



**MACHINING OPTIMIZATION USING FIREFLY
ALGORITHM**

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“I declared that this is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree.’



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ABSTRACT

The industry always targets to achieve low production cost and high profit rate that generated by the machining process. Other than that, to get low production time on a product also important to them. When any of these targets is not achieved, creating big problem to company and a total loss. The metaheuristic algorithm which being called as Firefly Algorithm (FA) is often used to solve various optimization problem in our daily life. As it is new approach in optimizing sector and not often being used by the researcher making it very special. For this project, we will verify the Firefly Algorithm (FA) into finding total profit rate by optimizing the machining parameter of milling operation and compare the effectiveness of FA with other non-conventional method. The FA will be implemented into the milling operation to optimize the parameter which are the cutting speed, the feed rate and the depth of cut. Then, the result will be compared with Tabu Search (TS) Algorithm, Particle Swarm Optimization (PSO), Genetic Algorithm (GA) and Continuous Ant Colony Algorithm (CACO). Based on the previous research on the success of Firefly Algorithm, this approach will be able to optimize the machining parameter of milling operation. The FA able to achieve an improvement of about 54.36% compared to the handbook manual.