



# AI in Dermatology

Term	Definition
Artificial Intelligence (AI)	The ability of machines, such as computers, to simulate human intelligence.
Machine learning	Algorithms and statistical models that are programmed to learn from data, recognizing and inferring patterns within them. This enables computers to perform specific tasks without explicit instructions from a human operator.
Supervised learning	A type of machine learning where the goal is to identify a function that best maps a set of inputs (e.g., image) to their correct output (label). This is based on learning or training on pre-matched pairs. In contrast, unsupervised learning identifies novel patterns such as groups or “clusters” in data without prior knowledge or labeling.
Overfitting	A common problem in machine learning where the model has high accuracy when tested on data from the same source as its training data, but its performance does not generalize to novel sources of data.
Neural network	A form of supervised machine learning inspired by biology where data pass through a series of interconnected neurons that are individually weighted to make predictions. During training, data pass through the network iteratively, and weights are continually adjusted to optimize matching labels to data.
Deep learning	Refers to a neural network with multiple layers of “neurons” that have adjustable weights (mathematical functions).
Convolutional neural network	A type of neural network in which the layers apply filters to identify specific features within areas of an image.



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## Skin Cancer

Take a look at this resource to learn how AI systems analyze skin cancer using clinical, dermoscopic, and smartphone images. It outlines common model types, and explains the typical AI workflow: image pre-processing, feature extraction, and classification:

**Karimzadhigh et al., 2025**

Watch this video to understand how AI can be implemented in dermatology to assist in the diagnosis of cancer:

**AI tool Deep Ensemble for Recognition of Malignancy (DERM) in triaging skin cancer**

## Acne

Take a look at this resource to learn about the main types of AI models used for acne diagnosis, including deep learning and traditional machine-learning approaches. It explains how these systems identify different lesion types and grade acne severity using common scoring tools such as IGA and GEA, and shows that combined “ensemble” models often perform best:

**Frederickson et al., 2025**

Read this resource to understand how acne AI tools are used in real-world settings, such as teledermatology platforms, mobile apps, and clinic systems. It describes applications like lesion detection, severity grading, patient triage, remote care, and treatment:

**Li et al., 2023**

Watch this video to see how AI can be used to monitor treatment response in patients with acne:

**Using Facial Skin Artificial Intelligence to Capture Acne Patients’ Response to Therapy**

## Psoriasis

Review this resource to learn how AI systems analyze psoriasis images. It explains how models detect and outline plaques, assess features like redness, thickness, and scaling, and automatically calculate PASI scores using clinical and dermoscopic images:

**Chou et al., 2025**



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Read this article to understand the current limitations of psoriasis AI models. It highlights issues such as small or biased datasets, poor performance across different skin tones, and the lack of real-world testing and external validation:

**[Choy et al., 2023](#)**

Watch this video for an overview of how AI may support psoriasis diagnosis and management.

**[The Role of AI in Psoriasis Care](#)**

## **Eczema**

Take a look at this resource to learn about common AI models used for eczema. It explains how these systems use clinical images, dermoscopy, and patient data to detect eczema, distinguish it from similar conditions, and assess severity:

**[Hammad et al., 2023](#)**

Read this resource to see how eczema AI tools are being used in teledermatology apps and web-based platforms. It describes features such as automated lesion detection, severity scoring, and differential diagnosis, along with key limitations like poor generalizability and limited validation:

**[Huang et al., 2024](#)**

Watch this video to see how AI can objectively measure eczema severity using patient-submitted photos:

**[AI-Based Objective Severity Assessment of Atopic Dermatitis Using Patient Photos](#)**

## **Moving forward: How can dermatology residents be trained in AI use?**

Review this resource to learn how AI is being integrated into dermatology residency training. It discusses current uses in education, diagnosis, and research, highlights concerns about bias and overreliance on AI, and recommends adding formal AI teaching while maintaining core clinical skills:

**[Gracey et al., 2025](#)**



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Take a look at this resource for an overview of how AI may shape the future of dermatology. It reviews current and emerging uses such as decision support, diagnostic imaging, multimodal AI, and generative tools, while noting that further validation is needed before widespread use:

**[Thang et al., 2025](#)**

## **Other resources:**

Want to learn more about AI in derm? Watch this video to gain more insight into this growing industry!

- **Video : [AI Scribe for dermatologists](#) (featuring Canadian Dermatology Association)**

Get familiar with the role of AI in dermatology by listening to the following podcasts!

1. **Spotify: The Future of Dermatology**
  - a. [Episode 123: The Ethical Integration of AI in Dermatology](#)
  - b. [Episode 122: Trusting AI: A New Era in Medicine](#)
2. **JCMS: The JCMS Dermatology Podcast with Dr Kirk Barber**
  - a. [Episode 78: AI and Skin Cancer with Dr Philippe Lefrançois](#)
3. **Youtube: European Academy of Dermatology and Venereology**
  - a. [Episode 103: Revolutionizing dermatology with AI: Insights from Prof. Alexander Navarini](#)
4. **Apple Podcast: Skinfluence with Dr. David Portela**
  - a. [Episode 31: Derm Punk and the Future of AI in Dermatology](#)
5. **Youtube: NEJM Group**
  - a. [Interrogating AI Fairness and Bias in Dermatology and Beyond with Dr. Roxana Daneshjou](#)



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