

Project Proposal: A Computer-Assisted Tool to Learn Algerian Sign Language

I. Title

"A Computer-Assisted Tool to Learn Algerian Sign Language"

II. Objectives

The primary objectives of this project are as follows:

1. To develop a computer-assisted tool that aids individuals with hearing impairments in learning Algerian Sign Language (ASL).
2. To assess the efficacy of the learning process by analyzing the success and errors made during sign language acquisition.
3. To implement pretrained machine learning models for the recognition and validation of learner signs, providing instant feedback and guidance.
4. To incorporate two modes of learning within the tool: automatic learning, where users can self-learn ASL with the aid of the tool, and supervised learning, where teachers or mentors can provide guided instruction.
5. To collect and compile a comprehensive dataset of Algerian Sign Language signs through user interactions with the tool, contributing to the development of an ASL corpus.

III. Keywords

- Computer-Assisted Learning
- Algerian Sign Language (ASL)
- Reinforcement Learning
- Sign Language Recognition
- Error Analysis
- Pretrained Models
- Dataset Collection
- Deaf Education
- Learning Tools

IV. Summary

The proposed project aims to create a computer-assisted learning tool for Algerian Sign Language, catering to the needs of individuals with hearing impairments. This tool will employ reinforcement learning techniques and pretrained models to facilitate ASL learning, offering an innovative approach for sign language acquisition. Users will have the option to choose between automatic learning and supervised learning, providing flexibility and personalization in their learning journey. Additionally, this project will contribute to the establishment of a comprehensive dataset of Algerian Sign Language signs.

V. Work Outline

The project will be divided into the following key phases:

1. Research and Literature Review:

- Review existing ASL learning tools and technologies.
- Study reinforcement learning techniques and sign language recognition models.

2. Tool Development:

- Design and develop the computer-assisted ASL learning tool.
- Implement reinforcement learning algorithms for automatic learning mode.
- Incorporate pretrained models for sign recognition and validation.
- Integrate user-friendly interfaces for both automatic and supervised learning modes.

3. Data Collection and Corpus Building:

- Implement data collection mechanisms to record user interactions and signs.
- Organize, clean, and structure the collected data into a coherent ASL corpus.

4. Evaluation and Testing:

- Conduct extensive testing of the tool's functionalities.
- Gather feedback from deaf individuals and educators.
- Evaluate the effectiveness of the automatic and supervised learning modes.

5. Documentation and Reporting:

- Prepare comprehensive project documentation.
- Create user manuals and guides for the tool.
- Generate a report detailing the project's objectives, methodology, results, and recommendations.

VI. Work Schedule

The project is expected to be completed over the course of one academic year, with the following tentative schedule:

- **Month 1:** Research and Literature Review
- **Month 2:** Tool Development
- **Month 1:** Data Collection and Corpus Building
- **Month 1:** Evaluation and Testing
- **Month 1:** Documentation and Reporting

This work schedule may be adjusted as the project progresses to accommodate any unforeseen challenges or opportunities for improvement.

In conclusion, this project aims to create a valuable resource for individuals with hearing impairments, facilitating the learning of Algerian Sign Language through an innovative computer-assisted tool. The implementation of reinforcement learning and pretrained models will enhance the learning experience and provide valuable data for the development of ASL resources.