Specular Reflection Removal in Smart Colposcopy Images Using Deep Learning Models for Enhanced Grading of Cervical Cancer

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A Thesis Submitted to

Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore – 641 043

In Partial Fulfilment of the Requirements for the Degree of

Doctor of Philosophy in Computer Science

April 2024

80_Recommendation

- **Distinguishing SR from Speculum Instrumentation:** Develop advanced techniques to effectively differentiate between specular reflection (SR) and the speculum instrument used in smart colposcopy images, as current methods may confuse the two.
- **Handling Variable Illumination:** Investigate methods to enhance SR region recognition under varying lighting conditions. This would address the limitation of current techniques that assume consistent illumination from a fixed light source.
- **Expanding Binary Masking Applications:** Test the proposed binary masking technique on a broader range of medical imaging modalities, such as endoscopy and colonoscopy, to verify its effectiveness in different contexts.
- **Real-Time Integration:** Explore the integration of these enhancement techniques into real-time smart colposcopy systems to provide immediate feedback and improve clinical decision-making during procedures.
- **Increasing Dataset Diversity:** Utilize more diverse datasets in future studies to ensure the generalizability and robustness of the proposed methods across various patient populations and imaging environments.