1. Introduction
2. Theory
   * Op Amps
     + Amplifiers
       1. Inverting
       2. Non-Inverting
     + Comparators
     + Differential Amplifiers
     + Envelope Detectors
   * DSP
   * YIN Method
     + Autocorrelation Function
     + Difference Function
     + Cumulative Mean Difference Function
   * Analog Octaver
     + Circuit
     + Digital Recreation
   * Pickup Technology and Fundamentals
     + Piezo
     + Single Coil
     + Humbuckers
3. Methods
   * Debugging PCB for a Bass Guitar
   * Data Correlation using Python Scripts
     + Data Flow
     + Data Points
     + Methods
   * Test Data and Test Methods
     + Bass Synthesizer, Octaver, and Octaver Augmented
     + Piezo and Humbucker/Split coil Pickups
   * Test Considerations
4. Results
   * Results using Python Data Correlation on Synth and Octaver
     + **Settling Time**
     + **Accuracy**
     + **Stability**
   * Error Cases and Types
     + Phase shifts
     + Octave error
     + Other Errors
   * Pickup Effects on Tracking and Frequency
     + Error Occurrences
5. Discussion
   * Methods for Improving Tracking
   * Results
6. Conclusion
7. References