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Quality Assurance using AI – (Simplified)

Given:

Our software processes geometric vector data (points, lines, polygons) for cartographic applications through:

1. Data import
2. Generalization
3. Interactive editing
4. Data export

Current QA Process: Manual testing to verify functions work correctly, data is complete and visually correct, and no crashes occur.

Simplified Task:

Build an AI system to automate **one specific aspect** of quality assurance.

Choose ONE Focus Area:

Option A: Screenshot-Based Anomaly Detection

- Take screenshots of generalized map outputs
- Train AI to identify visual errors (missing features, incorrect styling, distorted geometries)
- Flag images that "don't look right" compared to good examples

Option B: Rule-Based Geometry Validation

- Check vector geometry properties (coordinates, topology, completeness)
- Use simple ML to detect anomalies in geometric properties
- Validate against known rules (no gaps, no overlaps, valid coordinate ranges)

Requirements:

1. **Single Error Type:** Focus on detecting one specific kind of error (e.g., "missing line features" or "invalid polygon topology")
2. **Clear Output:** Show what error was found and where
3. **Training Data:** Use provided examples of correct vs. incorrect outputs

Deliverables:

1. Working demo detecting **one type of error** in provided test cases
2. Simple error report showing what was found
3. Brief training instructions (how to add more examples)
4. Demonstration on 2-3 provided error examples