



INFORMATICS INSTITUTE OF TECHNOLOGY

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**BlazeAid: Deep Learning and Explainable Artificial
Intelligence Techniques for Human Skin Burn Severity
Classification**

A dissertation

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ABSTRACT

Skin burns can be classified into three main groups according to the different characteristics as first-degree, second-degree and third-degree burns. These different types of burns need different treatments and care accordingly to better burn diagnosis. Before any initial burn care treatment detecting the burn degree is the most crucial step. Nowadays, the primary method for diagnosing and classifying skin burns is manual inspection, which takes more time and is unreliable. This study focuses on addressing this issue by developing a skin burn severity assessment system using deep learning for better burn diagnosis.

A hybrid model using convolutional neural networks in conjunction with Transfer Learning techniques like VGG16, inceptionV3 is proposed to classify the different burn degrees. Also integrating explainable artificial intelligence techniques such as LIME to explain the model's prediction and to validate the model is carried out through this research. Publicly available datasets of skin burn images will be used to develop a web-based skin burn severity classification system with good accuracy.

Initial evaluation of the proposed solution achieved a 89% accuracy rate, by using the novel hybrid approach.

Keywords: Burn Depth Classification, Deep Learning, Explainable Artificial Intelligence, Neural Networks, Transfer Learning, Severity Assessment

Subject Descriptors

• Computing methodologies → Machine learning → Machine learning approaches → Neural networks