# Machine learning and optimization techniques in major human fatal disorders: A Short Communication

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**Abstract**

The main objective of this short communication is to present the usage of different machine learning and optimization techniques in diagnosis of different human diseases like cancer (breast, lung, skin and prostate), diabetes, cardio and mental disorders (stress, anxiety, depression, etc.)

**Keywords:** Disease diagnosis, machine learning, swarm intelligence, optimization techniques.

## 1. Introduction

Disease diagnosis is one of the prominent areas for the computer scientist. In last two decades, several computing methods have been used in diagnosis of different human disorders. A wide variety of methods have been employed to mine images, signals, and other clinical modes of the data.

## 2. Review outcomes

Table 1 presents a brief picture of these works.

| Authors | Disease | Technique | Type |
|---|---|---|---|
| Maglogiannis et al. | Cancer | SVM | Research |
| Gayathri, et al. | Breast Cancer | Machine Learning | Survey |
| Vijayarajeswari, R., et al | Breast Cancer | SVM | Research |
| Asuntha, A., et al | Lung Cancer | SVM and optimization techniques | Research |
| Murugan et al. | Skin cancer | SVM, Random Forest, kNN | Research |
| Ashok et al. | Cervical cancer | SVM | Research |
| Nanglia | Lung Cancer | SVM and neural network | Research |
| Aličković, Emina | Breast Cancer | GA and Rotation Forest | Research |

| | | | |
|---|---|---|---|
| Çınar, Murat, et al | Prostate cancer | ANN and SVM | Research |
| Subhani, Ahmad Rauf | Mental Stress | Machine learning | Research |
| Tengnah, et al | Hyper tension | Machine learning | Research |
| Kumar et al. | Anxiety and depression | Machine learning | Research |
| Sharma et al. | Stress | Supervised learning and soft computing | Survey |
| Sharma | COVID19 | Mobile health | Short communication |
| Sharma | Mental health | Machine learning and optimization techniques | Short communication |
| Sharma | Stress | Bibliometric | Survey |
| Kaur et al. | Psychological disorder | Supervised learning | Meta-analysis |
| Samriti | Cardiac arrhythmia | Swarm intelligence | Research |
| Kaur and Sharma | Diabetes | Soft computing | Survey |
| Kaur and Sharma | Fatal disorder | Nature inspired computing | Survey |
| Gautam and Manik | Neurological disorder | Deep learning techniques | Meta-analysis |
| Omurca et al | Post-traumatic stress | Machine learning | Research |
| Shatte | Mental health | Machine learning | Review |
| Sharma and Natalia | Psychiatric disorder | Soft Computing | Editorial |
| Salehi, Elham, and Mahdi Mehrab | Mental illness | Particle swarm optimization | Research |
| SARANYA, A., and R. ANANDAN | Autism | Worm Extreme learning machine | Research |
| Prabhaka et al. | Schizophrenia | Nature inspired techniques | Research |
| Nivedha, R., et al | Emotion recognition | SVM and PSO | Research |
| Subasi, Abdulhamit | neuromuscular disorders | PSO optimized SVM | Research |
| Sharma et al. | Diabetes and cardio | Machine learning | Research |
| Passos, Ives Cavalcante, et a | Mood disorder | Machine learning | Pilot study |
| Kim, Yong-Ku, and Kyoung-Sae Na | Brain disorder | Classification techniques | Critical review |
| Lee, Yena, et al. | Depression | Machine learning | Meta-analysis |
| Ribeiro, J. D., et al | Suicide prediction | Machine learning and related techniques | Letter to editor |

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|---|---|---|---|
| Garcia-Ceja, Enrique, et al | Mental health | Machine learning | Survey |
| Librenza-Garcia, Diego, et al | Bipolar disorder | Machine learning | Systematic review |

## 3. Concluding Remarks

It has been found that the researchers across the world have utilized different machine learning and optimization techniques to diagnose different human disorders. Different types of researches like review, meta-analyses, editorial, short communication have been observed which highlight the usage of machine learning and optimization techniques in diagnosis of cancer, diabetes, cardio and different mental disorders like stress, anxiety, depression, autism etc.

## 4. References

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