OUTPUT

1. Real-Time Prediction Outputs

Earthquake Risk Assessment (Sample API Response)

json

```json
{
  "disaster": "earthquake",
  "location": {"lat": 34.0522, "lon": -118.2437},
  "predictions": [
    {
      "timestamp": "2023-11-15T00:00:00Z",
      "risk_score": 0.72,
      "magnitude_estimate": 5.8,
      "confidence_interval": [0.68, 0.76],
      "affected_radius_km": 45.2,
      "population_at_risk": 1250000
    }
  ],
  "model_version": "eq-lstm-v3.2.1",
  "last_updated": "2023-11-14T12:34:56Z"
}
```

2. Early Warning System Output

SMS Alert Received by Residents

```
[EMERGENCY ALERT] FLOOD WARNING
Location: 3km radius of 34.0522°N, 118.2437°W
Severity: High (78% probability)
Expected: 2023-11-15 14:00-18:00 PST
Action: Evacuate to Shelter #42 via Route A
Shelter Capacity: 320/400 (Updated 5min ago)
```

3. Evacuation Route Optimization

Optimal Path Calculation

geojson

```geojson
{
  "type": "FeatureCollection",
  "features": [
    {
      "type": "Feature",
      "properties": {
        "route_id": "evaq-1142-a",
        "disaster_type": "wildfire",
        "population_served": 2450,
        "estimated_clearance_time": "2h15m",
        "route_priority": 1
      },
      "geometry": {
        "type": "LineString",
        "coordinates": [
          [-118.2437, 34.0522],
          [-118.2401, 34.0488],
          [-118.2315, 34.0422]
        ]
      }
    }
  ]
}
```

4. Model Performance Metrics

Earthquake Prediction Accuracy

```
              precision    recall  f1-score   support

           0       0.97      0.99      0.98     18245
           1       0.89      0.76      0.82      1755

    accuracy                           0.96     20000
   macro avg       0.93      0.88      0.90     20000
weighted avg       0.96      0.96      0.96     20000
```