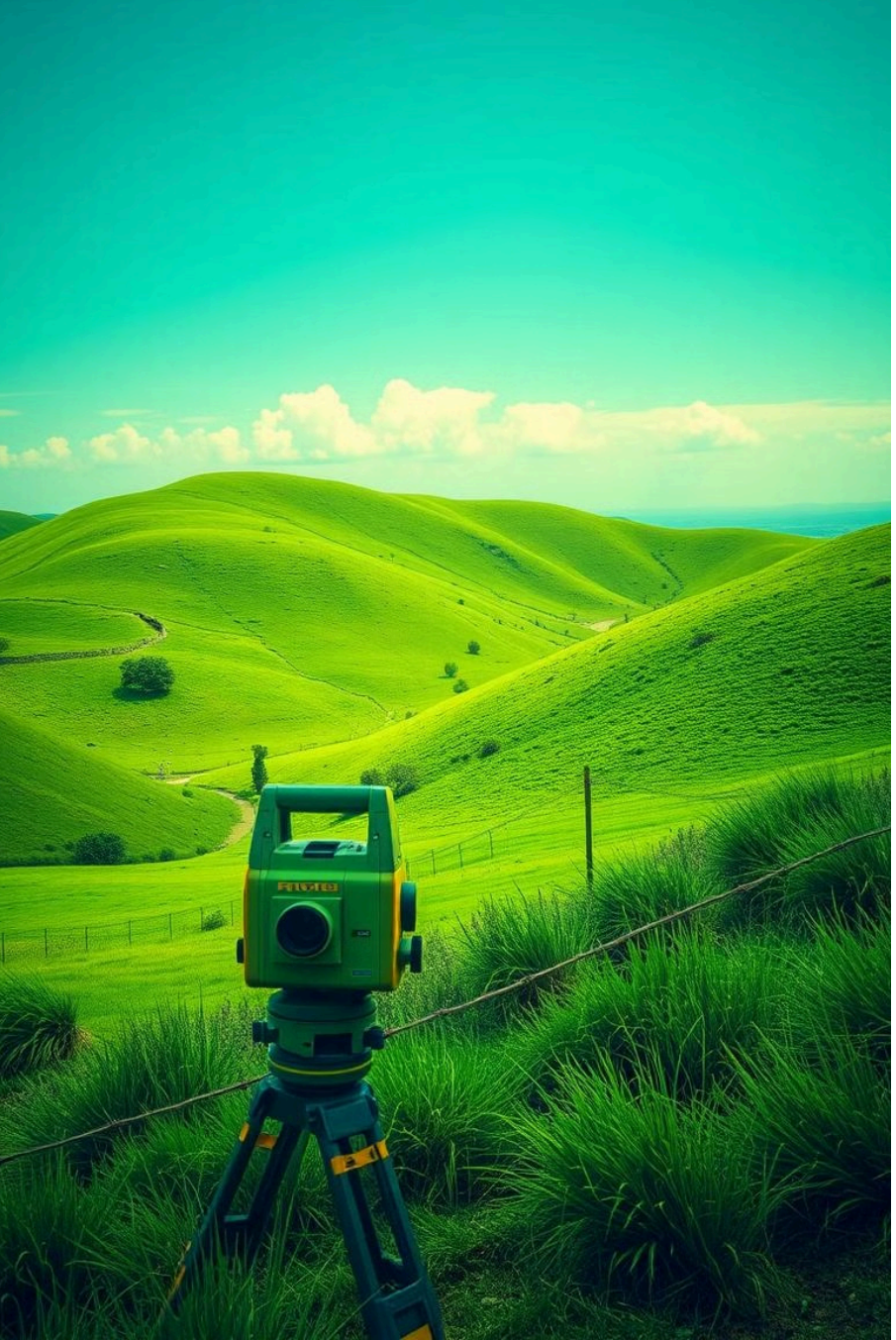


Traversing in Surveying: A Comprehensive Overview

This presentation covers traversing in surveying. We will explore its definition, importance, and applications. We'll also cover equipment and procedures.

By the end, you will understand traversing principles and future trends.

by Shahi Survey

Core Principles of Traversing

Angular Measurement

Horizontal angles are measured at each station. Theodolites or total stations are typically used.

Distance Measurement

Distances between stations are measured using tapes or EDM.

Traverse Stations

Measurements are taken at traverse stations, which are specific points.

Accuracy

Careful measurements are critical for desired precision. This includes error adjustment.

Closed Traverses: Definition and Characteristics

Definition

Forms a closed polygon. Returns to the start or connects to a known point.

Geometric Check

Enables checking of angular and linear misclosures for accuracy.

Error Adjustment

Distributes errors for geometric consistency. Methods include Bowditch rule.

Example

A boundary survey of a land parcel is a common application.

Open Traverses: Definition and Limitations

Definition

A series of lines that do not form a closed loop.

No Geometric Check

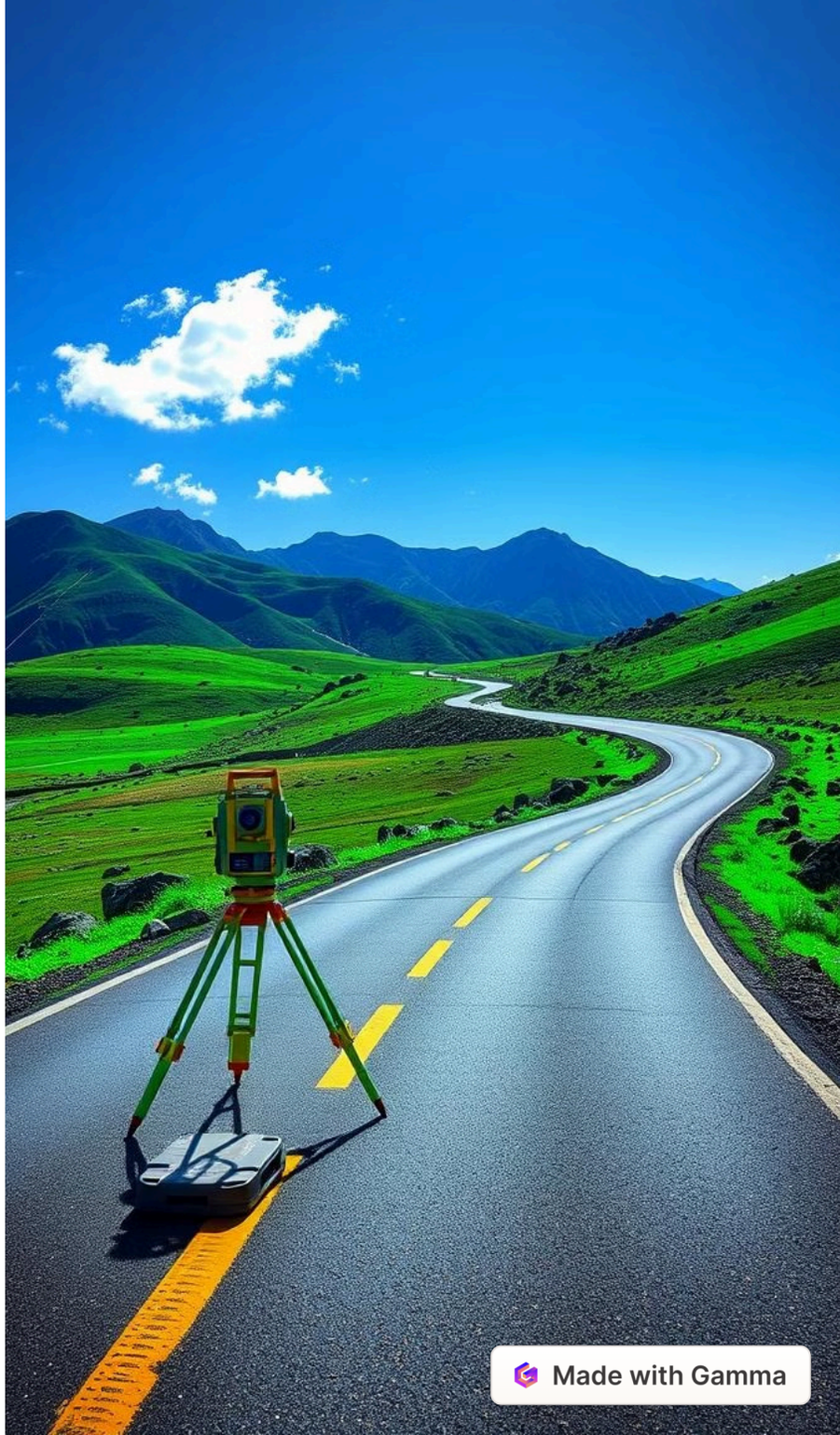
Accuracy depends on measurement precision. Error detection is not built-in.

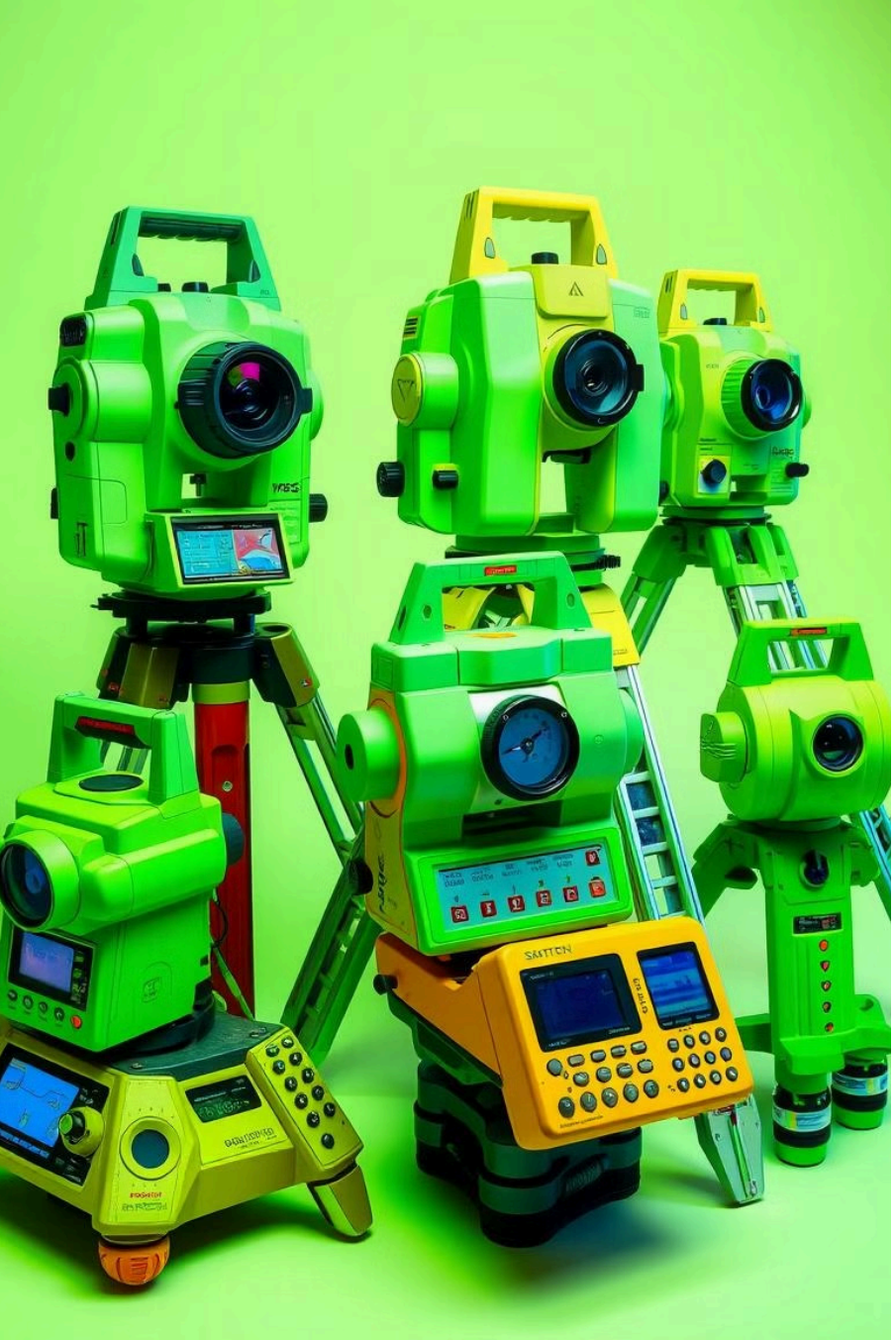
Applications

Route surveys for roads, pipelines, and transmission lines.

Limitations

Prone to accumulated errors. Requires frequent checks against control points.





Essential Traversing Equipment

Total Stations

Measure angles and distances electronically with high precision.

Theodolites

Used for precise angle measurement in surveying.

GPS/GNSS Receivers

Determine positions using satellite signals. Useful for large traverses.

Traversing Fieldwork Procedure

Reconnaissance

Site visit to select stations and plan the route.

Station Marking

Setting up and marking traverse stations.

Angle Measurement

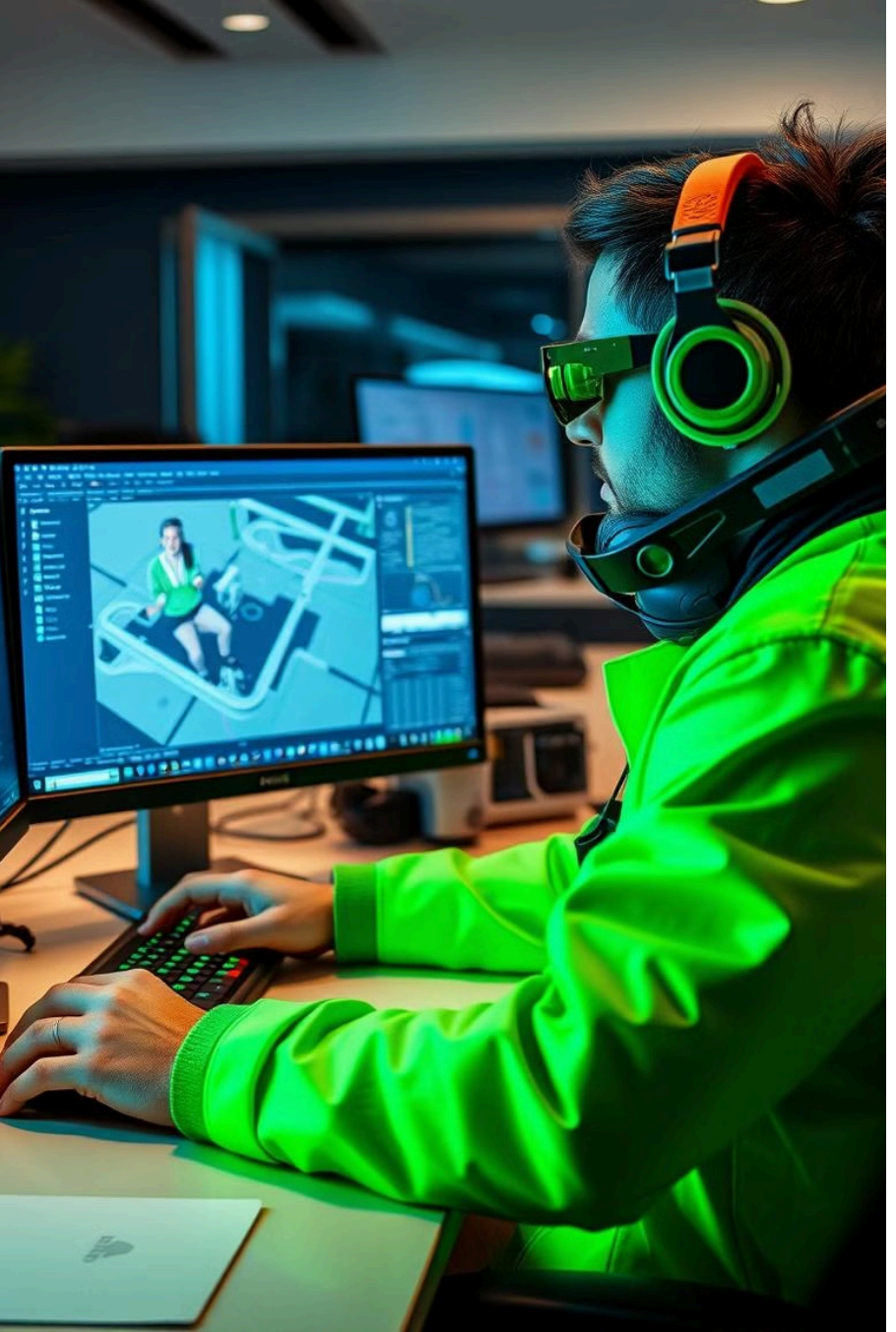
Measuring horizontal angles at each station.

Distance Measurement

Measuring distances between stations using equipment.

Data Recording

Accurate recording of measurements.



Calculations and Adjustments

Angular Misclosure

Calculate difference in angles.

Error Distribution

Adjust angles to meet conditions.

Linear Misclosure

Find error in traverse closure.

Coordinate Calculation

Compute station coordinates.

Conclusion: Traversing Today and Tomorrow

Applications

Control networks, mapping, layout, surveys.

Advantages

Simple and cost-effective method.

Limitations

Time-consuming, error-prone.

Future Trends

Drones and automated processing will improve results.