



# BILLY NICHOLAS PANGGIRI

COMPUTER SCIENCE



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Jelambar, West Jakarta, Indonesia



## EDUCATION

2021 - 2025 ( on progress )

**BINA NUSANTARA University**

I'm taking major of computer science - fast track and still going, and I've maintained a GPA of 3.75 while completing a total of 82 credit hours during my studies.



## ORGANIZATION

**Bina Nusantara Computer Club - Member**

2021 - 2022

I have been a proud member of the Bina Nusantara Computer Club, where I've had the opportunity to deepen my knowledge of Java programming, HTML, and CSS.

**Himpunan Mahasiswa T. Informatika - Member**

2021 - 2022

I've completed extra courses in machine learning, artificial intelligence, and data structures during my involvement.



## LANGUAGE PROFICIENCY

English	: Intermediate
Chinese Simplified	: Intermediate
Indonesia	: Advanced



## SOFT SKILL

### Communication

I refined my soft skills through classroom presentations and active participation in the Digitalent Scholarship.

### Teamwork

My colleagues and I successfully published a paper at the ICIMTECH 2023 conference, demonstrating my strong collaborative skills and ability to work effectively in teams



## HARD SKILL

### Programming

I've developed Python language for scientific computing and **machine learning**, leveraging libraries Scikit-learn, PyTorch, Tensorflow and Pandas.

Furthermore, I've gained practical proficiency in database management through the use of MySQL. I've also honed my expertise in Java programming for object-oriented applications.

# VOLUNTEER AND EXPERIENCES

## 2023 INTERNATIONAL CONFERENCE ON INFORMATION MANAGEMENT AND TECHNOLOGY

My colleagues and I presented our research with the intention of publishing it in the IEEE.

## AWS ACADEMY GRADUATE - AWS ACADEMY CLOUD FOUNDATIONS

I have studied AWS architecture, AWS pricing, AWS core services, and their usage.

## TEMBANG 2023

I participated in this activity to appreciate the diversity among ethnicities and cultures, as well as to enhance tolerance and **leadership** qualities as a young generation.

## IFEX (INDONESIA INTERNATIONAL FURNITURE EXPO) 2023

I have extensive experience as a sales representative and improves my communication skill, where I focused on promoting and selling rattan furniture to a diverse clientele, which includes both local and international customers.

## THE 2022 ICPC ASIA JAKARTA - INDONESIA NATIONAL CONTEST

My colleagues and I successfully solved several programming challenges during the event. Participating in the contest enhanced my coding and **problem-solving** skills.

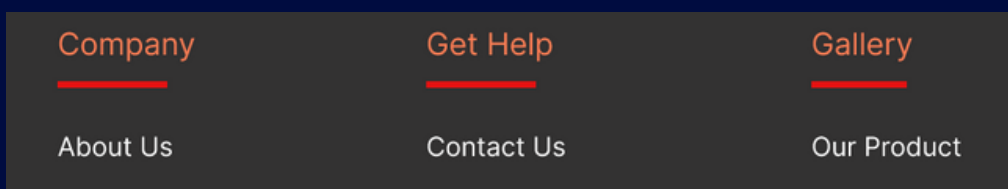
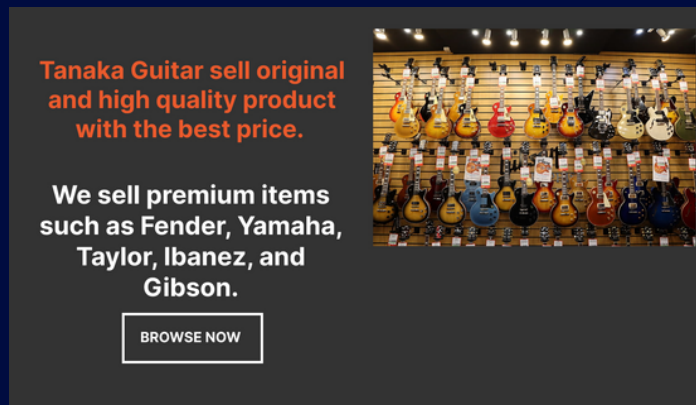
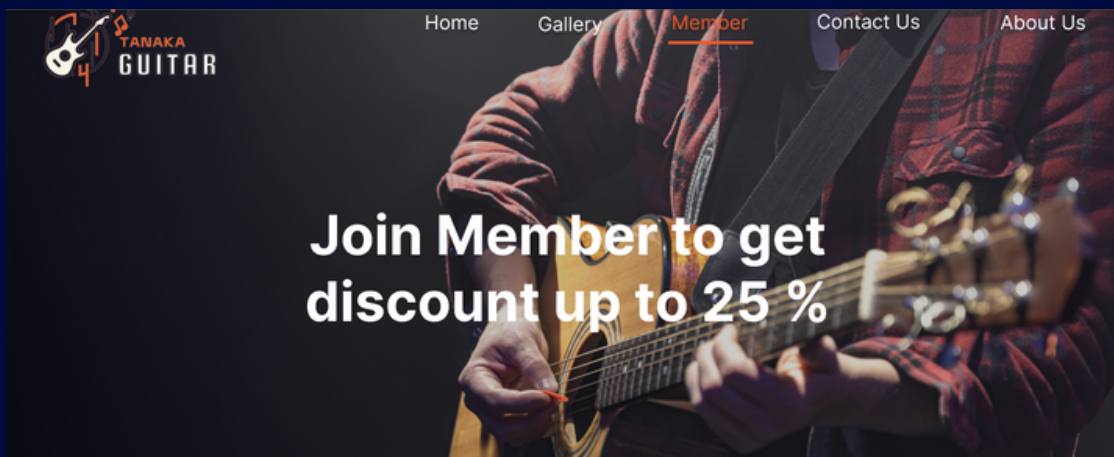
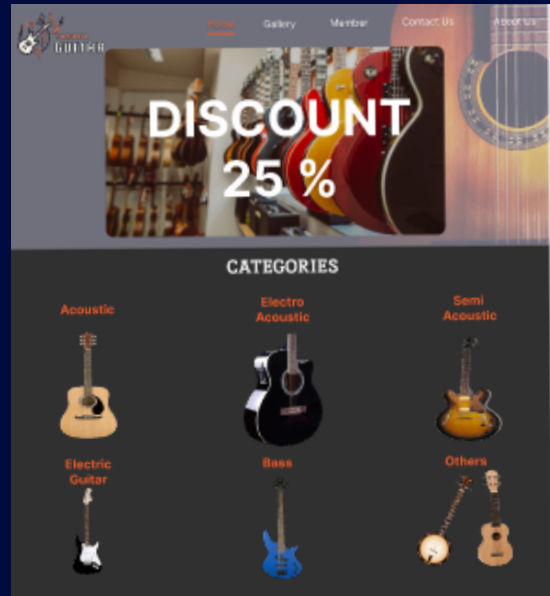
# PROJECT RESEARCH AND DEVELOPMENT



## TANAKA GUITAR

I created a responsive website named "Tanaka Guitar" designed for selling guitars using HTML, CSS, and JavaScript. The website consists of various components, including an interactive navigation menu in the header section, product listings and detailed descriptions in the main content area, and essential contact and footer information at the bottom.

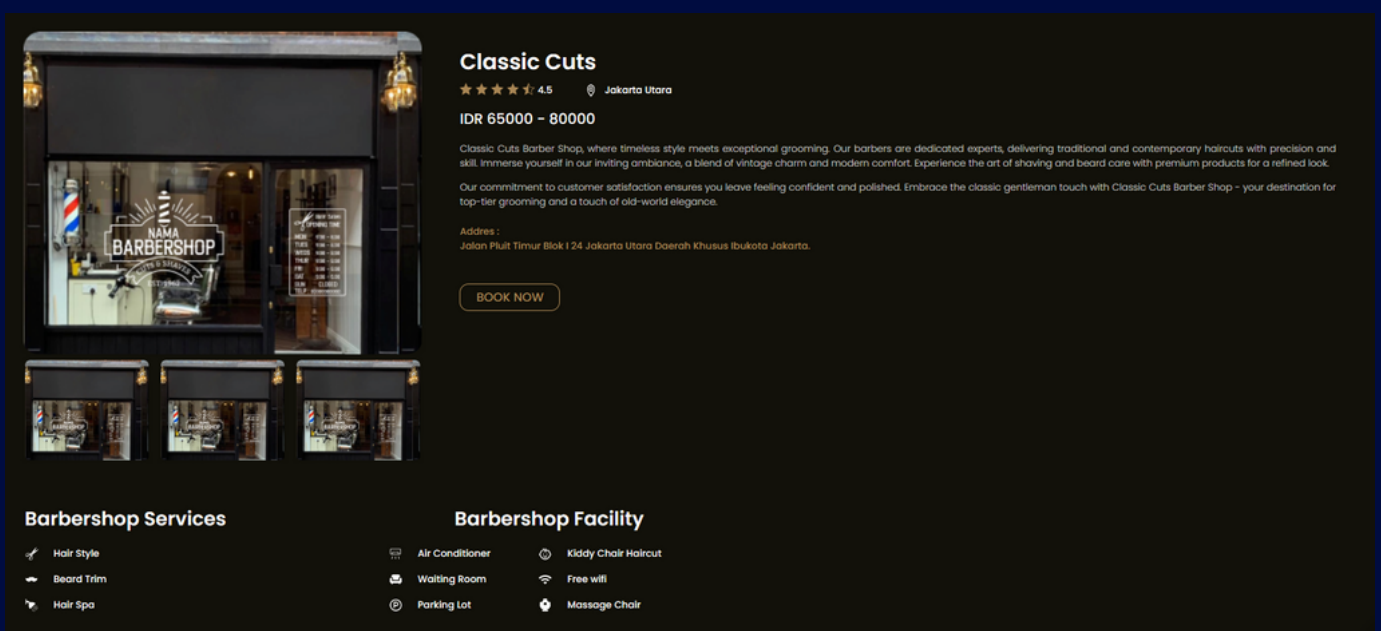
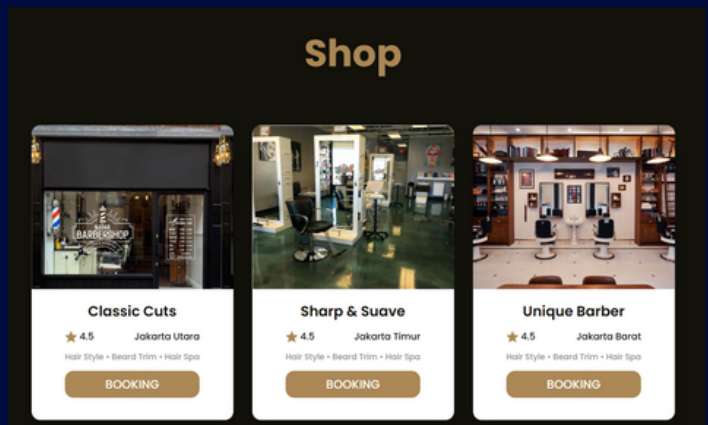
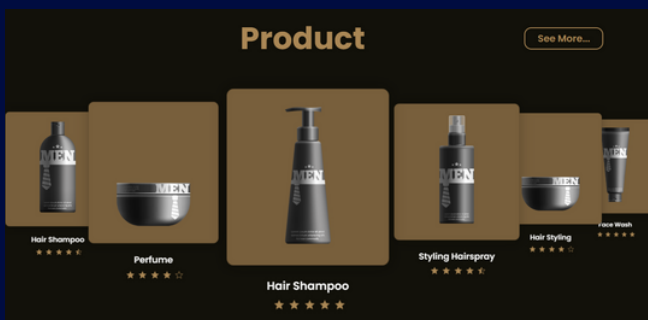
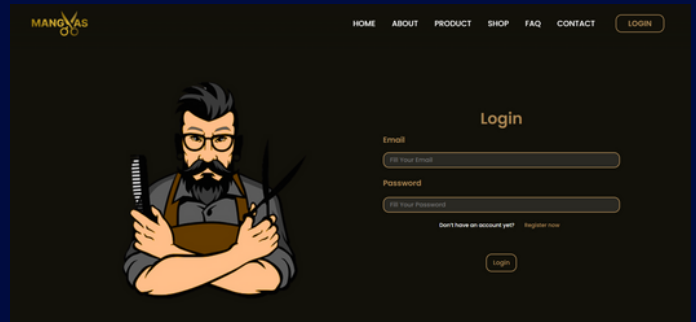
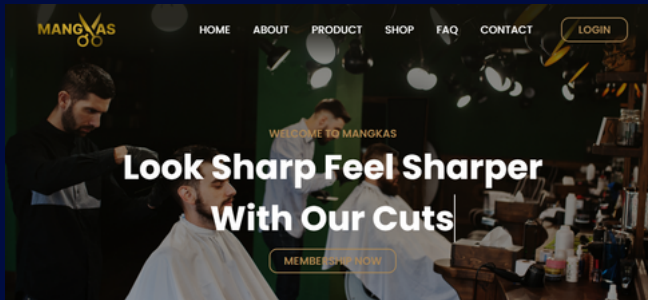
[Prototype link in Figma](#)



# MANGKAS

Our team has created "Mangkas," an e-commerce platform for barbershops. It allows customers to book appointments online and provides information about services and barbers.

Mangkas also includes an online store where customers can buy grooming and haircare products. We built it using PHP, Blade templating, CSS, JavaScript, and MySQL.



# ENHANCING BISINDO RECOGNITION ACCURACY THROUGH COMPARATIVE ANALYSIS OF THREE CNN ARCHITECTURE MODELS

The research compared three different CNN architectures for classifying BISINDO sign language using Python.

We tested model accuracy and performance with 10 repetitions, and Densenet consistently outperformed the others.

TABLE I  
COMPARISON OF 3 CNN ARCHITECTURES BASED ON ACCURACY RATE

Architecture	Mean Rate (%)	Best Rate (%)	Network Runtime (s)
Custom Architecture	96.36	98.66	3.06
Densenet121	99.86	99.93	5.74
ShuffleNet-V2-X1.0	99.22	96.88	4.8

## Enhancing BISINDO Recognition Accuracy through Comparative Analysis of Three CNN Architecture Models

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**Abstract**—This paper aims to develop an effective and efficient system for hand gesture recognition of Indonesian Sign Language (BISINDO) using a comparative analysis of three CNN architectures. The Python programming language is used as the development environment, together with the free edition of Google Colab. Google Colab provides a free online platform for coding and experimentation. PyTorch is used as a framework for training models, exploiting its Python programming language capabilities, and comprised 8,792 pictures of 200 by 200 pixel dimensions, divided A CNN-based technique is used, consisting of convolutional layers with ReLU activation, a comparison of three possible CNN designs from the detected image, and max pooling to constantly minimize dimensions, parameters, and computations within the network. The acquired findings show the CNN model is accurate after training and testing, with different accuracy rates.

**Keywords**—CNN, SVM, Densenet121, Shufflenet, Hand Sign, BISINDO

### I. INTRODUCTION

Language is a system used by everyone to communicate with each other. Everyone uses a different language according to the language in the place where they live, but some people have limitations such as hearing loss and speech impairment which require them to use sign language as a means of communication to interact with others. For the deaf and hard-of-hearing community, sign language is a sophisticated and crucial mode of communication, but there aren't many resources available to faithfully translate sign language into spoken or written language. In this paper, we suggest a cutting-edge method for creating a sign language translation application that makes use of hand pose detection.

One common way to speak to people with disabilities is by using sign language. Chairperson of the Indonesian ENT Association (PP PERHATI) Prof. Jenny

Bashiruddin said that 1 in 1,000 births suffered congenital deafness in Indonesia. [1]. Indonesia has one method of using sign language, BISINDO (Bahasa Isyarat Indonesia) [1]. In translating sign language in text form, we implement the transfer learning method, transfer learning is a technique or method that utilizes models that have been trained on a dataset to solve problems.

The objective of our research is to achieve advancements in hand sign recognition based on the BISINDO dataset. Through our research, we aim to develop improved architectures. This, in turn, will contribute to easier communication between individuals with limitations and those who are fluent in sign language. By achieving more accurate and efficient hand sign recognition systems, we anticipate that it will become easier to develop assistive devices and other related technologies that cater to the needs of individuals who rely on hand sign recognition.

### II. RELATED WORK

To align and enhance the system following the project objectives, we rely on a set of references as guiding principles during the project's development process. By adapting and learning from prior advancements in neural networks, we aim to execute the project successfully and generate a more advanced methodology compared to previous research, while adhering to established criteria. Several studies serve as crucial reference materials, with certain key aspects we consider for analysis, including the utilized datasets, accuracy levels, and research effectiveness. The following studies are of relevance:

#### A. PCA and KNN

One notable study by Promila Haque et al. (2019) [2] explored the domain of Two-Handed Bangla Sign Language Recognition. The study employed a model based on Principal