- 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
    - Pickup Effects
    - Exception Cases
  - Pickup Effects on Tracking and Frequency
  - Other Effects
- 5. Discussion
  - Methods for Improving Tracking
  - Results
- 6. Conclusion
- 7. References