

Faculty Profile



Dr.A.Swarnambiga Ph.D
Associate Professor/BME
Bioinformatics(CoE)-Head

HIGHLIGHTS:

- Number of Publications: 26
- H-Index: 5
- Project Funding Received: 99,25,000
- Patents Granted: 2
- Alumini Of Indian Institute of Technology Madras, India. (IITM)
- Alumni Of College Of Engineering Guindy, Chennai. (India)

PROFESSIONAL LINKS:

- Scopus ID: 55932969300
- Scopus Link: <https://www.scopus.com/authid/detail.uri?authorId=55932969300>
- Google Scholar ID: <https://scholar.google.ca/citations?user=V7M3nM4AAAAJ&hl=en>
- Anna University Faculty ID: 280180
- AICTE Faculty ID: 1-27109498121
- Anna University Supervisor ID: 2540050
- LinkedIn: <https://www.linkedin.com/in/swarnambiga-ayyachamy-7aa08a144/>
- Teaching Experience till date: 10 Years 1 Months
- Industrial Experience: Nil
- Scopus ID: 55932969300
- Scopus Link: <https://www.scopus.com/authid/detail.uri?authorId=55932969300>
- Google Scholar ID: <https://scholar.google.ca/citations?user=V7M3nM4AAAAJ&hl=en>
- Orcid ID: <https://www.orcid.org/0000-0001-8295-8383>
- WOS ID: C4030-2015
- WOS ID LINK: <https://www.webofscience.com/wos/author/rid/C-4030-2015>

INTERNATIONAL EXPOSURE:

Funding and Grants:

- Awarded the USISTEF Research Grant (2024) for critical research on explainable AI in neuro-oncology, funded jointly by the USA and India, with a sanction of ₹92.5 lakhs.
- Recipient of multiple travel grants for international conferences, including ESMO 2023 (Europe) and SPIE 2019 (USA), funded by prestigious organizations.

Research Collaborations:

- Active contributor to European Society for Molecular Oncology (ESMO) and International Society for Computational Biology (ISCB).
- Collaborative research publications in high-impact journals like *Annals of Oncology*.

International Conferences and Recognition:

- Presented cutting-edge research at global platforms such as the SPIE Medical Imaging Conference (USA) and ESMO 2023 Congress (Europe).
- Ranked 10th in the HEROHE ECDP2020 Challenge, part of the European Congress on Digital Pathology.

Global Consultancy Projects:

- Led consultancy projects for PMX Inc. (USA) in developing AI-driven diagnostic tools for lung cancer and neuro-oncology.

AREA OF SPECIALIZATION:

- Bioinformatics
- Radiogenomics
- Artificial intelligence in Medicine.
- Computational and System Biology
- Cancer Biology

SPONSORED RESEARCH / FUNDING APPLIED / CONSULTANCY:

SPONSORED RESEARCH

1. USISTEF Research Grant (2024)

- Title: *Beyond the Black Box: Unveiling Image Data Decisions in Neuro-Oncology through GPT-Powered Explainable AI.*
- Investigators: Swarnambiga Ayyachamy, Girish Srinivasan.

- Funding Agency: United States-India Science & Technology Endowment Fund (USISTEF).
- Amount Sanctioned: ₹99,25,000.

2. Travel Grants

- Europe Congress ESMO 2023: ₹3,00,000, funded by PMX Inc.
- SPIE 2019: 1,25,000 Funded by IIT Madras (IITM).

3. 10AciousX : (2024)

- Amount: ₹50,000.

CONSULTANCY

1. AI-Powered Diagnostic Tool for Lung Carcinoma
 - Client/Company: PMX Inc., USA.
 - Duration: July 2023 – October 2023.
 - Description: Developed an AI-driven diagnostic tool for analyzing tumor volume, consolidation, and infiltration in lung carcinoma using Chest OMX imaging.
2. AI-Enhanced Diagnostic Tool for Brain OMX Analysis in Neuro-Oncology
 - Client/Company: PMX Inc., USA.
 - Duration: July 2023 – October 2023.
 - Description: Designed an AI-powered tool to assess structural (T1) and functional connectome (RS-fMRI) imaging for brain tumor diagnosis.
3. Segmentation of Midbrain and Cerebellum for Neurodegenerative Diseases
 - Client/Company: PMX Inc., USA.
 - Description: Focused on precise segmentation techniques to aid AI-based diagnostic tools for neurodegenerative diseases.
4. Precision Segmentation of Infiltration and Tumors in Lung Cancer Subtypes
 - Client/Company: PMX Inc., USA.
 - Description: Developed advanced segmentation algorithms for lung cancer subtypes to assist AI diagnostic tools.

PATENTS PUBLISHED/GRANTED:**PUBLISHED/ GRANTED**

S.No	Title	Application No.
1	Nasogastric Insertion of Tuboscope with Virtual and NBSP; Guidance (Published)	202341061520
2	Graviola(Annona Muricata) nanoparticle derived anti-inflammatory gel (Published)	202341061526A)
3	Tridax Daisy nanoparticle derived anti-bacterial gel composition (Published)	202341061515A)
4	Nanoparticle based gel formulation of turmeric and clove for enhanced topical delivery and anti-inflammatory (Published)	202341061514A)
5	Garcinia Indica Nanoparticle Derived anti-Inflammatory Gel (Published)	202341061512A)
6	Antimicrobial nanaogel with bentonite clay and rosarubiginosa extract (Published)	202341061518A)
7	Oryza and Biotic milk infusion nanogel for skin revitalizing (Published)	202341061510A)
8	Safe Travel Urobag for Elderly People,	411008-001
9	Double Barred Ostomy Refeeding Prosthesis	410952-001

ACHIEVEMENTS AND AWARDS:

1. Thomson Reuters Highest Impact Factor:
 - 2 Publications in *Annals of Oncology* (Impact Factor: 50).
2. HEROHE ECDP 2020 Challenge:
 - Ranked 10th in a grand challenge focused on high-sensitivity HER2-positive BC identification.

SPECIAL SESSIONS DELIVERED:

1. SPIE Medical Imaging Conference (2019)
2. ESMO Congress (2023)

CONFERENCES/SEMINARS/WORKSHOPS ATTENDED:**SPIE Medical Imaging Conference (2019)**

- Presented multiple papers, including topics on ResNet-18 for medical image retrieval and clinical analysis of tumors.

European Congress on Digital Pathology (ECDP 2020)

- Participated and competed in challenges related to HER2-positive BC identification.

PROFESSIONAL MEMBERSHIPS:

1. European Society of Molecular Oncology (ESMO)
2. International Society for Computational Biology (ISCB)

RESEARCH SUPERVISOR:

- Anna University Chennai (2014–Present).

PUBLICATIONS:

2025

1. Swarnambiga Ayyachamy et al., **“Graph attention networks-based prediction of MicroRNA-disease causality in head and neck neoplasms.”** Scientific Reports, 15(1), 2025.
2. Swarnambiga Ayyachamy et al., **“Predicting and identifying key genes driving chemoresistance and cancer stemness in oral squamous cell carcinoma.”** Network Modeling Analysis in Health Informatics and Bioinformatics, 14(1), 2025.
3. Swarnambiga Ayyachamy et al., **“Comparing gradient boosting and neural networks in the prediction of intersecting genes in gingival epithelial immunity.”** Journal of Indian Society of Periodontology, 29(6), 2025.
4. Swarnambiga Ayyachamy et al., **“Kolmogorov-Arnold Networks for Predicting Drug-Gene Associations of HDAC1 Inhibitors in Periodontitis.”** Computational Biology and Chemistry, 118 (2025), 108451.

2023

1. S. Ayyachamy, G. Srinivasan, G. Nandakumar, A. Perumalla, N. Thomas, P. Priya Vijayakumaran, H. Kim, D. Jawahar, N. Duraisamy, **“Assessing Lung Carcinoma: A Retrospective Study on Volume Evaluation, Consolidation and Infiltration Using Chest OMX.”** Annals of Oncology, 34(Suppl. 2), 2023, S727. DOI: 10.1016/j.annonc.2023.09.2339.
2. S. Ayyachamy, G. Srinivasan, A. Perumalla, G. Nandakumar, P. Priya Vijayakumaran, H. Kim, D. Jawahar, A. Faizal, S. Dev Merlin, **“Retrospective Analysis of Brain OMX: Diagnostic Tool for Structural (T1) and Functional Connectome (RS-FMRI) Analysis of Brain.”** Annals of Oncology, 34(Suppl. 2), 2023, S728–S729. DOI: 10.1016/j.annonc.2023.09.2343.

2015

1. Swarnambiga Ayyachamy, **“Registration Based Retrieval Using Texture Measures.”** Applied Medical Informatics, 37(3), 2015, pp. 1–10.
2. Swarnambiga Ayyachamy, **“Rise and Recent Hasten in Image Processing and Health Care.”** Journal of Health and Medical Informatics, 6(5), 2015.

2014

1. Swarnambiga Ayyachamy, “**Affine with B-Spline Registration-Based Retrieval Using Distance Metrics.**” Applied Medical Informatics, 34(2), 2014, pp. 41–52.

2013

1. Swarnambiga Ayyachamy, Vasuki, S. Manivannan, “**Distance Measures for Medical Image Retrieval.**” International Journal of Imaging Systems and Technology, 23, 2013, pp. 9–21.
2. Swarnambiga Ayyachamy, Vasuki Manivannan, “**Medical Image Registration Based Retrieval.**” Applied Medical Informatics, 32(1), 2013, pp. 8–20.
3. Swarnambiga Ayyachamy, Vasuki Manivannan, “**Medical Image Retrieval Using Transform.**” Applied Medical Informatics, 32(2), 2013, pp. 54–66.
4. Swarnambiga Ayyachamy, Vasuki Manivannan, “**Content Based Medical Image Retrieval for Histopathological, CT and MRI Images.**” Applied Medical Informatics, 33(3), 2013, pp. 33–45.
5. Swarnambiga Ayyachamy, Vasuki, S. Manivannan, “**Medical Image Registration-Based Retrieval Using Distance Metrics.**” International Journal of Imaging Systems and Technology, 23, 2013, pp. 360–371.