GAME ON:

GAMIFIED READING LEARNING

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ABOUT?

Gamified reading learning is a well-liked strategy for encouraging students to read. Numerous websites and application in the world provide an interactive reading games and exercises that monitor student progress and give tailored recommendations. To motivate children to read more and develop their reading skills, several schools and teachers have also developed their own gamified reading programs. Gamified reading learning has the potential to increase students' enjoyment of reading and help them build solid literacy skills.

WHAT'S INSIDE?

Game on: Gamified Reading Learning

Game On: Gamified Reading Learning for Grade 2 Students to Enhance Reading Learning in Tubigan Elementary School, Biñan, Laguna, It shows the Input, Process and Output (IPO) of the system. Input consist of activities and points. Process consist of graph, features and functionalities (profile management and gamification reading application), pre-test, post-test, t-test and ISO/IEC 25010. Output consist of students scores reading performance and students behavior while playing Game On: Gamification Reading Application.

Key System Enhancement: Predictive Score Modeling with TensorFlow

The core enhancement implemented in the system is the integration of a machine learning-based prediction model using TensorFlow.js. This enhancement enables the system to provide personalized, forward-looking insights to users by predicting their points (scores) for the next five consecutive days based on their historical performance.

How It Works:

- The system uses past score data stored in Firebase Firestore, specifically the user's daily points.
- A linear regression model is created and trained using TensorFlow.js every time the user accesses the "Statistics" section.
- The model takes the sequence of past scores (at least 3 recent days: 2 previous and today's score) and learns the trend.
- It then predicts the user's likely scores for the next 5 days.
- These predictions are visualized alongside the actual past scores in a line graph chart for easy understanding.

Key System Enhancement: Predictive Score Modeling with TensorFlow

Technical Features

- TensorFlow.js: Used to build and train the regression model directly in the React Native app.
- Firebase: Provides real-time access to user data and score history.
- Graph Visualization: The predicted scores and recent performance are displayed in a clean, interactive line chart.
- On-Demand Training: The model retrains every time the “Statistics“ button is pressed, ensuring the predictions reflect the most current data.
- Performance Improvements: Mild optimizations were applied to the codebase to reduce lag, especially around model training and chart rendering.

Benefits of the Enhancement

- Empowers users with insights into their future performance trends.
- Adds an intelligent, personalized experience to the app.
- Bridges the gap between raw score data and actionable progress tracking.

Lesson learned

Fundamentals of Machine Learning

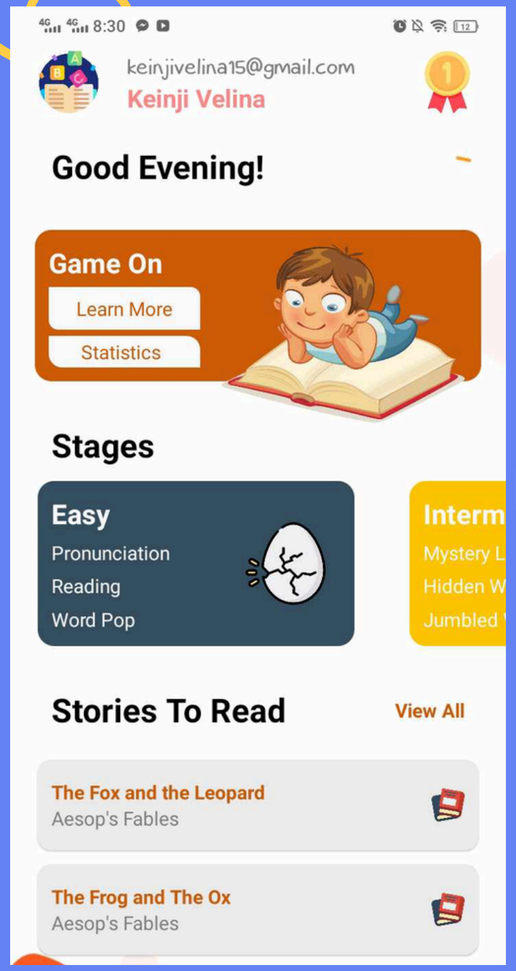
- Understanding what a model is (specifically, a linear regression model).
- Learning how a model is trained on past data to recognize patterns.
- Seeing how input and output data (features and labels) are used.

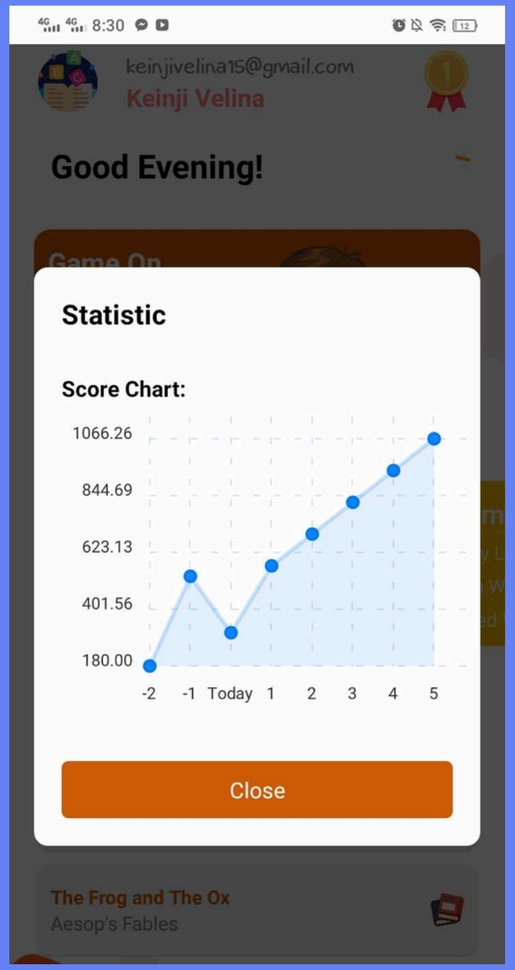
How to Use TensorFlow.js in a Mobile App

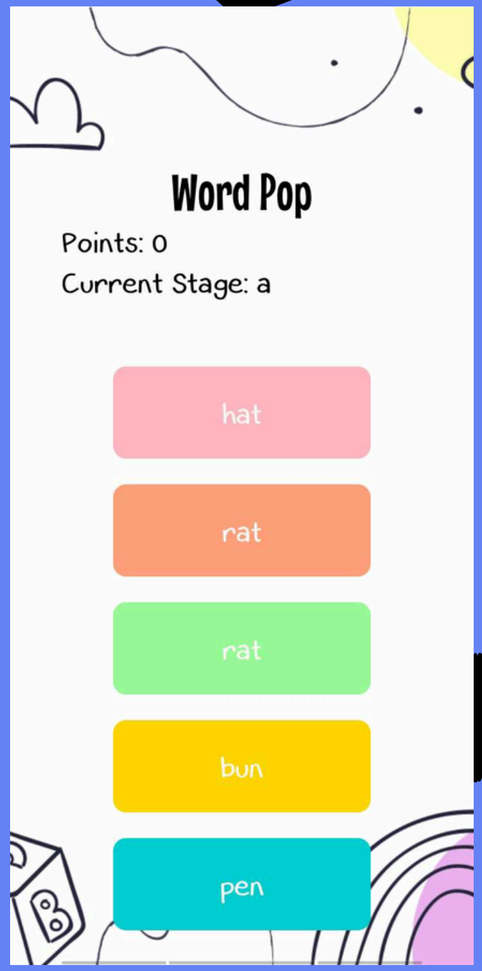
- Gaining practical experience using TensorFlow.js inside a React Native + Expo project.
- Learning how to:
- Create a sequential model
- Compile it with a loss function and optimizer
- Train the model using .fit()
- Use .predict() to generate outputs

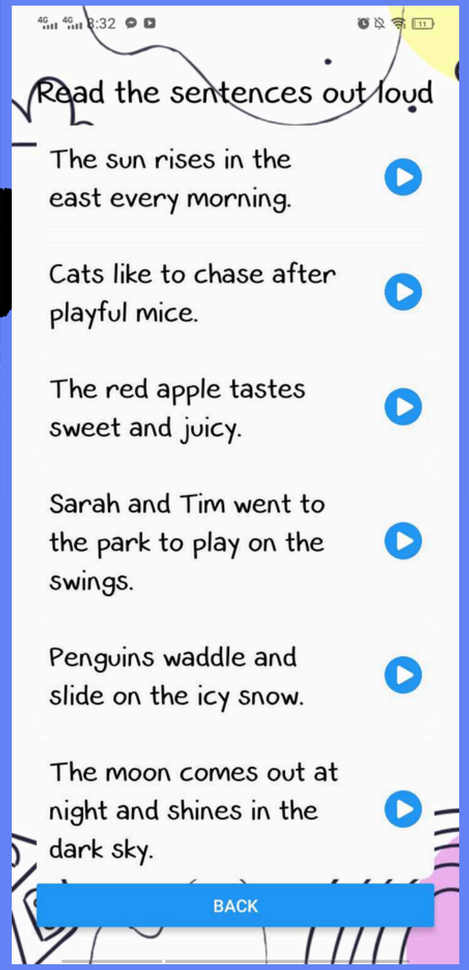
Data Visualization

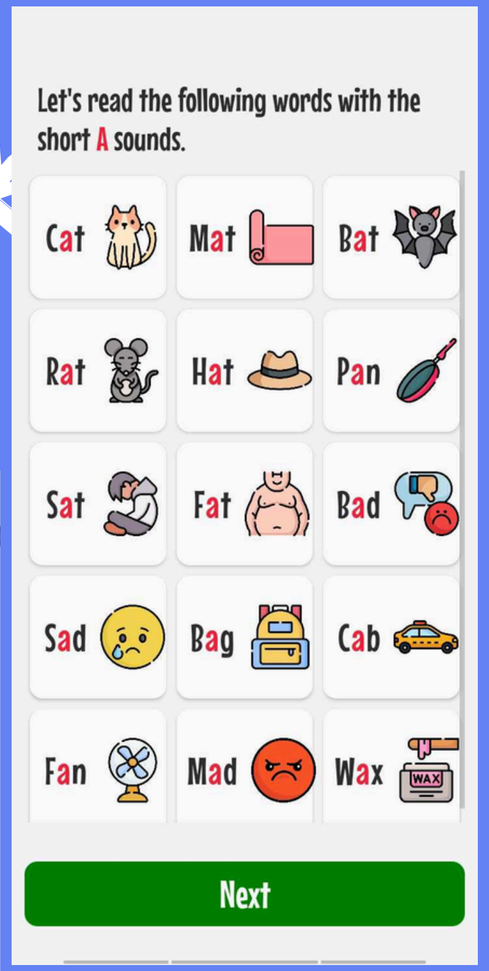
- Understanding how to make ML predictions visible and useful to users through charts.
- Using libraries like react-native-chart-kit to show score trends.
- Showing both real data and predicted data together in a meaningful way.


8:30
keinjivelina15@gmail.com
Keinji Velina
Good Evening!
Game On
Learn More
Statistics
Stages
Easy
Pronunciation
Reading
Word Pop
Interm
Mystery L
Hidden W
Jumbled
Stories To Read
View All
The Fox and the Leopard
Aesop's Fables
The Frog and The Ox
Aesop's Fables


8:30
keinjivelina15@gmail.com
Keinji Velina
Good Evening!
Statistic
Score Chart:
1066.26
844.69
623.13
401.56
180.00
-2
-1
Today
1
2
3
4
5
Close
The Frog and The Ox
Aesop's Fables


Word Pop
Points: 0
Current Stage: a
hat
rat
rat
bun
pen


8:32
Read the sentences out loud
The sun rises in the east every morning.
Cats like to chase after playful mice.
The red apple tastes sweet and juicy.
Sarah and Tim went to the park to play on the swings.
Penguins waddle and slide on the icy snow.
The moon comes out at night and shines in the dark sky.
BACK


Let's read the following words with the short A sounds.
Cat
Mat
Bat
Rat
Hat
Pan
Sat
Fat
Bad
Sad
Bag
Cab
Fan
Mad
Wax
Next