# Erna Budhiarti Nababan

Lecturer of Master's Program in Data Science and Artificial Intelligence Study Program
Faculty of Computer Science and Information Technology
Universitas Sumatera Utara

ernabrn@usu.ac.id

fasilkom-ti.usu.ac.id/en/lecturer/erna-budhiarti-nababan

*Dr. Erna Budhiarti Nababan is an accomplished lecturer in the Master's Program in Data Science and Artificial Intelligence at Universitas Sumatera Utara. Born in Bandung on October 26, 1962, she brings a wealth of knowledge and experience to her students. Her academic journey includes a Bachelor's degree in Electrical Engineering from IKIP Bandung, a Master's in Industrial Computing from Universiti Kebangsaan Malaysia, and a Doctorate in Science and Management Systems from the same institution. With her expertise in Artificial Intelligence, Machine Learning, and Optimization, Dr. Erna is committed to fostering a dynamic learning environment that encourages students to explore innovative solutions in data science.*

*In her teaching, Dr. Erna emphasizes the integration of theoretical concepts with practical applications, preparing her students to tackle real-world challenges in the field of technology. Her dedication to education extends beyond the classroom, as she actively participates in research projects and collaborates with industry partners. By instilling a strong foundation in AI and machine learning, she aims to equip her students with the skills necessary to excel in a rapidly evolving technological landscape.*

## Publications

2026
Jurnal internasional bereputasi

### Evaluating Hyperparameter Tuning of Random Forest and CatBoost on Complex and Imbalanced Real-world Datasets

ANDRI , NG POI WONG , DARWIN , SUTARMAN , ERNA BUDHIARTI NABABAN

2026
Prosiding seminar internasional

### A Combined Discrete Cosine Transform Algorithm and Downsampling Techniques for Data Compression and Transformation on IoT Sensors

HAYATUNNUFUS , PAUZI IBRAHIM NAINGGOLAN , ERNA BUDHIARTI NABABAN , ANDIKO EKARINA PINDONTA BANGUN

2026
Jurnal internasional bereputasi

### DEVELOPMENT OF A HYBRID PROBABILISTIC KEY GENERATION METHOD USING MULTI-PRIME RIVEST-SHAMIRADLEMAN AND LEARNING WITH ERRORS TO ENHANCE HILL CIPHER SECURITY

MAHDIANTA PANDIA , MOHAMMAD ANDRI BUDIMAN , ERNA BUDHIARTI NABABAN , POLTAK SIHOMBING

2025
Makalah ilmiah

### PILOT ASSESSMENT ON KNOWLEDGE AND AWARENESS OF LEPTOSPIROSIS AMONG HIGH-RISK FARMERS IN MEDAN TUNTUNGAN AREA, NORTH SUMATERA, INDONESIA

DR SUNNA VYATRA HUTAGALUNG , ERNA BUDHIARTI NABABAN , RAHAYU LUBIS , RITA ROSMALA DEWI , MUHAMMAD ATQA ADZKIA ZALDI , NURFIDA KHAIRINA ARRASYID , April Hari Wardhana, SKH, MSi, PhD

2025
Jurnal internasional bereputasi

### Advancements in Detection of Top Influencer Marketing in the Airline Industry: A Combination of the Leiden Algorithm and Graph Coloring

HANDRIZAL , POLTAK SIHOMBING , ERNA BUDHIARTI NABABAN , MOHAMMAD ANDRI BUDIMAN

2025
Prosiding seminar internasional

## Realtime Kick Motion Detection in Pencak Silat with YOLOv11

FANINDIA PURNAMASARI , ERNA BUDHIARTI NABABAN , RAIHAN JAMILAH R.HASIBUAN

2025
Prosiding seminar internasional

## The Combination of the Leiden Algorithm and Graph Coloring for Influencers Detection in Large Scale Social Networks

HANDRIZAL , POLTAK SIHOMBING , ERNA BUDHIARTI NABABAN , MOHAMMAD ANDRI BUDIMAN

2025
Prosiding seminar internasional

## A Comparative Analysis of Louvain and Leiden Coloring Algorithms in Influencer Detection

HANDRIZAL , POLTAK SIHOMBING , ERNA BUDHIARTI NABABAN , MOHAMMAD ANDRI BUDIMAN

2025
Jurnal nasional terakreditasi

## Finding Random Integer Ideal Flow Network Signature Algorithms

INDRIATI NJOTO BISONO , ERNA BUDHIARTI NABABAN , RESMANA LIM , Kardi Teknomo

2025
Jurnal internasional bereputasi

## An Improvement Of The Leiden Algorithm For Influencer Detection

HANDRIZAL , POLTAK SIHOMBING , ERNA BUDHIARTI NABABAN , MOHAMMAD ANDRI BUDIMAN

2025
Jurnal internasional bereputasi

## A Multi-View Clustering Approach And Exploratory Data Analysis For Dominant Demographic Knowledge Discovering On The Cause Behind The Pandemic

WILLIAM RAMDHAN , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

2025
Jurnal internasional bereputasi

## A MULTI-VIEW CLUSTERING APPROACH AND EXPLORATORY DATA ANALYSIS FOR DOMINANT DEMOGRAPHIC KNOWLEDGE DISCOVERING ON THE CAUSE BEHIND THE PANDEMIC

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , SAWALUDDIN , WILLIAM RAMDHAN

2025
Jurnal internasional bereputasi

## A MULTI-VIEW CLUSTERING APPROACH AND EXPLORATORY DATA ANALYSIS FOR DOMINANT DEMOGRAPHIC KNOWLEDGE DISCOVERING ON THE CAUSE BEHIND THE PANDEMIC

WILLIAM RAMDHAN , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

2024
Jurnal internasional bereputasi

## Leiden Coloring Algorithm for Influencer Detection

POLTAK SIHOMBING , ERNA BUDHIARTI NABABAN , MOHAMMAD ANDRI BUDIMAN , HANDRIZAL

2024
Prosiding seminar internasional

## Twitter Data Extraction for Food and Beverage Business Analytics

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

2024
Prosiding seminar internasional

## Customer Churn Prediction using Confident Learning and XGBoost

ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL

2024
Prosiding seminar internasional

## Enhancing Digital Document Security with Elliptic Curve Digital Signature Algorithm and Watermarking Techniques

M ABDUL GANI , ADE CANDRA , ERNA BUDHIARTI NABABAN

2024
Prosiding seminar internasional

## Customer Segmentation Using Generated Coffee Export Transaction Data

ERNA BUDHIARTI NABABAN , MOHAMMAD ANDRI BUDIMAN , SYARIFAH CHAIRA ZULFA

2024
Jurnal nasional terakreditasi

## PERFORMANCE OF ROBUST SUPPORT VECTOR MACHINE CLASSIFICATION MODEL ON BALANCED, IMBALANCED AND OUTLIERS DATASETS

SUTARMAN , MUHAMMAD ARDIANSYAH SEMBIRING , HERMAN SAPUTRA , RIKI ANDRI YUSDA , ERNA BUDHIARTI NABABAN

2024
Prosiding seminar internasional

## Indonesian Dynamic Sign Language Recognition for Individuals with Sensory Disabilities using LSTM

ERNA BUDHIARTI NABABAN , RENI YUNITA

2024
Prosiding seminar internasional

## Reduction of Microarray Data Dimensions to Enhance Performance of Naïve Bayes in Classification

ERNA BUDHIARTI NABABAN , PUTRI TSATSABILA RAMADHANI

2024
Jurnal internasional bereputasi

## IMBALANCED MEDICAL DATA ANALYSIS: DEVELOPING A MULTICLASS LOGISTIC REGRESSION CLASSIFICATION MODEL WITH PCA APPROACH

SUTARMAN , ERNA BUDHIARTI NABABAN , ADLI ABDILLAH NABABAN , Muhammad Zarlis

2024
Jurnal internasional bereputasi

## Development of the fuzzy grid partition methods in generating fuzzy rules for the classification of data set

ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL , POLTAK SIHOMBING , MURNI MARBUN

2024
Jurnal internasional bereputasi

## The role of Louvain-coloring clustering in the detection of fraud transactions

ERNA BUDHIARTI NABABAN , SYAHRIL EFENDI , SAIB SUWILO

2024
Jurnal nasional terakreditasi

## Performance Analysis Of The Combination Of Blum Blum Shub And Rc5 Algorithm In Message Security

MAHYUDDIN , ERNA BUDHIARTI NABABAN

2024
Artikel ilmiah

## Convolutional Neural Network Activation Function Performance on Image Recognition of The Batak Script

ERNA BUDHIARTI NABABAN , ELVIAWATY MUISA ZAMZAMI , ABDUL MUIS

2024
Jurnal nasional terakreditasi

## Convolutional Neural Network Activation Function Performance on Image Recognition of The Batak Script

ABDUL MUIS , ERNA BUDHIARTI NABABAN , ELVIAWATY MUISA ZAMZAMI

2023
Prosiding seminar internasional

## Implementation of N-Gram Method For Automating News Ticker Generation Based on Indonesian Language

FELIPE , INDRA AULIA , ERNA BUDHIARTI NABABAN

2023

Prosiding seminar internasional

## Long Short-Term Memory and Word Embedding For Sentiment Analysis of User Review

ERNA BUDHIARTI NABABAN

2023
Prosiding seminar internasional

## Synthetic Data Generation Using Time-Generative Adversarial Network (Time-GAN) to Predict Cash ATM

ADE CANDRA , FERI RANJA , ERNA BUDHIARTI NABABAN

2023
Jurnal internasional bereputasi

## Community Clustering on Fraud Transactions Applied the Louvain-Coloring Algorithm

SAIB SUWILO , SYAHRIL EFENDI , ERNA BUDHIARTI NABABAN

2022
Jurnal nasional terakreditasi

## PENINGKATAN SDM PROMOSI DINAS PARIWISATA SAMOSIR MELALUI PELATIHAN WEBSITE MENGGUNAKAN CMS WORDPRESS

ERNA BUDHIARTI NABABAN , AKHYAR LUBIS , SRI WAHYUNI

2022
Jurnal nasional terakreditasi

## PENINGKATAN SDM PROMOSI DINAS PARIWISATA SAMOSIR MELALUI PELATIHAN WEBSITE MENGGUNAKAN CMS WORDPRESS

ERNA BUDHIARTI NABABAN

2022
Jurnal nasional terakreditasi

## PENINGKATAN SDM PROMOSI DINAS PARIWISATA SAMOSIR MELALUI PELATIHAN WEBSITE MENGGUNAKAN CMS WORDPRESS

ERNA BUDHIARTI NABABAN

2022
Prosiding seminar internasional

## Smartphone-controlled 3D Printed Robots for STEM Learning

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , BAIHAQI SIREGAR , FAHMI

2021
Prosiding seminar internasional

## A Framework for Dominant Factors Revelation of the Outbreak's Cause

WILLIAM RAMDHAN , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

2021
Prosiding seminar internasional

## A Framework for Dominant Factors Revelation of the Outbreakâ€™s Cause

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , SAWALUDDIN

2021
Prosiding seminar internasional

## Social Network Analysis Text Mining on Networks Publication Citation

OPIM SALIM SITOMPUL , POLTAK SIHOMBING , ERNA BUDHIARTI NABABAN

2021
Prosiding seminar internasional

## Taxonomy of rough set approaches for rule generation

ERNA BUDHIARTI NABABAN , POLTAK SIHOMBING , OPIM SALIM SITOMPUL

2021
Jurnal internasional bereputasi

## Morpheme Embedding for Bahasa Indonesia Using Modified Byte Pair Encoding

AMALIA , ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL

2021
Prosiding seminar internasional

## Bahasa Indonesia pre-trained word vector generation using word2vec for computer and information technology field

ERNA BUDHIARTI NABABAN , AMALIA , OPIM SALIM SITOMPUL

2021
Jurnal nasional terakreditasi

## Diagonal Based Feature Extraction and Backpropagation Neural Network in Handwritten Batak Toba Characters Recognition

ERNA BUDHIARTI NABABAN , ELVIAWATY MUISA ZAMZAMI

2021
Jurnal internasional bereputasi

## Identification of Indonesian clickbait news headlines with long short-term memory recurrent neural network algorithm

BAIHAQI SIREGAR , ERNA BUDHIARTI NABABAN , FAHMI

2021
Jurnal internasional bereputasi

## Morpheme Embedding for Bahasa Indonesia Using Modified Byte Pair Encoding

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

2020
Jurnal internasional bereputasi

## Multi-LSB and Modified Vernam Cipher to Enhance Document File Security

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

2020
Jurnal internasional bereputasi

## A comparison study of document clustering using DOC2VEC versus TFIDF combined with LSA for small corpora

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , AMALIA

2020
Prosiding seminar internasional

## Web Based Application for Controlling Data Quality in Phenotype Prediction of Indonesian Rice Genomes

ROSSY NURHASANAH , ADE SARAH HUZAIFAH , ERNA BUDHIARTI NABABAN

2020
Prosiding seminar internasional

## An Efficient Text Classification Using fastText for Bahasa Indonesia Documents Classification

ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL , AMALIA

2020
Jurnal internasional bereputasi

## Knowledge acceleration estimator (KAE) model to customer behavior using business metrics

ERNA BUDHIARTI NABABAN

2020
Jurnal internasional bereputasi

## Multi-LSB and Modified Vernam Cipher to Enhance Document File Security

ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL

2019
Prosiding seminar internasional

## Application of the Alcohol Sensor MQ-303A to Detect Alcohol Levels on Car Driver

LILI TANTI , IWAN FITRIANTO RAHMAD , ERNA BUDHIARTI NABABAN , BUDI TRIANDI , EVRI EKADIANSYAH , VIDI AGUNG FRAGASTIA

2017
Jurnal internasional bereputasi

### Use of One Time Pad Algorithm for Bit Plane Security Improvement

SUHARDI , SAIB SUWILO , ERNA BUDHIARTI NABABAN

## Researches

2026

### Optimasi Desain Multi-Cell Crash Box berbahan Komposit Epoksi yang Diperkuat Serat Tandan Kosong Kelapa Sawit (STKKS) untuk Kendaraan Listrik menggunakan Machine Learning

MOCH. AGUS CHOIRON , ERNA BUDHIARTI NABABAN , FAUZAN , ARDIANSYAH , ASSOC. PROF. Ir. Dr. AHMAD ZAINI

2025

Penelitian Unggulan Perguruan Tinggi

### SURVEI KAP (KNOWLEDGE, ATTITUDE, PRACTICE) DIKOMBINASIKAN DENGAN PENGEMBANGAN APLIKASI CHATBOT PENILAIAN MANDIRI PRA-KUNJUNGAN FASKES PADA PEKERJA RISIKO TINGGI LEPTOSPIROSIS DI MEDAN TUNTUNGAN

DR SUNNA VYATRA HUTAGALUNG , RAHAYU LUBIS , ERNA BUDHIARTI NABABAN , April Hari Wardhana, SKH, MSi, PhD

2024

### Prediction of Agricultural Yields through Deep Learning in Big Data Analytics for Food Security in North Sumatra

BAIHAQI SIREGAR , HAYATUNNUFUS , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , Ahmad Ashari

2023

Kerjasama Luar Negeri dan Publikasi Internasional

### Model Telenursng Pencegahan Depresi Berbasis Keperawatan Holistik Untuk Meningkatkan Keterampilan Sosial Remaja di Provinsi Sumatera Utara

WARDIYAH DAULAY , JENNY MARLINDAWANI PURBA , ERNA BUDHIARTI NABABAN

2023

Kerjasama Luar Negeri dan Publikasi Internasional

### NATURAL LANGUAGE GENERATION FOR SMART VIRTUAL TOURISM OF BATAK HERITAGE AT LAKE TOBA

HAYATUNNUFUS , OPIM SALIM SITOMPUL , INDRA AULIA , FANINDIA PURNAMASARI , ERNA BUDHIARTI NABABAN

2022

### KINERJA KOMBINASI FEATURES FROM ACCELERATED SEGMENT TEST (FAST) DAN LONG SHORT-TERM MEMORI (LSTM) UNTUK MACHINE IMAGE EXTRACTION AND TRANSLATION BAHASA BATAK-INDONESIA

ERNA BUDHIARTI NABABAN

2020

Penelitian Dana Lokal Perguruan Tinggi

### KETERATURAN LINGUISTIK PADA METODE WORD EMBEDDING UNTUK BAHASA INDONESIA

AMALIA , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , SYARIFAH KEMALA PUTRI , SELINA AMELIA SAVITTRI , DWI FIMOZA

2020

Penelitian Dana Lokal Perguruan Tinggi

### Word vetor representation untuk natural language processing bahasa Indonesia dengan metode neural networks

AMALIA , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , AMALIA

2019

Penelitian Fundamental

### Identifikasi Penyakit Padi melalui DNA menggunakan Rough Set dan Genetik Algorithm

ERNA BUDHIARTI NABABAN

2019

Penelitian Dana Lokal Perguruan Tinggi

### Representasi Vektor untuk Teks Bahasa Indonesia dengan Pendekatan Word Embedding

AMALIA , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , SYARIFAH KEMALA PUTRI , SELINA AMELIA SAVITTRI , DWI FIMOZA

2019
Penelitian Dana Lokal Perguruan Tinggi

### Identifikasi Penyakit Padi melalui DNA Menggunakan Rough Set dan Genetic Algorithm

ADE SARAH HUZAIFAH , ROSSY NURHASANAH , ERNA BUDHIARTI NABABAN

## Community Services

2018
Hibah HI-LINK

### Pengembangan Industri Software House untuk Aplikasi Berbasis Mobile dan IoT

BAIHAQI SIREGAR , OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN

## Intellectual Property Rights

2025
Hak cipta nasional

### Program Komputer Kombinasi Algoritma Leiden dan Graph Coloring Untuk Menentukan Top Influencer Marketing

HANDRIZAL , POLTAK SIHOMBING , MOHAMMAD ANDRI BUDIMAN , ERNA BUDHIARTI NABABAN

2025
Hak cipta nasional

### Kombinasi Algoritma Leiden Dan Graph Coloringuntuk Menentukan Top Influencer Marketing

HANDRIZAL , POLTAK SIHOMBING , MOHAMMAD ANDRI BUDIMAN , ERNA BUDHIARTI NABABAN

2023
Hak cipta nasional

### Aplikasi Text Mining Visualisasi Jaringan Sitasi Publikasi

OPIM SALIM SITOMPUL , ERNA BUDHIARTI NABABAN , POLTAK SIHOMBING

2019
Paten nasional

### Integrated Blood Interpretation

ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL

2019
Paten nasional

### CBCI System: Complete Blood Count Interpreter System In Bahasa Indonesian Language

ERNA BUDHIARTI NABABAN , OPIM SALIM SITOMPUL