



Members

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PROPOSAL

**CLASSIFYING HIJAIYAH LETTERS:
HANDWRITTEN DETECTION OF CHILDREN USING CNN ALGORITHM**

INTRODUCTION

HUROOFY MEMBERS



Ahmad Maulidi Roofiad
Front-end developer / ML

I continued to learn about web development and I learned about databases and then I learned React Native to jump into the world of Android development.

Personal quotes :
Trying to do better

<https://github.com/Didin07>

<https://www.linkedin.com/in/ahmad-maulidi-roofiad-b8873a266/>



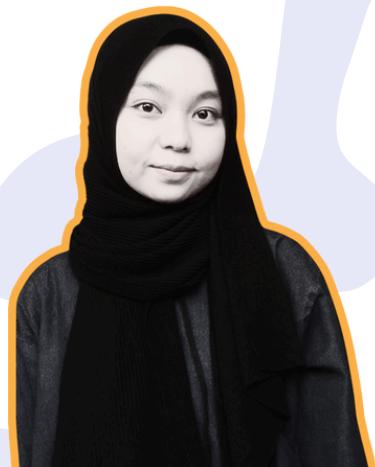
Aprian Nur Rohman
Back-end developer / ML

I am passionate about creating innovative and user-friendly applications, with expertise in web development, has proven my ability to meet deadlines and excel both independently and in a team.

Personal quotes :
Life is struggle, struggle need sacrifice

<https://myporfollio.vercel.app/>

<https://github.com/upreean>
[linkedin.com/in/aprian-nur-rohman-72b4ba241](https://www.linkedin.com/in/aprian-nur-rohman-72b4ba241)



Annisa Sabillah
Researcher / Writer/ML

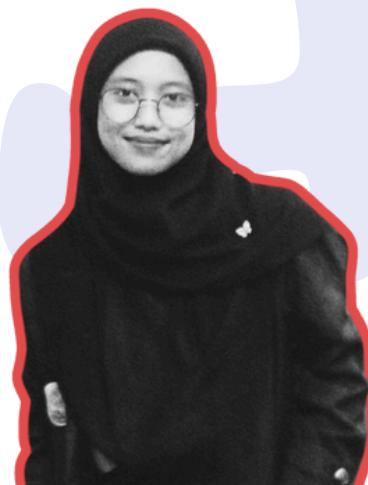
As a developer with expertise in web and mobile app design and development, I am committed to creating apps that deliver exceptional digital experiences.

Personal quotes :
Words can inspire, thoughts can provoke, actions lead to achievement

<https://bil-trove-portofolio.vercel.app/>

<https://github.com/annisasabil>

[linkedin.com/in/annisa-sabillah-48aaa4294/](https://www.linkedin.com/in/annisa-sabillah-48aaa4294/)



Elmi Wahyu Triyani
Front-end developer / Writer/ML

"As a design enthusiast and student, I've discovered immense joy in crafting captivating video content on UI and UX for Instagram. Additionally, I'm deeply involved in the development of mobile app and webs

Personal quotes :
Never be afraid to take the leap, action is key

<https://elmidraft-portofolio.vercel.app/>

<https://github.com/elmiwahyu>
[linkedin.com/in/elmi-wahyu-triyani-b4232b2a5](https://www.linkedin.com/in/elmi-wahyu-triyani-b4232b2a5)

TOPIC AND MOTIVATION

Huroofy is the right first step to open the door for children in the journey of understanding the Qur'an, as explained in a hadith from Usman bin Affan ra, Rasulullah saw. said,

خَيْرُكُمْ مَنْ تَعَلَّمَ الْقُرْآنَ وَعَلَّمَهُ » رواه البخاري

"The Best Amongst You Are Those Who Learn and Teach Quran" (HR. Bukhari).

This Hadith shows how noble and important the activity of learning and teaching the Qur'an is in Islamic teachings. Because introducing the Qur'an to children at an early age is an important first step in fostering their love for religion and its values.

TARGET USER GROUP

Early Childhood and Parents



The target user group for this application includes young children who are learning to recognize and write Arabic alphabet letters, as well as parents or educators who want to support the learning process of children in recognizing Arabic alphabet letters.



PRODUCT BRANDING



Nurturing Young Minds, Letter by Letter to Shine

Unlock the world of Arabic alphabet with Huroofy, Classifying Handwritten Hijaiyah Letters for Early Childhood Literacy Development. Nurturing Young Minds, Letter by Letter, to Shine. Start their journey today.

For parents and educators committed to supporting their children's journey, Huroofy serves as a valuable ally. With its user-friendly interface and comprehensive content, it empowers caregivers to actively participate in their child's learning process. Whether at home or in the classroom, Huroofy provides the tools and resources needed to cultivate a strong foundation in Arabic alphabet letters, fostering confidence. Join us in nurturing young minds, letter by letter, to shine brighter every day.

SYMBOLISM IN THE HUROOFY LOGO



This logo represents the 2 letters 'oo' in the word 'huroofy' and also symbolizes children, meaning that this application is child-friendly



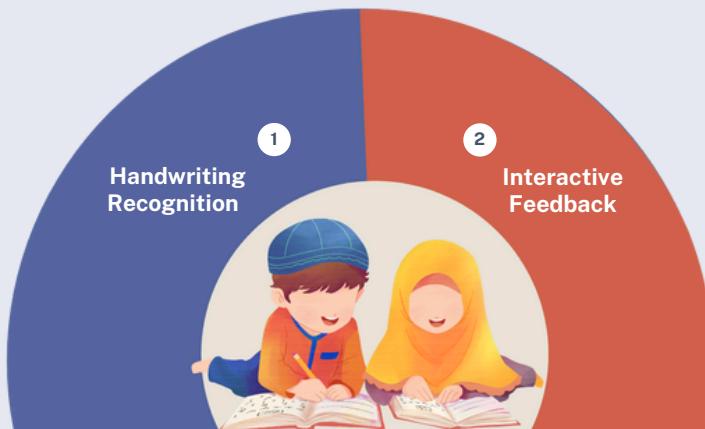
Blue for comfort,
Pink for gentleness
Red for spirit
Yellow for joy (to shine)

OUR PRODUCT



Huroofy is an innovative educational application specifically designed to help early childhood in learning Hijaiyah letters. By utilizing advanced Handwriting Recognition technology, Huroofy can classify the shape and variations of children's Hijaiyah writing well, even imperfect writing. Huroofy provides interactive feedback and motivates children to continue learning.

THE MAIN FEATURES



THE CONNECTION WITH SDGS

4 QUALITY EDUCATION



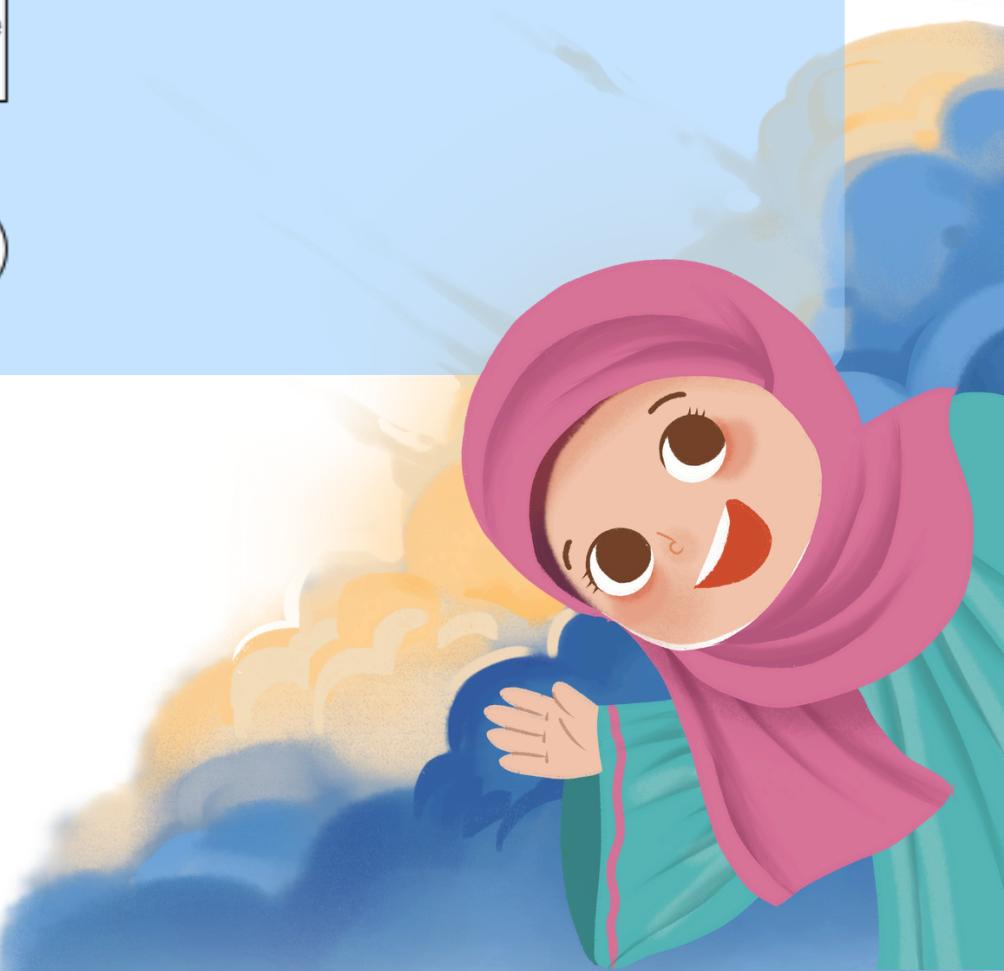
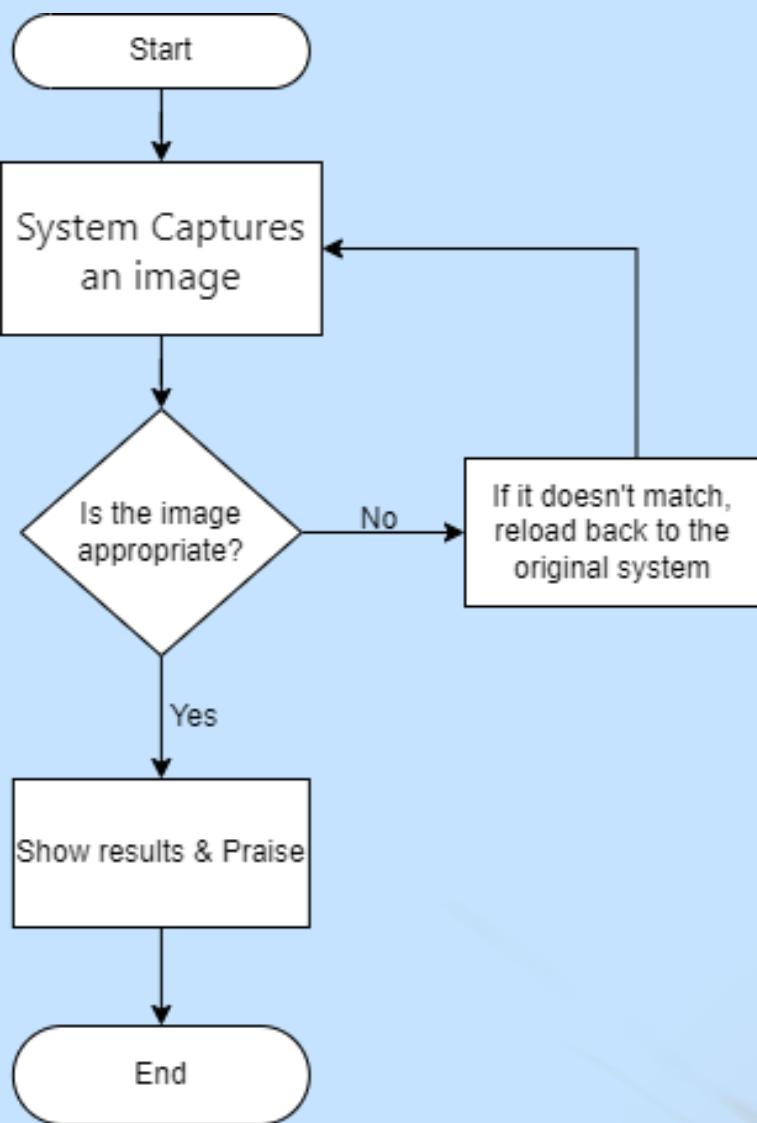
Technology such as hijaiyah letter classification using CNN can be used in children's learning and education, especially in introduction of hijaiyah letters, which is an important part of the Islamic education curriculum in various countries.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



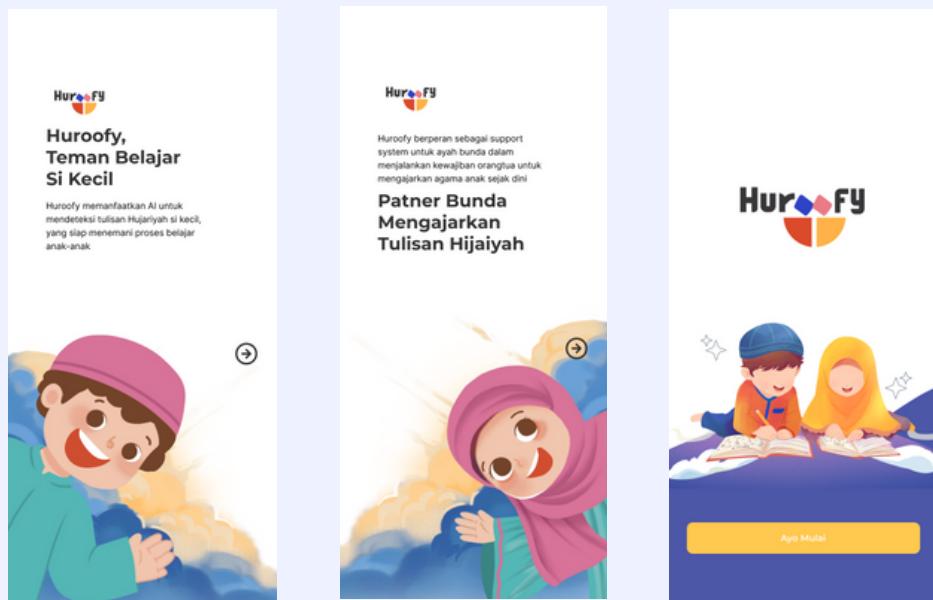
Huroofy utilizes technology to offer a more engaging and effective learning approach for children. By combining handwriting detection with Hijaiyah letter instruction, this application drives innovation in early childhood education.

FLOW CHART

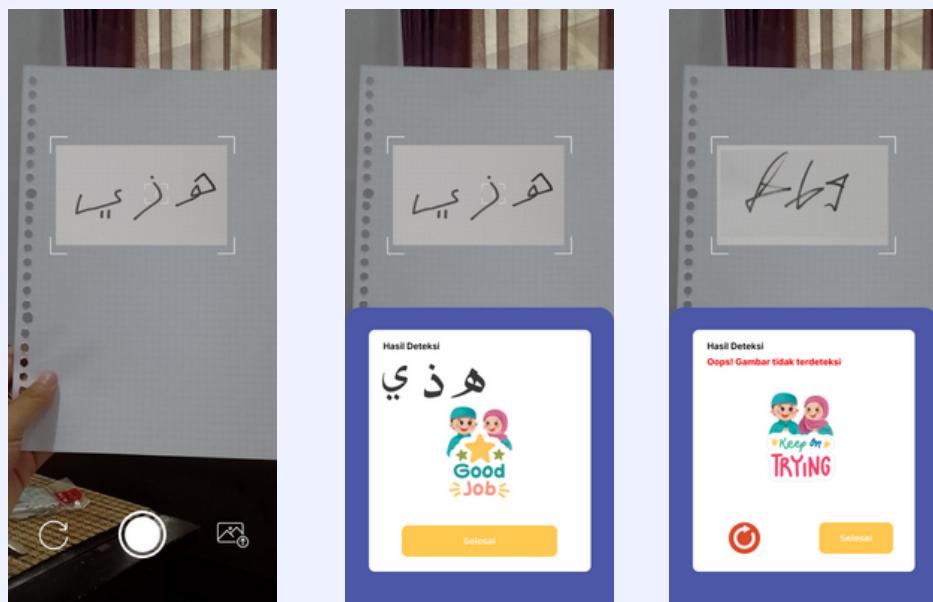


APPLICATION DESIGN

Introduction page



Processing page



RESEARCH QUESTION AND OBJECTIVES

How can the Huroofy application improve children's ability to learn hijaiyah letters?



RESEARCH METHODOLOGY

- This research aims to develop a Huroofy application to classify children's Arabic handwriting using the Hijja and AHCD datasets.
- Using a quantitative experimental design, we will train and test the machine learning model using randomly drawn data from both datasets, consisting of the Hijja dataset of 47,434 handwritten characters, and the AHCD dataset of 16,800 handwritten characters.
- Analysis using CNN and evaluation metrics such as accuracy, precision, and recall will determine the effectiveness of the model. Validity and reliability will be strengthened through cross-validation and the use of recognized datasets.
- This research follows research ethics with responsible use of data, recognizes the limitations of the dataset and technology, and is run on a systematic schedule for efficiency.



TECHNOLOGIES UTILIZED



Open CV

OpenCv is used for image processing and computer vision.



Python

Python as a programming language is versatile and easy to learn, with a clear and readable syntax that can be used for the development of machine learning algorithms.



Tensor Flow

TensorFlow as an important library provides the tools necessary to build, train, and deploy CNNs efficiently.



Keras

Keras is a powerful Python library for machine learning and neural networks model development.

TIME TABLE

Start from May 13, 2024

Task	Week 1	Week 2	Week 3	Week 4	Week 5
Dataset Collection	● ● ● ● ●	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Data Pre-Processing	● ● ● ● ●	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Model Building	○ ○ ○ ○ ○	● ● ● ● ●	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Model Evaluation	○ ○ ○ ○ ○	● ● ● ● ●	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Hyperparameter Tuning	○ ○ ○ ○ ○	○ ○ ○ ○ ○	● ● ● ● ●	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Model Training & Testing	○ ○ ○ ○ ○	○ ○ ○ ○ ○	● ● ● ● ●	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Model Deployment	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	● ● ● ● ●	● ● ● ● ●
Implementation to Web Apps	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	● ● ● ● ●	● ● ● ● ●



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