

Title: Exploring the Landscape of Explainable Artificial Intelligence (XAI): A Systematic Review of Techniques and Applications

Author: Artificial intelligence; explainable (AI); Trust in AI; Healthcare AI; AI interpretability; AI transparency; XAI properties

Abstract: Artificial intelligence (AI) encompasses the development of systems that perform tasks typically requiring human intelligence, such as reasoning and learning. Despite its widespread use, AI often raises trust issues due to the opacity of its decision-making processes. This challenge has led to the development of explainable artificial intelligence (XAI), which aims to enhance user understanding and trust by providing clear explanations of AI decisions and processes. This paper reviews existing XAI research, focusing on its application in the healthcare sector, particularly in medical and medicinal contexts. Our analysis is organized around key properties of XAI—understandability, comprehensibility, transparency, interpreta.

Keywords: Artificial intelligence; Ethics; Dental education; Dentistry; Health profession; Informatics; Machine Learning; Patient care

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