

## ***ABSTRACT***

The violin is one of the string instrument category and to produce a violin with a beautiful voice requires precision on pressing a finger on a string or referred to as fingering. For a beginner who unfamiliar with the fingering require hard practice and very long time. When they have to exercise, they are not accompanied by teachers so they will confuse as to play the right note. Beginners do not know whether it is correct tones or not. For that, they need tool that display the feedback of their mistakes. The mistakes could be something about the wrong notes different from the notes they supposed to play or could be the wrong fingering, it can be higher or lower than the right pitch. To be more efficient, the feedback shows in real-time so that beginners can analyze the mistakes of their playing.

For the feedback, the system needs the algorithm to detect the notes that they've been played. The algorithm is the Harmonic Product Spectrum (HPS), because this method perfect in a variety conditions. At the end of the simulation there will be feedback that displays the note that the beginner had played, and there will be performance evaluation that shows whether the note is higher or lower or are exactly as expected.

The final result is achieved after doing some testing of the accuracy with the tuner Joyo and the accuracy is around 77%.

Keywords: violin, Harmonic Product Spectrum, Realtime feedback.