Theoretical Approach:

1. **Preprocessing of Signals**:
   - **Normalization**: Both the transmitted and received audio signals are normalized to ensure they have a consistent amplitude range. This helps in accurately identifying the peaks in the signals.
2. **Cross-Correlation**:
   - **Definition**: Cross-correlation is used to measure the similarity between two signals as a function of the time-lag applied to one of them.
   - **Purpose**: In this context, cross-correlation helps to identify the echoes in the received signal that correspond to the transmitted signal.
3. **Peak Detection**:
   - **Definition**: Peak detection is used to identify significant peaks in the cross-correlation result, which correspond to the echoes from different mountains.
   - **Parameters**: `MinPeakHeight` and `MinPeakDistance` are used to filter out noise and ensure that only significant echoes are detected.
4. **Time Delay Calculation**:
   - **Formula**: The time delay (Δt) for each echo is calculated from the lags of the peaks detected in the cross-correlation.
   - **Unit**: The time delays are converted from samples to seconds using the sampling frequency (fs).
5. **Distance Calculation**:
   - **Formula**: The distance (d) to each mountain is calculated using the formula: $d=(\Delta t \times v)/2$ where v is the speed of sound in the environment (450 m/s).
   - **Explanation**: The factor of 2 accounts for the round trip of the sound wave (from the source to the mountain and back).
6. **Attenuation Factor Calculation**:
   - **Definition**: The attenuation factor (α) measures the reduction in the amplitude of the sound wave as it travels.
   - **Formula**: It is calculated as the ratio of the peak amplitude of the received signal to the peak amplitude of the transmitted signal.
7. **Decision Making**:
   - **Criteria**: If any of the calculated distances are less than or equal to 500 meters, Batanatham can glide away. Otherwise, he should call for help.