

## CERTIFICATE

This is to certify that the thesis entitled “**Cervical Cancer Detection and Classification in Pap smear Images using Enhanced Deep Learning Models**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of the requirements for the award of the **Degree of Doctor of Philosophy in Computer Science**, is a record of original research work done by **Soumya Haridas** during the period of her study in the Department of Computer Science at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, under my Supervision and Guidance and the thesis has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or other similar title to any candidate of any University.

  
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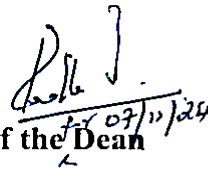
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## DECLARATION

I, **Soumya Haridas**, hereby declare that the thesis entitled “**Cervical Cancer Detection and Classification in Pap smear Images using Enhanced Deep Learning Models**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of the requirements for the award of the **Degree of Doctor of Philosophy in Computer Science**, is a record of original research work done by me during the period of my study under the Supervision and Guidance of **Dr. T. Jayamalar, MCA, M.Phil., Ph.D., NET**, Department of Information Technology at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, and it has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or other similar title to any candidate of any University.



**Signature of the Candidate**



**Signature of the Supervisor**

## ACKNOWLEDGEMENT

At the outset, I would like to express my sincere gratitude to the God Almighty for his/her constant love, blessing and grace showered on me making my work meaningful and worthwhile to the society.

I express my reverential gratitude to **Late Sri. T.S. Avinashilingam Ayya Avl.**, Founder and the First Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing this temple of learning for women.

My reverential gratitude to **Late Dr. (Tmt) Rajammal P. Devadas Amma Avl.**, M.A., M.Sc., Ph.D. (OHIO State), Hon. D.Sc., Hon. D.Sc., Former Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for her heavenly blessings.

I express my gratitude to the **Late Padma Shri. Dr. P. R. Krishnakumar**, Former Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing me with an opportunity, infrastructure and all the amenities to carry out the research.

I express my heartfelt thanks to Former **Chancellor Dr. S. P. Thyagarajan**, D.Sc., M.D., Ph.D., Avinashilingam Institute for Home Science and Higher Education for women, for providing me the moral support for the conduct of research work.

I express heartfelt thanks to **Chancellor Sri. T.S.K. Meenakshisundaram**, M.A., M.Phil., Ph.D., Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing the facilities to conduct the study.

I express my immense gratitude to **Dr. (Mrs.) Premavathy Vijayan**, M.Sc., M.Ed., Dip. Spl. Edn.(U.K.), M.Phil., Ph.D., Former Vice Chancellor, Avinashilingam Institute for Home Science and Higher Education for women for her constant encouragement throughout the research work.

I express my sincere gratitude to **Dr. (Mrs) V. Bharathi Harishankar** Ph.D., FRSA, Vice Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing the necessary platform and support for research work.

My sincere thanks to **Dr. (Mrs) S. Kowsalya**, M.Sc., M.Phil., Ph.D., Former Registrar, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing the opportunity to do this research.

My sincere thanks to **Dr. (Mrs) H. Indu**, M.Sc(Phy), M.Ed., SLET(Edn), Dip in Multimedia, M.Phil(Education), Ph.D(Education), M.B.A (Education Management), Registrar, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing the opportunity to do this research.

I sincerely thank to **Dr. (Mrs) K. Manimozhi**, M.Sc., B.Ed. M.Phil., Ph.D., Former Controller of Examination, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for giving suggestions and support to me at all times of need.

I owe deep gratitude to **Dr. K. Sambath Rani** M.R.Sc, M.Phil., M.Ed, (MR+VI), Ph.D., NET, Controller of Examination, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for her constant encouragement, support and wishes.

I record my gratefulness to **Dr. (Mrs.) P.Lalitha**, M.Sc., M.Phil., Ph.D., Dean, R&D (i/c), Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for her timely help, support and encouragement in carrying out the research work.

I am also thankful to **Dr. (Mrs). K. UdayaChandrika**, M.Sc., M.Phil., Ph.D., Former Dean, School of Physical Sciences and Computational Sciences, for granting the facilities required. I am obliged for their extended support throughout my work.

I sincerely thank **Dr. (Mrs) G. Padmavathi**, M.Sc., M.Phil., Ph.D., Dean, School of Physical Sciences and Computational Sciences, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing her constant encouragement, motivation, and suggestions for my research work.

My thanks are also due to **Dr. (Mrs.) S.N. Geethalakshmi**, MCA., M.Phil., Ph.D., Former Professor and Head, Department of Computer Science, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for her blessings, support, and cooperation rendered towards the completion of this research.

My thanks are also due to *Dr. (Mrs.) B. Kalpana*, M.Sc., M.Phil, Ph.D., Professor and Head, Department of Computer Science, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for her blessings, support, timely help and encouragement rendered towards the completion of this research.

My heartfelt and deep sense of gratitude to my beloved supervisor, *Dr. (Mrs.) T. Jayamalar*, MCA, MPhil., Ph.D., NET Assistant Professor, Department of Information Technology, who enlivened and gave a golden opportunity to carry out my research on this topic, which helped me a lot to learn many new things. I am very grateful for her continuous guidance with all the useful discussions and brainstorming sessions, especially during the difficult conceptual development stage of my research. She has always been my thriving force and inspiration. Her unwavering enthusiasm for research kept me constantly engaged and fortified my passion for research.

I thank the Doctoral Committee Member *Dr. C. Chandrasekhar*, MCA, Ph.D., Professor and Head, Department of Computer Science, Periyar University, Salem for helping me to fine-tune my research work through his valuable discussions, comments and suggestions.

I am so thankful to **all research scholars, staff members**, Department of Computer Science and members of Computer Center, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for their support, cooperation, suggestions and wishes.

I extend my heartfelt thanks to *my husband, children*, and all my family members for their unwavering love, prayers, support, blessings and encouragement throughout this endeavor. I am also grateful to my friends and everyone else who has offered their support and well-wishes along the way. Besides this, I would like to extend my gratitude to one, and all who have knowingly or unknowingly, directly or indirectly help me in the successful completion of this work.

I am also grateful to the Almighty for the blessings throughout the journey which walks me in the correct direction for successful completion of this work.

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## ACRONYMS

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ADC	Adenocarcinoma
ADF-DO	Adaptive Diffusion Filter-Dragonfly Optimization
ADF-HE	Anisotropic Diffusion Filter with Histogram Equalization
AI	Artificial Intelligence
CAD	Computer-aided Design
CC	Cervical Cancer
CES-BOA	Chaos and Exponential Scale based Butterfly Optimization Algorithm
CIN	Cervical Intraepithelial Neoplasia
CIS	Cancer in Situ
CL	Convolutional Layer
CLAHE	Contrast Limited Adaptive Histogram Equalization
CNN	Convolutional Neural Network
DL	Deep Learning
DLNN	Deep Learning Neural Network
DNA	Deoxyribo Nucleic Acid
EDA	Exploratory Data Analysis
FCL	Fully Connected Layer
FCM	Fuzzy C-Means
GLCM	Gray-Level Co-occurrence Matrix
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
hrHPV	high-risk Human Papilloma Virus
i-WFCM	improved - Weighted Fuzzy C-Means
i-WFCM-GOA	improved - Weighted FCM- Grasshopper Optimization
LBC	Liquid Based Cytology
LMICs	Low and Middle-Income Countries
LTrP	Local Ternary Patterns
ML	Machine Learning
Pap test	Papanicolaou test
PDE	Partial Differential Equation

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PL	Pooling Layer
RBM-DBN	Restricted Boltzmann Machine - Deep Belief Neural Network
ReLU	Rectified Linear Unit
RNA	Ribo Nucleic Acid
RVDLNN	Radiance and Variance Enabled Deep Learning Neural Network
SCC	Squamous Cell Carcinoma
TLR	Toll-Like Receptors
TWBS	Topographic Weibull Bounding Segmentation
TZ	Transformation Zone
VIA	Visual Inspection with Acetic acid
WHO	World Health Organization
WSI	Whole Slide Images

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