



### REVIEWER'S REPORT

Manuscript No.: 50492

Date: 03-03-2025

Title: **Advance DSP – Goertzel Algorithm Implementation**

**Recommendation:**

Accept ... **YES**

Accept after revision ... ..

Do not accept (*Reasons below*) ...

Rating	Excel.	Good	Fair	Poor
Originality		<b>YES</b>		
Techn. Quality		<b>YES</b>		
Clarity			<b>YES</b>	
Significance		<b>YES</b>		

Reviewer Name: Gulnawaz Gani

### Reviewer's Comment for Publication

This paper contributes an **optimized Goertzel algorithm implementation** for **efficient frequency detection in DSP applications**, particularly **DTMF decoding in telecommunication systems**.

### Detailed Reviewer's Report

- The paper "**Advance DSP – Goertzel Algorithm Implementation**" explores the **Goertzel algorithm**, a computationally efficient method for detecting specific frequencies in a signal.
- It highlights the algorithm's two-phase approach: **processing (filtering target frequencies)** and **evaluation (magnitude computation)**.
- Compared to the **Fast Fourier Transform (FFT)**, Goertzel is **more efficient** when analyzing a small set of frequencies, making it ideal for **real-time DSP applications** with limited resources. The study focuses on **DTMF tone decoding**, demonstrating its effectiveness in **telecommunication systems**.
- It includes an **implementation in C**, optimization using **compiler switches and intrinsics**, and performance analysis to reduce computational cycles.
- The results confirm that the optimized algorithm improves efficiency while maintaining accuracy. The research underscores Goertzel's **practicality in embedded systems** and **frequency detection tasks** but suggests further improvements for **multi-frequency analysis**.

### Decision:

Accept