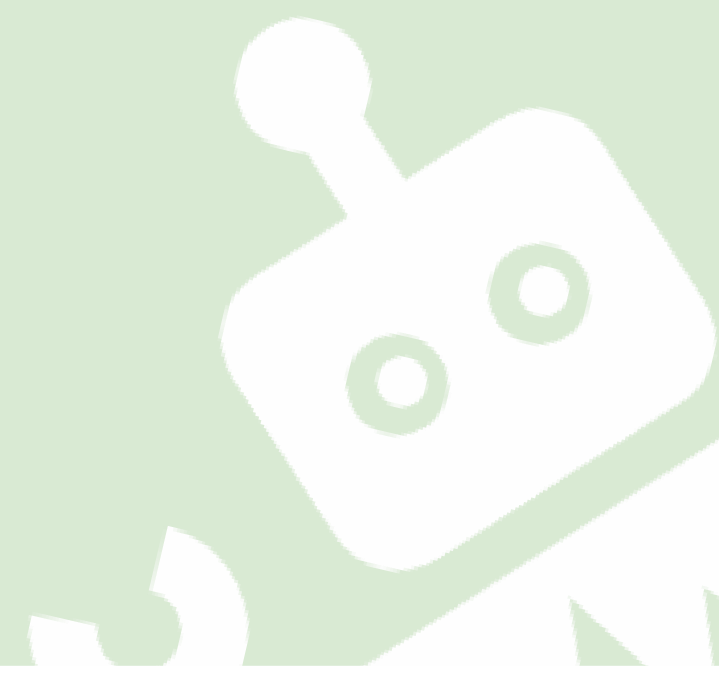


Digital Assistant for Financial Transactions

A Multilingual Personal Finance Management Application Incorporating NLG

1. OVERVIEW

Existing Fintech products for improving financial literacy are not fully accessible to the South African population as they do not use indigenous languages. We will fill this gap by developing a mobile application for financial literacy with a digital assistant in isiZulu.

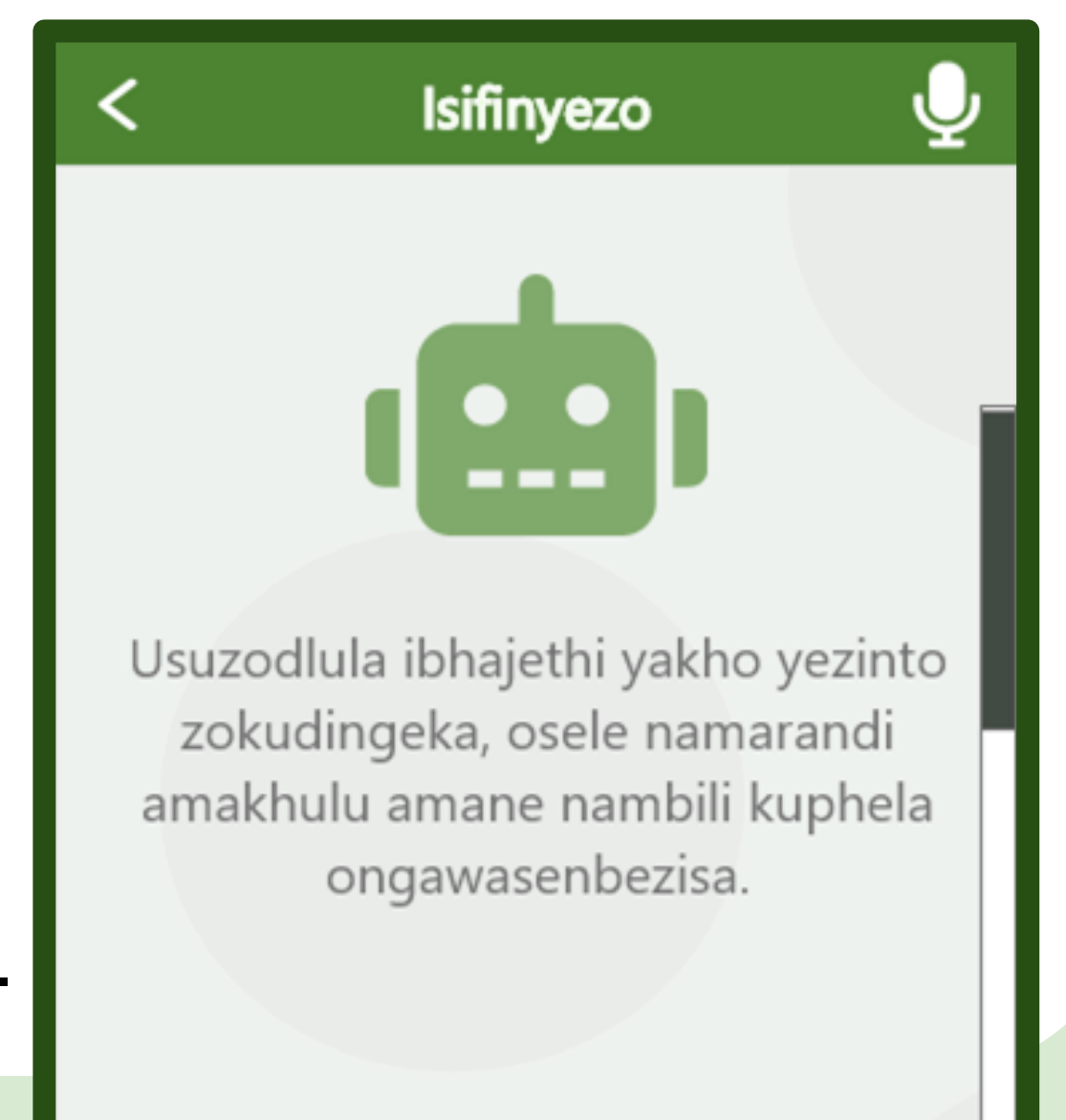


2. OBJECTIVES

1. Create an isiZulu personal finance management mobile application that helps users manage their money and adapts a trust-inducing interface.
2. Develop a natural language generator (NLG) that will generate summaries about users finances in isiZulu. The generated summaries must verbalise numbers in context and be understandable.

3. SOLUTIONS

1. The application's interface design was based on Wang and Emurian's framework on inducing user trust, which states that ease of navigation and colour are important aspects in obtaining user trust in an application [1].
2. The NLG system was built following a three-stage modular pipeline architecture.
3. Built algorithms for verbalising numbers following grammar rules and added them to the NLG system.

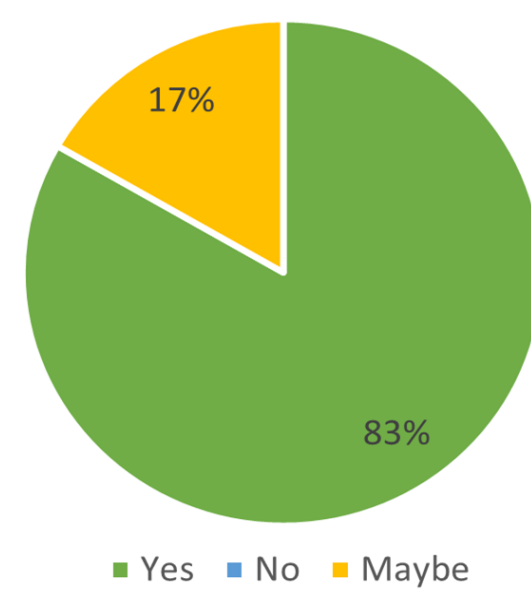


4. RESULTS: APP AND DESIGN

Table 1: Results for Q10, "Please indicate your agreement with the statement: The interface is trustworthy."

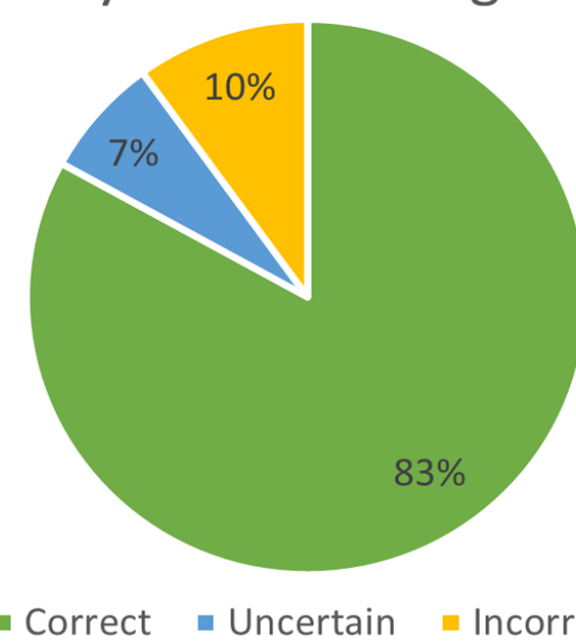
| Answer | Number of Participants |
|----------------------------|------------------------|
| Strongly Agree | 4 |
| Somewhat Agree | 0 |
| Neither Agree nor Disagree | 0 |
| Somewhat Disagree | 1 |
| Strongly Disagree | 1 |

Do you think the mobile application would positively impact your financial literacy?

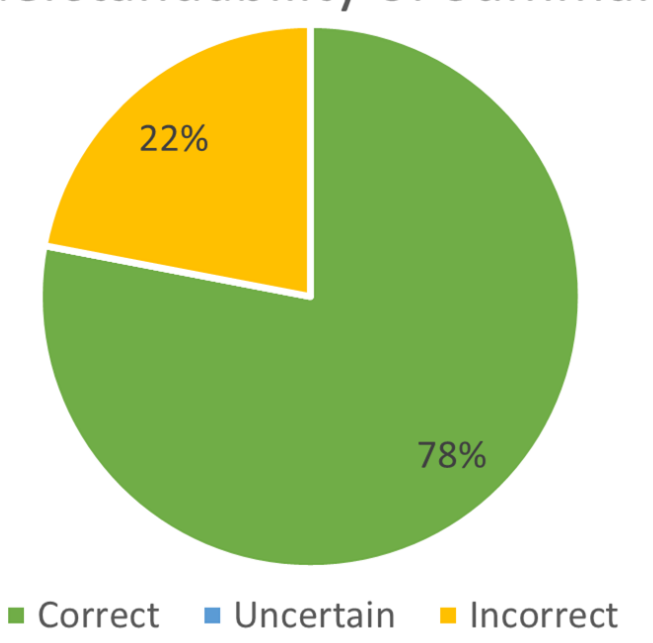


5. RESULTS: NLG ENGINE

Accuracy of Verbalising Numbers



Understandability of Summaries



6. CONCLUSIONS

1. The design was somewhat appropriate for inducing trust, and the application was perceived as useful in positively impacting financial literacy.
2. IsiZulu speakers strongly agree that the built algorithms are correctly verbalising numbers and that the NLG engine generated understandable summaries.

7. REFERENCES

[1] Ye Diana Wang and Henry H Emurian. 2005. An overview of online trust: Concepts, elements, and implications. *Computers in Human Behavior* 21, 1 (Jan. 2005), 105–125. DOI: <https://doi.org/10.1016/j.chb.2003.11.008>

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Team:

Amy Solomons
(slmamy003@myuct.ac.za) – App and NLG Content Selection & Junior Moraba - NLG and Verbalisation of Numbers (mrbvhu001@myuct.ac.za)

Supervisors:
Maria Keet & Zola Mahlaza

