



## **FILTER BANK DESIGN USING MULTIPLE PROTOTYPE APPROACH FOR VARIABLE GRANULARITY BANDS**

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*Abstract- In this paper, a multiple prototype based filter bank is proposed for variable granularity bands. This method makes use of channel combiners for variable granularity bands from a cosine modulated filter bank. In the proposed method, the filter bank is generated from proper choice of prototype filters and bandwidth combinations are generated from different prototypes, where  $M$  determines the granularity of the uniform bandwidth from individual prototypes. The condition for generation of variable granularity bands from multiple prototype filters is also defined. The method is found to have less complexity and distortions as compared to a single prototype approach using channel combiners. The method allows different combinations of the uniform filter banks to generate the filter banks with variable granularity for integer powers of two. Simulations are done to obtain varying bandwidth channels, and analyzed for different input signals with different fidelity parameters. The results are found to be comparable with existing methods.*

**Index terms:** Multi Prototype, Variable Granularity, Channel Combiners, Cosine modulation, Filter Banks.