

## Anant colony system for routing in PCB holes drilling process

### Abstract

Most electronic manufacturing industries use computer numerical controlled (CNC) machines for drilling holes on printed circuit board (PCB). Some machines do not choose the optimal route when completing their tasks. Hence, this paper proposes an approach, which is based on ant colony system (ACS), for finding the optimal route in PCB holes drilling process. In ACS, an artificial ant starts to move from a random hole location and moves to the next hole location, based on the pheromone level between the locations of two holes. The higher the pheromones level, the higher the chance for the artificial ant to choose that path. At the same time, that ant deposits its pheromone on the path chosen. This process is repeated until the artificial ant builds a solution, which is evaluated with other artificial ants' solutions. The best artificial ant deposits additional pheromone to its path. The best-found path is updated as the iteration continues. Experimental result indicates that the proposed ACS-based approach is capable to efficiently find the optimal route for PCB holes drilling process.