

# Chapter 8

## Prediction of Skin Diseases Using Machine Learning

**Siddhartha Kumar Arjaria**

*Maulana Azad National Institute of  
Technology, India*

**Priyanshu Shrivastava**

*Rajkiye Engineering College, Banda,  
India*

**Vikas Raj**

*Rajkiye Engineering College, Banda,  
India*

**Monu Kumar**

*Rajkiye Engineering College, Banda,  
India*

**Sunil Kumar**

*Rajkiye Engineering College, Banda,  
India*

**Jincy S. Cherian**

*The Bhopal School of Social Sciences,  
Bhopal, India*

### ABSTRACT

*Skin disease rates have been increasing over the past few decades. It has led to both fatal and non-fatal disabilities all around the world, especially in those areas where medical resources are not good enough. Early diagnosis of skin diseases increases the chances of cure significantly. Therefore, this work is comparing six machine learning algorithms, namely KNN, random forest, neural network, naïve bayes, logistic regression, and SVM, for the prediction of the skin diseases. The information gain, gain ratio, gini decrease, chi-square, and relieff are used to rank the features. This work comprises the introduction, literature review, and proposed methodology parts. In this research paper, a new method of analyzing skin disease has been proposed in which six different data mining techniques are used to develop an ensemble method that integrates all the six data mining techniques as a single one. The ensemble method used on the dermatology dataset gives improved result with 94% accuracy in comparison to other classifier algorithms and hence is more effective in this area.*

DOI: 10.4018/978-1-7998-7888-9.ch008

## **INTRODUCTION**

Skin disease is one of the most important and gradually increasing disease in the world. Most of the skin diseases cases increases just my touching or getting in contact with the affected person. These types of diseases causes heavy financial, psychological and emotional burden on patients and on their families. As a result people in the world specially those who belongs to poor resources region, are unable to fight against these challenges.

Some of the common causes of skin disease includes: weakened immune system, parasites, fungus or some other microorganisms residing on the skin, many viruses, genetic factors of person, getting in get in touch with allergens, irritants, or other person's infected skin, some bacteria those are confined in skin pores and hair follicles, diseases related to thyroid, kidneys are some important causes of dermatology diseases. Climate change may also cause skin disease but it differs from one region to another region.

Despite the fact that dermatology diseases are characterized by large range of diseases, bulk of skin diseases belong to less than ten categories as suggested by many prevalence surveys. These results are very useful in spreading information and provide preventive programs on health, which is very essential. These diseases are also categorized as infectious (that spreads from person to person) or non-infectious.

There are a variety of symptoms of skin diseases. Some of the symptoms that seem to be due to common problem, might not be every time caused due to any skin disorder. Such type of common skin problems are sores from new shoes or roughness from tight pants. Typical indications of a skin disorder include: too much flushing, raised up bumps which have red or white color, a loss of skin pigment, a rash, which might be hurting or itchy, changes in mole color or size, scaly or rough skin, bumps that are fleshy, warts, or other skin growths, ulcers, peeling skin, discolored patches of skin, open sores or lesions and cracked skin.

Many skin diseases are not avoidable, which occurs due to some genetic conditions or any other ailments. These diseases are also categorized as infectious (that spreads from person to person) or non-infectious. However, it is possible to avert the spread of skin diseases.

Some tips to prevent these types of skin conditions are:

- Regularly washing hands with soap and water
- Taking nutritious diet
- Avoiding sharing utensils and drinking glasses with others
- Getting proper vaccines to prevent some skin disorders, like chickenpox
- Avoiding direct contact with people who have skin infections
- Avoiding excessive emotional or physical stress

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/prediction-of-skin-diseases-using-machine-learning/289724](http://www.igi-global.com/chapter/prediction-of-skin-diseases-using-machine-learning/289724)

## Related Content

---

### Spreading the News: Spreadable Media, Social Networking, and the Future of News Production

Robert J. Baron (2019). *Journalism and Ethics: Breakthroughs in Research and Practice* (pp. 695-710).

[www.irma-international.org/chapter/spreading-the-news/226703](http://www.irma-international.org/chapter/spreading-the-news/226703)

### The Influence of COVID-19 Outbreak on the Readiness of Firms to Cyber Threats

Moti Zwilling (2021). *Responsible AI and Ethical Issues for Businesses and Governments* (pp. 165-178).

[www.irma-international.org/chapter/the-influence-of-covid-19-outbreak-on-the-readiness-of-firms-to-cyber-threats/268493](http://www.irma-international.org/chapter/the-influence-of-covid-19-outbreak-on-the-readiness-of-firms-to-cyber-threats/268493)

### Education Attainment and Feminization of Labor Markets in Arab Countries with Comparisons to Eastern and Central European Countries

Fatima-Zohra Filali Adiband Amale Achehboune (2015). *Human Rights and Ethics: Concepts, Methodologies, Tools, and Applications* (pp. 163-181).

[www.irma-international.org/chapter/education-attainment-and-feminization-of-labor-markets-in-arab-countries-with-comparisons-to-eastern-and-central-european-countries/117026](http://www.irma-international.org/chapter/education-attainment-and-feminization-of-labor-markets-in-arab-countries-with-comparisons-to-eastern-and-central-european-countries/117026)

### Policy and Management Issues of Artificial Intelligence

Bistra Konstantinova Vassileva (2021). *Responsible AI and Ethical Issues for Businesses and Governments* (pp. 54-66).

[www.irma-international.org/chapter/policy-and-management-issues-of-artificial-intelligence/268486](http://www.irma-international.org/chapter/policy-and-management-issues-of-artificial-intelligence/268486)

### Value-Oriented Specification of Service Systems: Modeling the Contribution Perspective of Enterprise Networks

João Pombinho, David Aveiroand José Tribolet (2015). *Business Law and Ethics: Concepts, Methodologies, Tools, and Applications* (pp. 374-395).

[www.irma-international.org/chapter/value-oriented-specification-of-service-systems/125742](http://www.irma-international.org/chapter/value-oriented-specification-of-service-systems/125742)