULTIMODAL SKIN AGING ASSESSMENT PLATFORM: INTEGRATING BIOLOGICAL AGE AND FACIAL AI



Facial Skin Aging Framework (Biological Age + custom-trained Facial Skin AI)

Our developed method performs a multimodal skin aging assessments. The framework takes two inputs, (1) Blood Biomarkers and Chronological Age, (2) Facial Skin Images.

Using the Biological Age and Age Acceleration and Detected Skin Features the Skin Age will be determined.

Using these features appearance age metric would be derived and used as baseline.

The model will provide diet, lifestyle and specific skincare routine and products to every individual; this is important since it operates on both "inside" and "outside" the human body for making precise, user-specific assessments.

The Biological Age and Age Acceleration will be estimated from Blood Biomarkers are Using Our Developed Models.

Namely two classical methods that are (1) PCA-Dubina and (2) KDM:

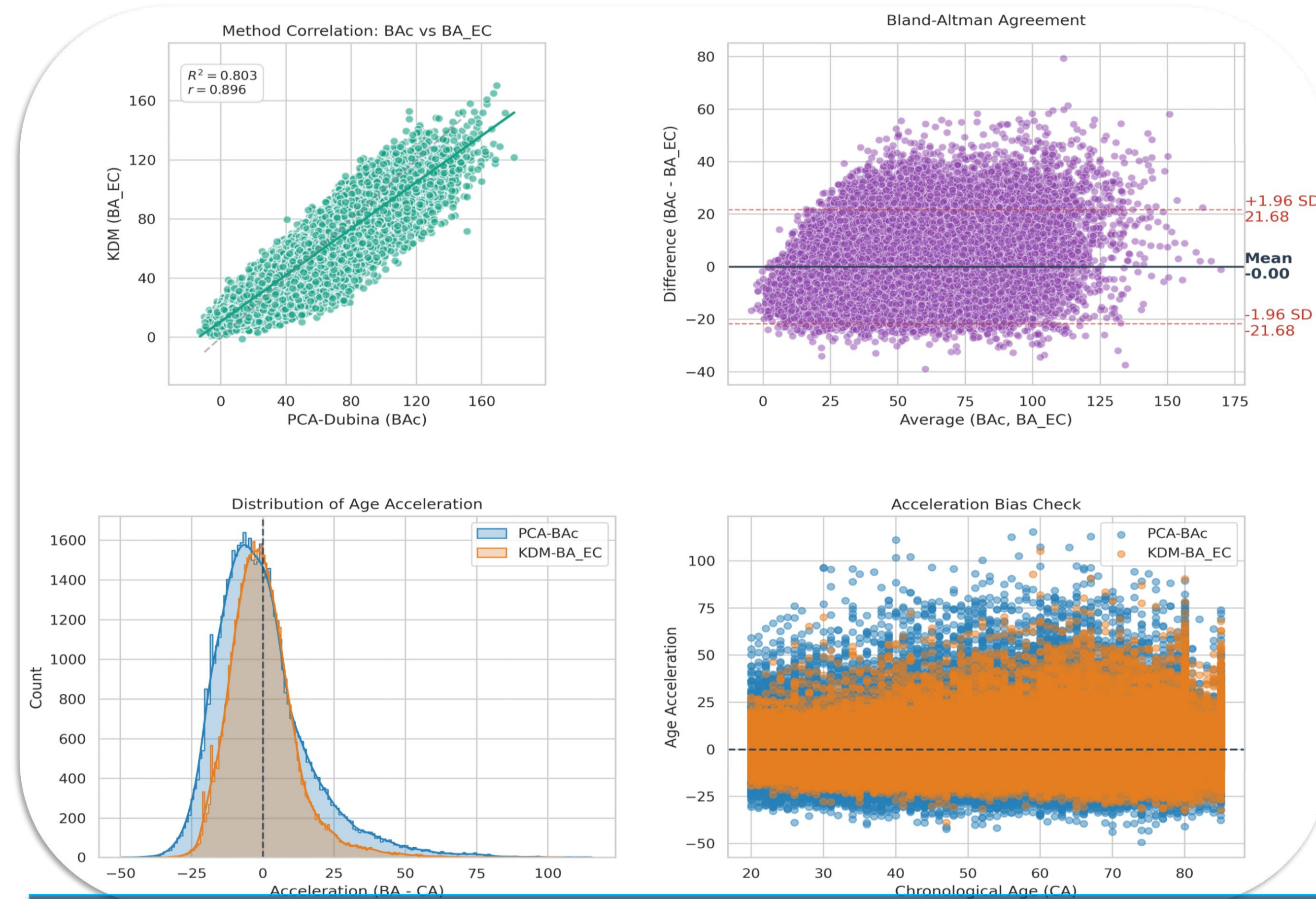
PCA-Dubina Method

$$b = \frac{\sum_{i=1}^N (BA_i - \mu_{BA})(CA_i - \mu_{CA})}{\sum_{i=1}^N (CA_i - \mu_{CA})^2}$$

$$BA_{c,i} = BA_i + (CA_i - \mu_{CA}) \cdot (1 - b)$$

KDM Method

$$BA_{EC,i} = \frac{BA_{E,i} \cdot (\sum_{j=1}^m w_j) + \left(\frac{CA_i}{S_{BA}^2}\right)}{(\sum_{j=1}^m w_j) + \left(\frac{1}{S_{BA}^2}\right)}$$



Biological Age and Age Acceleration Studies using Our Developed Tools

有诸内者，必形诸外

Whatever exists on the inside must manifest on the outside

Our VulnuScope for Wounds:



Our BACalc Model:



Our BioDyn Model:



Our ba_comp:

