AE6102 : Project Update 2

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1 Parallelized DPLL Algorithm

We parallelised the DPLL algorithm for the second project update using the mpi4py python library. The file mpidpll.py contains the parallel implementation for DPLL. The logic for the parallelization was that the rank 0 element first establishes the connection with all the other elements and then performs UNIT PROPOGATION. After this has been completed, each variable is sent to an element one by one, and that element calculates and returns if the literal is pure or not back to the rank 0 element.

All the pure literals are collected and removed from the formula. This step is recursively repeated. This is carried out throughout the formula until there are no clauses left, which implies that the formula has an SAT solution stored in the assignment dictionary. If the formula decreases to an empty clause, the formula has no solution.