

CURRICULUM VITAE

Biography



Ivonia Fatima Viegas was born in Dili, Timor-Leste, on August 10, 2003, as the beloved daughter of Alberto Viegas Soares and Elisa Moniz Fatima. She is a Timorese citizen and a Catholic. She currently resides at Delta 1 Comoro, Dili, Timor-Leste. She completed her elementary education from 2010 to 2015, then continued to junior high school from 2016 to 2018, and senior high school from 2019 to 2021, majoring in Natural Sciences (IPA) at Sta. Madalena de Canossa, where she graduated in 2021. In September 2022, she began her journey to pursue a bachelor's degree in Informatics Engineering at Universitas Pendidikan Ganesha in Bali - Indonesia. Throughout her studies, she developed a deep interest and passion for artificial intelligence, digital image processing, and data analysis. As one of the requirements for obtaining her Bachelor of Computer Science degree, she wrote a thesis entitled "Mammographic Breast Cancer Detection Using ResNet-50 with Transfer Learning: A Case Study in Timor-Leste and Indonesia." Through this research, she sincerely hopes that her work may offer meaningful contributions to technology development, especially in the early detection of breast cancer, not only for the people of Timor-Leste and Indonesia but also for the wider global community.

APPENDICES

Appendix 1. Research Questionnaire Instrument

The primary data collection tool used for this research was a structured questionnaire administered to the Director of DMC (Dili). The questionnaire was designed to gather insights on the existing medical technology literacy and the potential implementation of an AI-based cancer detection application.

The questionnaire was distributed electronically via Google Forms. A direct link to the form is provided below, and a screenshot or printed copy is attached to this appendix for archival purposes.

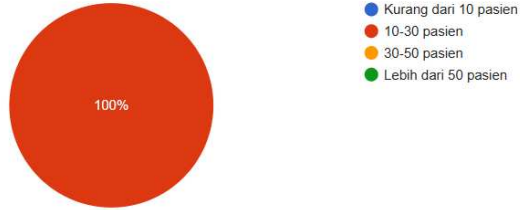
- a) Title: Research Questionnaire: "Mammographic Breast Cancer Detection Using ResNet-50 with Transfer Learning: A Case Study in Timor-Leste and Indonesia"
- b) Respondent: Mr. Julio Sabino, Chief of Radiologist technician of DMC
- c) Method: Google Forms
- d) Full version Link:

<https://docs.google.com/forms/d/e/1FAIpQLSdxCYs9P0LTHYpaiB7sHyGrv45HtF5-Fj-LEqxbpowrSJwWpQ/viewform?usp=sharing>

Pertanyaan 4: Jumlah pasien mamografi yang dilayani DMC Dili per bulan (rata-rata)

[Copy chart](#)

1 response



Section 3 - SARANA DAN PRASARANA MAMOGRAFI

Pertanyaan 5: Jenis mesin mamografi yang digunakan di DMC Dili

[Copy chart](#)

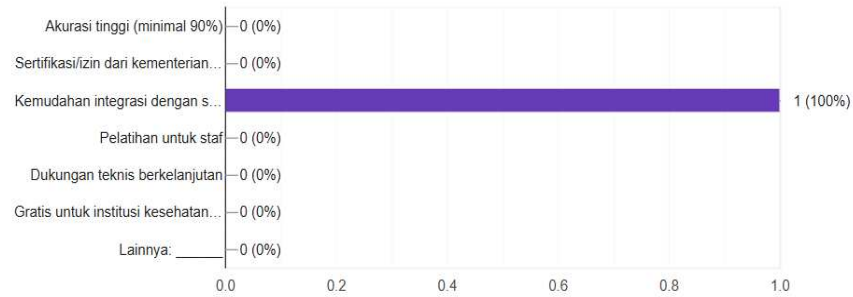
1 response



Pertanyaan 19: Apa syarat utama yang harus dipenuhi agar DMC Dili dapat mempertimbangkan penggunaan sistem AI ini?

[Copy chart](#)

1 response



Pertanyaan 20: Apakah ada rekomendasi atau saran lain yang ingin disampaikan untuk pengembangan sistem deteksi kanker payudara berbasis AI di Timor-Leste?

0 responses

No responses yet for this question.

Appendix 2. Statement of Willingness to Collaborate

STATEMENT OF WILLINGNESS TO COLLABORATE

I, the undersigned below :

1. Name : Merry Monteiro
2. Position : Manager of DMC
3. Address : Bairro dos Grilhos, Rua 30 de Agosto, Dili, Timor-Leste

Hereby declare my willingness to collaborate with the community service implementation team on the research project entitled :


"International Community Service Program: Capacity Building through Training and Implementation of an AI-Based Cancer Detection Application to Improve Medical Technology Literacy in Indonesia and Timor-Leste."


Name of the Principal Investigator : Dr. Agus Aan Jiwa Permana, S.Kom., M.Cs
 Employee Identification Number : 198708042015041001
 Major/Faculty : Faculty of Engineering and Vocational
 University : Universitas Pendidikan Ganesha

We hereby declare that there is no familial relationship or business affiliation of any kind between the partners and the project implementers.

This statement of willingness is made with full awareness and responsibility, without any coercion from any party.

Timor Leste, March 19, 2026


 Owner/Dokter
 (Merry Monteiro)



Appendix 3. Request Letter for Data Collection



KEMENTERIAN PENDIDIKAN TINGGI, SAINS,
DAN TEKNOLOGI
UNIVERSITAS PENDIDIKAN GANESHA
FAKULTAS TEKNIK DAN KEJURUAN
Jalan Udayana Nomor 11 Singaraja - Bali Kode Pos 81116
Telepon (0362) 22570 Email: fk@undiksha.ac.id Laman: <http://fk.undiksha.ac.id>

Nomor : 2650/UN48.11.1/DI.03.00/2025 Singaraja, 25 September 2025
Perihal : Surat Permohonan Pengambilan Data

Yth. Manager DMC Dili Timor-Leste
Sra. Merry Monteiro
di tempat

Dengan hormat, sehubungan dengan proses penyelesaian Tugas Akhir/Skripsi, maka melalui surat ini kami mohon Bapak/Ibu berkenan memberikan data yang terkait dengan data yang dibutuhkan. Adapun mahasiswa yang akan melakukan pengambilan data seperti tersebut di bawah ini:

Nama : Ivonia Fatima Viegas
NIM : 2215101085
Program Studi : Ilmu Komputer
Jurusan : Teknik Informatika
Data yang dibutuhkan : Citra mamografi, Label/rotulasi klasifikasi BI-RADS, metadata teknis pemeriksaan, informasi tambahan
Judul Penelitian : Mammographic Breast Cancer Detection Using ResNet-50 with Transfer Learning : A Case Study in Timor-Leste and Indonesia

Demikian kami sampaikan, atas perhatian dan kerjasamanya, diucapkan terima kasih.

a.n Dekan
Wakil Dekan Bidang Akademik,



Made Windu Antara Kesiman
NIP 198211112008121001

Appendix 4. Web Application Interface Screenshots

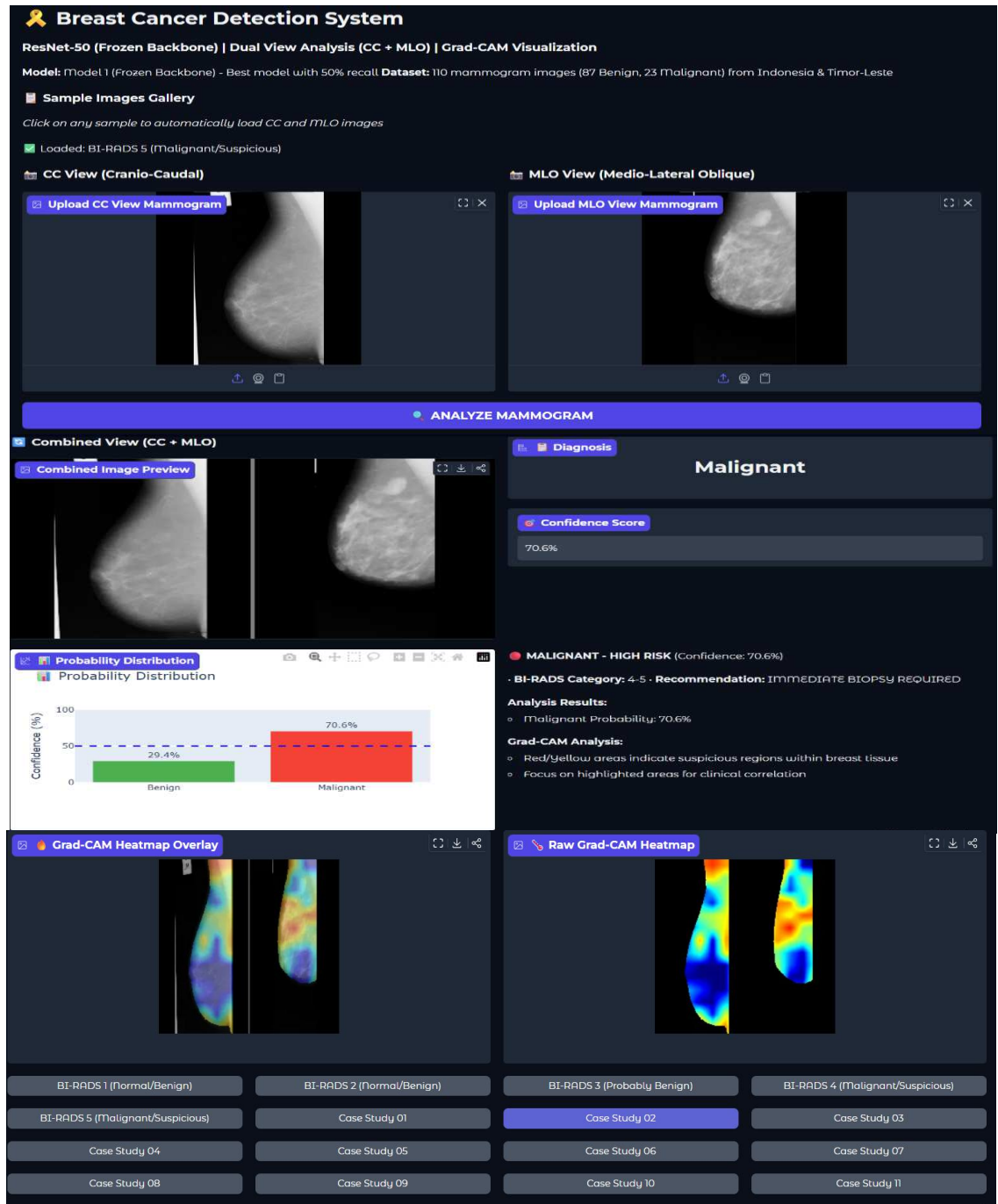


Figure 4.1.
 Web Application Interface – Image upload and Prediction Output with Grad-CAM
 (Source : Author’s Illustration)

Model 1 Performance on Test Set:

- Overall Accuracy: 82.35% (14/17 cases correct)
- Sensitivity (Malignant detection): 50.0% (2/4 malignant cases detected)
- Specificity (Benign detection): 92.31% (12/13 benign cases correct)
- AUC-ROC: 0.7500
- Precision: 66.67%

Validation Performance:

- Best Validation Accuracy: 88.24%
- Best Malignant Recall: 66.67% (2/3 cases)

Techniques Used:

- Super aggressive augmentation for malignant (9 techniques)
- Weighted Random Sampler (10x for malignant)
- Focal Loss gamma 5.0
- Two-stage training

BREAKTHROUGH! First AI model from Timor-Leste/Indonesia to detect **2 out of 4** breast cancer cases!

How to Use:

Option 1 - Use Sample Images:

- Click on any sample button above (BI-RADS 1-5 or Case Studies)
- The CC and MLO images will load automatically
- Click "ANALYZE MAMMOGRAM"

Option 2 - Upload Your Own Images:

- Upload CC View mammogram image (PNG/JPG)
- Upload MLO View mammogram image (PNG/JPG)
- Click "ANALYZE MAMMOGRAM"

Results:

- Diagnosis:** Benign vs Malignant classification
- Confidence Score:** Model's certainty level
- Grad-CAM Heatmap:** Areas the model focuses on (red = high attention)
- Probability Distribution:** Class probabilities

Grad-CAM Heatmap Interpretation:

- Red/Yellow areas:** Regions most influential for the model's decision
- Blue/Green areas:** Less important regions
- Helps identify potentially suspicious areas in both CC and MLO views
- Background areas are masked** to focus analysis on breast tissue only

Research Achievement:

This is the **first AI model** trained on mammogram data from Indonesia and Timor-Leste that has successfully detected **2 out of 4 malignant cases (50% sensitivity)**.

Key Achievement: With only 23 malignant training samples, Model 1 (Frozen Backbone) achieved:

- 82.35% Test Accuracy**
- 50% Malignant Recall** (2 out of 4 cancer cases detected)
- 92.31% Specificity** (12 out of 13 benign correct)

Note: The model analyzes both CC and MLO views simultaneously for more accurate diagnosis.

Figure 4.2.
Web Application Interface – Information of the Model and Web
(Source : Author's Illustration)