Major Project SRS Submitted to

Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal
Towards Partial Fulfillment for the Award of

Bachelor of Engineering
(Computer Science and Engineering)

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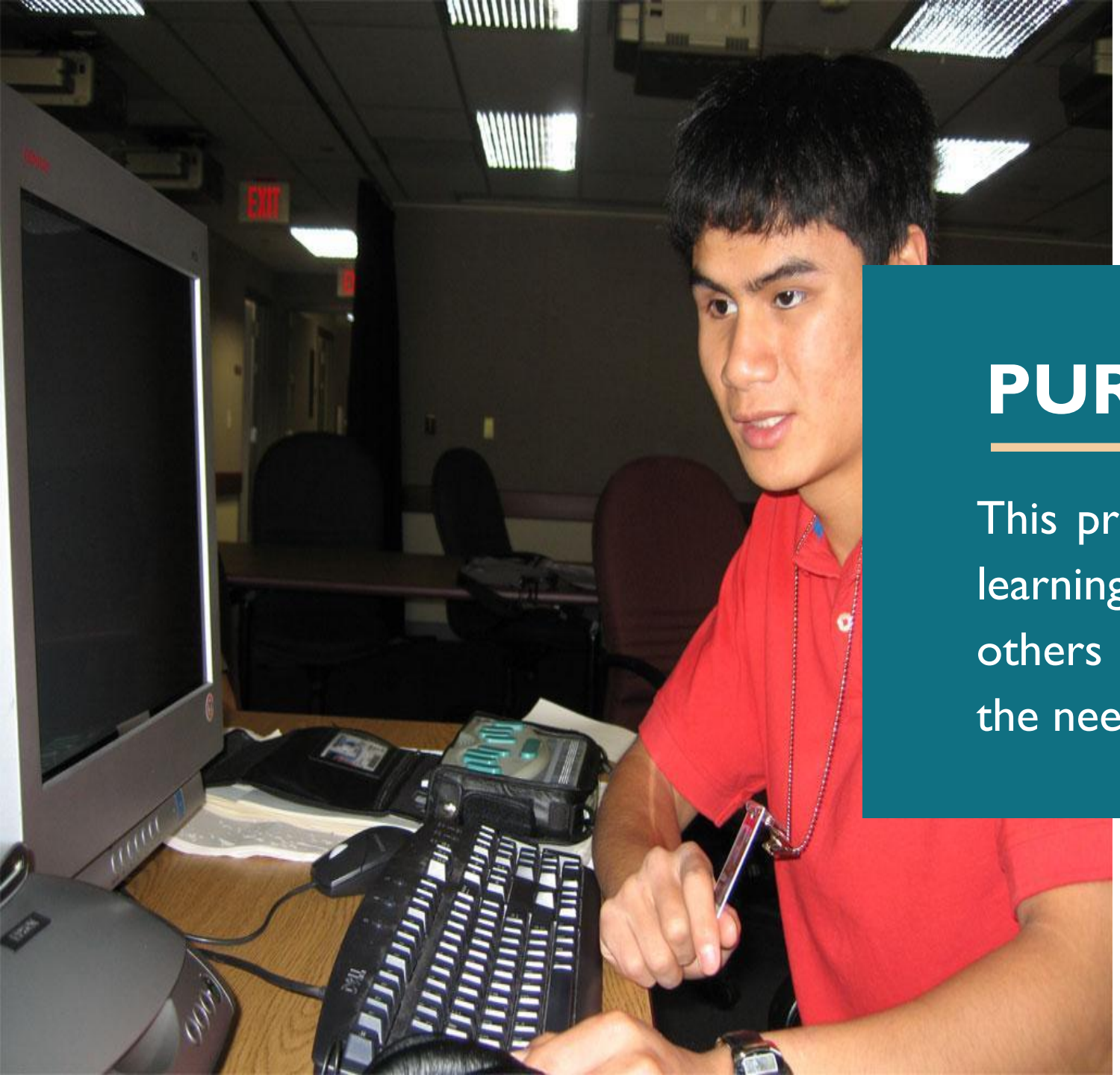
ACROPOLIS
Enlightening Wisdom

Software Requirements Specification

Presentation

Sign Language Converter



PURPOSE

This project will help a person who has learning disability to communicate with others and vice versa. Thus, eliminating the need of translator between them.

INTRODUCTION

Sign Language Converter is a desktop application which can be used to convert audio to text and then to sign language. The project is a machine learning program that detects and recognizes audio signals received to text using speech to text API (python modules or Google API) and then makes a visual presentation (video) of the converted sign language which requires machine learning as a part.

SCOPE

- This can be used to help disabled people.
- This can be used by people to understand the sign language and help those people communicate through it.
- This can be used on wide scale to make most of the public understand what a person is trying to convey to the world through sign language.
- This will prevent the disabled people from hiring other people who can speak and understand sign language just to be their communicator.
- This can be implemented with other technologies too like iot, android and thus has a lot of scope

PRODUCT FUNCTION

- Audio input on a Personal Digital Assistant(PDA) using python PyAudio module.
- Conversion of audio to text
- Dependency parser for analysing the grammatical structure of the sentence and establishing relationships between words.
- Generation of Sign language

GENERAL CONSTRAINTS

- The only disadvantage of the programming language is its speed.
- Python is not the fastest programming language still it is versatile and adopted broadly.
- Noise in background may cause application to generate error-prone results.

Functional Requirements

Sign Language Converter

Hardware Requirements

- **Operating System**: Windows XP/ Windows 7/ Linux
- **RAM**: 2 GB recommended
- **Hardware Devices**: Webcam enabled system
- **Display**: Standard Output Display
- **Audio**: Microphone (preferred)

Software Requirements

- **Technology Implemented**: Machine Learning, Artificial Intelligence, Natural Language Processing
- **Language Used**: Python
- **User Interface Design**: Desktop Application
- **Model**: Spiral Model

Non Functional Requirements

Sign Language Converter

PERFORMANCE

The Audio to Sign Language Converter is based on python. The program shall take initial load time. The performance shall also depend upon hardware components of the client.

RELIABILITY

Python is very reliable. The language has been around for over 20 years, and is in use in many sites. Python is actively maintained, so when problems are reported, they are dealt with promptly. But of course it is a programming language, which means the reliability of code you write depends on your skill at programming. If you write buggy code. Python cannot save you from your own errors.

SECURITY

Python is a very secured programming language. Thus, the application made is highly secured.

PORTABILITY

The product is highly portable as it can be accessed from any device with any operating system.

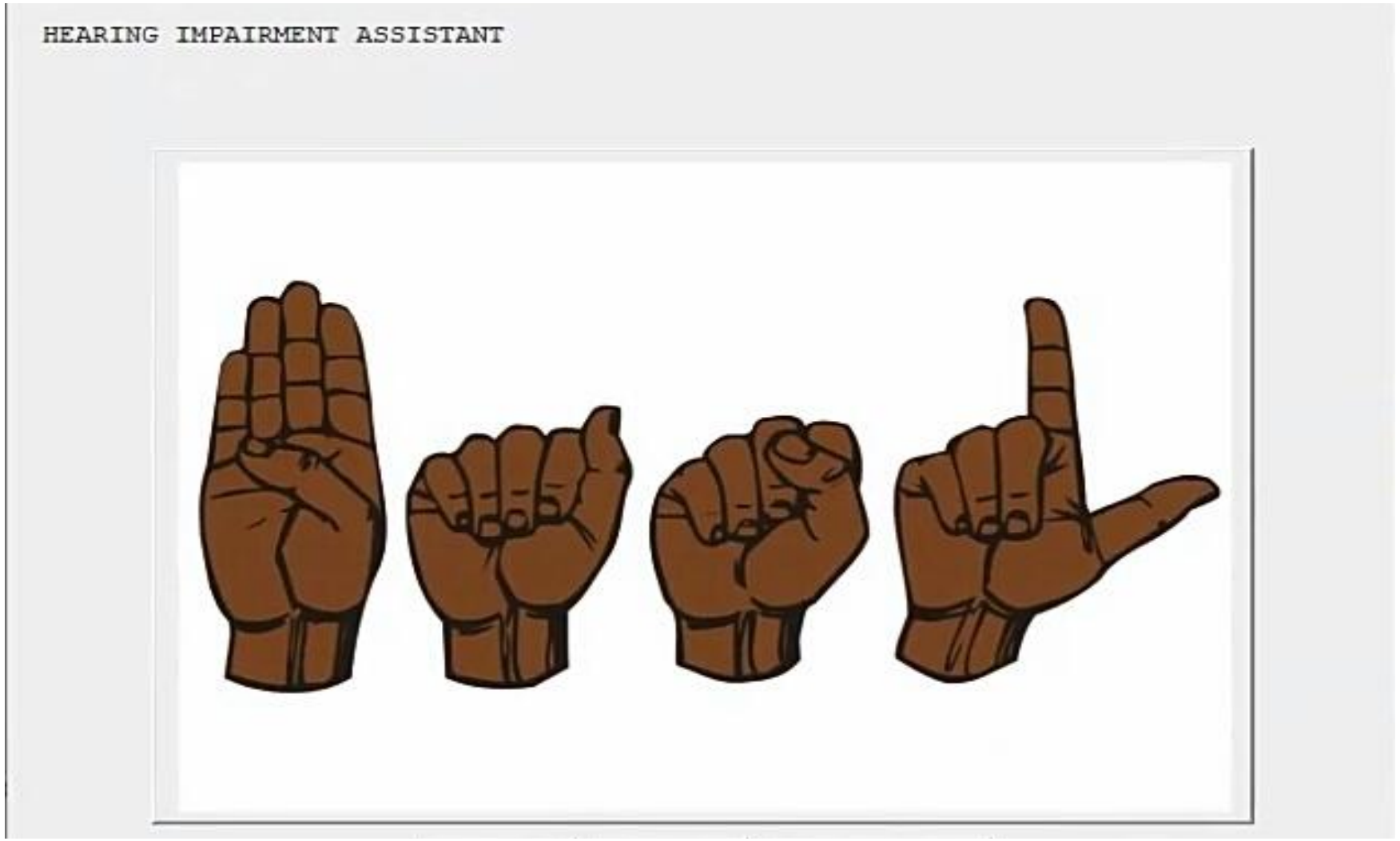
FAULT TOLERANCE

The product has high fault tolerance. Thus, maximizing its efficiency.

Implementation of Project

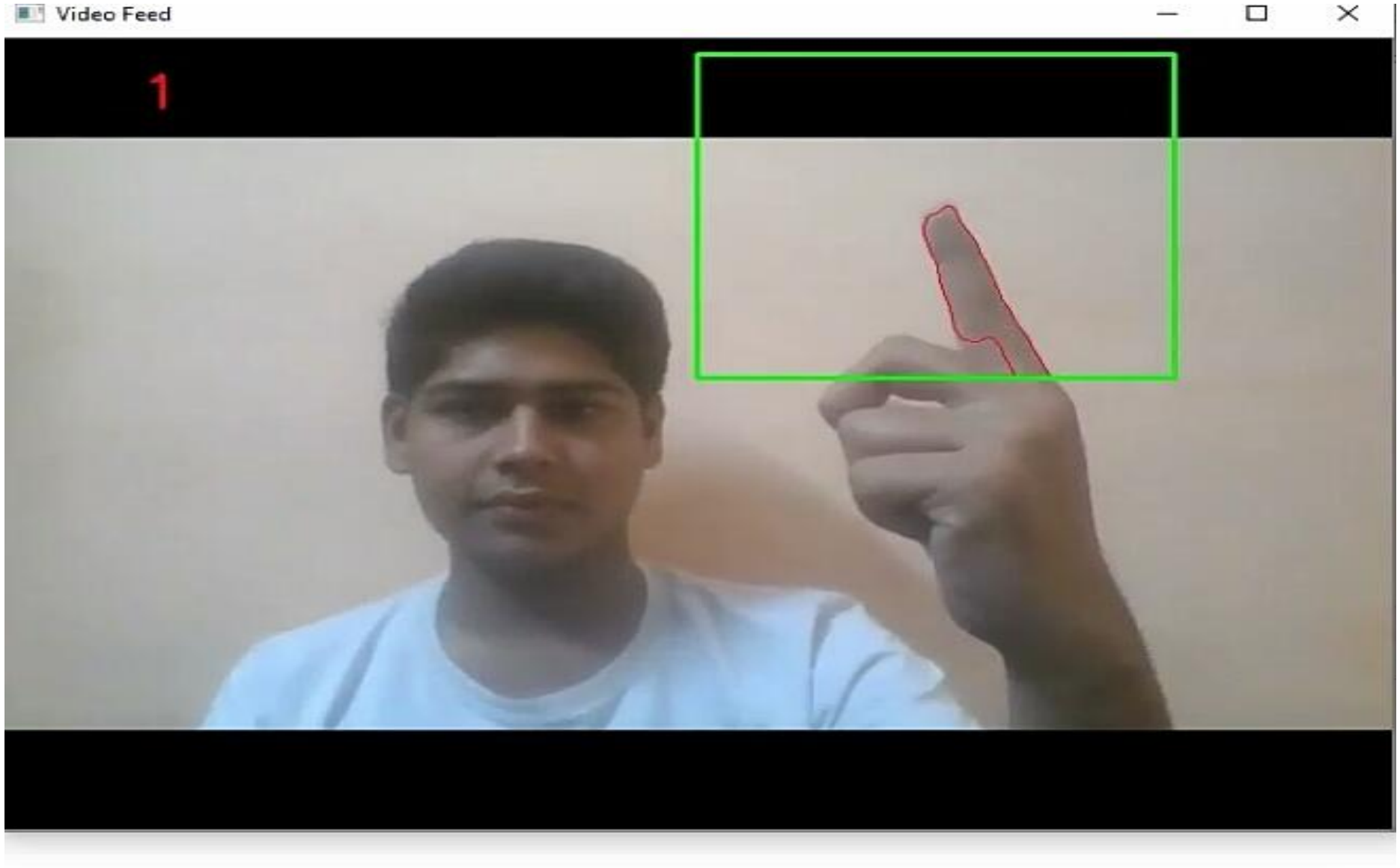
Sign Language Converter

Main Window



Audio to Sign Language

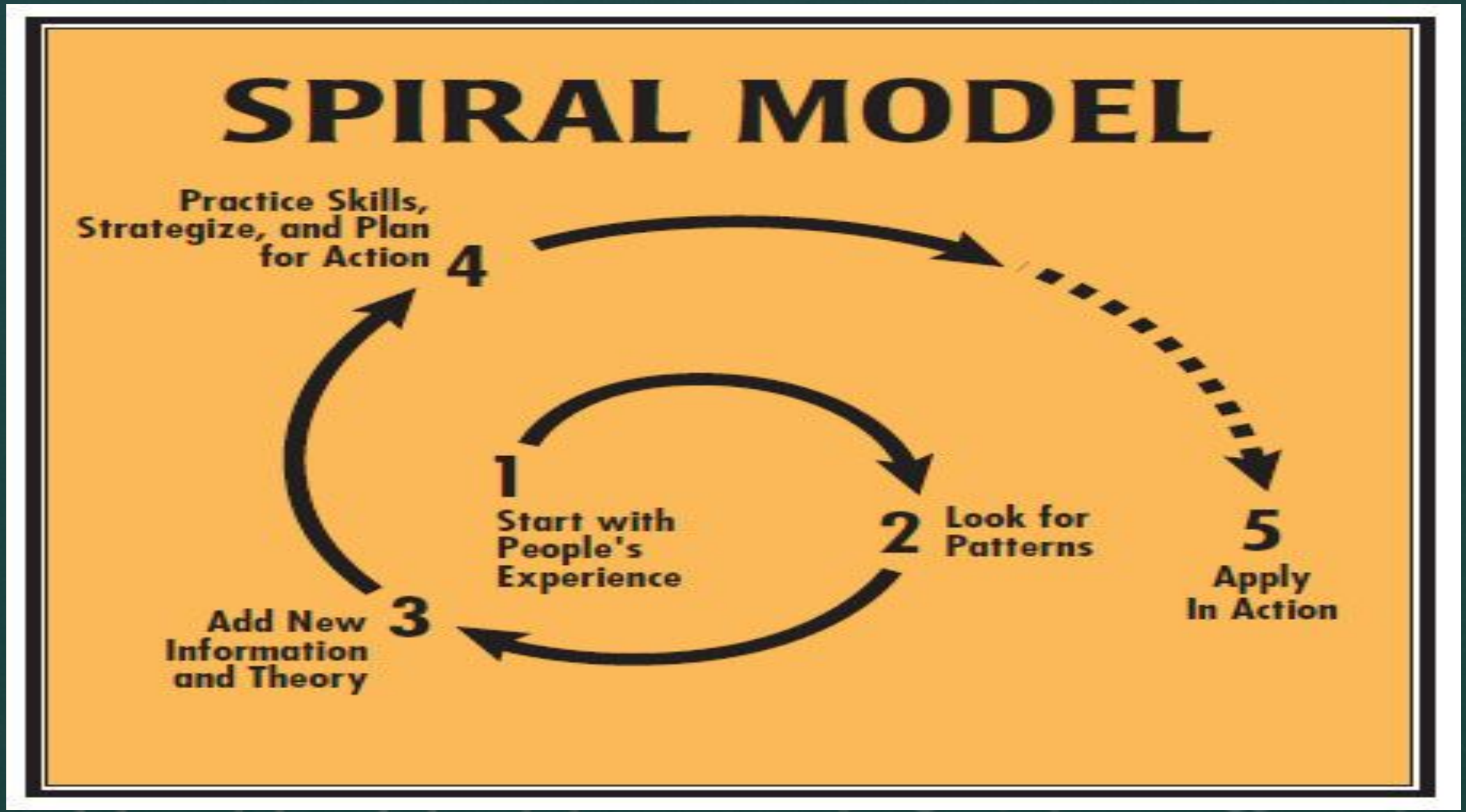
Sign Language to Text




Frame
3

SDLC MODEL USED

Sign Language Converter


SPIRAL MODEL
Practice Skills, Strategize, and Plan for Action
4
1
Start with People's Experience
2
Look for Patterns
5
Apply In Action
3
Add New Information and Theory

WHY SPIRAL MODEL ???

- Additional functionality or changes can be done at a later stage
- Cost estimation becomes easy as the prototype building is done in small fragments
- Continuous or repeated development helps in risk management
- Development is fast and features are added in a systematic way
- There is always a space for customer feedback

THANK YOU!