

# **Minimizing Bernstein Trigonometric Functions in Bernstein Newton Divided Differences Polynomials over Boxes**

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## **Abstract**

In this thesis, we study the minimization problem of trigonometric functions that are given over intervals. Finding the minimum value of such functions in high dimensional case suffers from complexity issues. To this end, we convert these functions to polynomials in the form of Newton divided differences of finite degree.

The problem of minimizing polynomials is easier to be solved than trigonometric functions. These differentiable polynomials can be expanded to polynomials of higher degree by Bernstein form. We provide a method of minimizing these functions in the Bernstein form. Finally, these functions were minimizing by the minimum value of Bernstein coefficients.

**Keywords:** Bernstein, Minimizing, Newton Divided Differences, Trigonometric Functions.