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| <b>Author(s) Name:</b>         | Shetu Roy, Mohammad Abdul Mannan  |
| <b>Contact Email(s):</b>       | mdmannan@aiub.edu   |
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## Abstract:

The DC-DC converters have an unregulated input dc voltage and a constant or regulated output dc voltage. Switching DC-DC voltage converters have two elements: A controller and a power stage. The power stage regulates the switching elements and converts input voltage to output voltage. The controller controls the switching operation to regulate the output voltage. The two systems are linked by a feedback loop that compares the actual output voltage with the desired output to derive the error voltage. This paper will focus on modeling, analysis, design and simulation of DC-DC boost converter architecture and will present an optimized controller for constant voltage applications. The constant output applications have been established by using pulse width modulation (PWM) with a proportional-integral (PI) controller. PI Controller is the most widely used controller in various industrial & technological applications. Here, trial and error method is used to set the controller parameters & to get constant outputs. The calculations of the boost converter have been examined through simulation results using MATLAB Simulink.

**Keywords:** Boost converter, duty cycle, PI controller, PWM Generator (DC-DC), trial & error method