

# Deep Digital Holographic Microscopy (DDHM)

ID: 2019-010

## Executive Statement:

A groundbreaking technology that combines machine learning with advanced microscopy to analyze biospecimens without traditional imaging processes.

## Technology Overview:

Deep Digital Holographic Microscopy (DDHM) is an innovative invention that leverages the power of machine learning and advanced microscopy techniques. By utilizing an interferometer to create phase interference patterns, DDHM employs deep learning algorithms to extract vital information from biospecimens. This method allows for virtual staining of specimens, which overcomes the limitations associated with traditional staining methods in medical diagnostics, offering a more efficient, cost-effective, and non-destructive alternative.

## Key Advantages:

- Eliminates the need for physical staining, avoiding the time-consuming and potentially destructive traditional process
- Reduces costs related to staining materials and overall diagnostic process overhead
- Facilitates deployment in low-resource areas, thanks to its low-cost design, thereby democratizing access to advanced diagnostics
- Enhances durability and maintenance ease by eliminating moving parts in diagnostic devices

## Problems Addressed:

- Time and resource constraints associated with traditional staining methods in diagnostics
- Limited access to advanced diagnostic technologies in low-resource settings
- High costs and maintenance challenges of current diagnostic imaging technologies

## Market Applications:

- Medical diagnostics in both developed and developing countries, particularly beneficial in resource-scarce regions
- Research institutions requiring non-destructive analysis of biospecimens
- Healthcare settings looking to reduce operational costs while maintaining or improving