Is the Island Model Fault Tolerant?

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Abstract

This paper studies the Fault Tolerance of Island Models applied to Distributed Parallel GAs.
There are few works dealing with failures when a distributed environment is employed.
The main results from this research suggest that GAs Island Models are Fault Tolerant by nature.

Problem

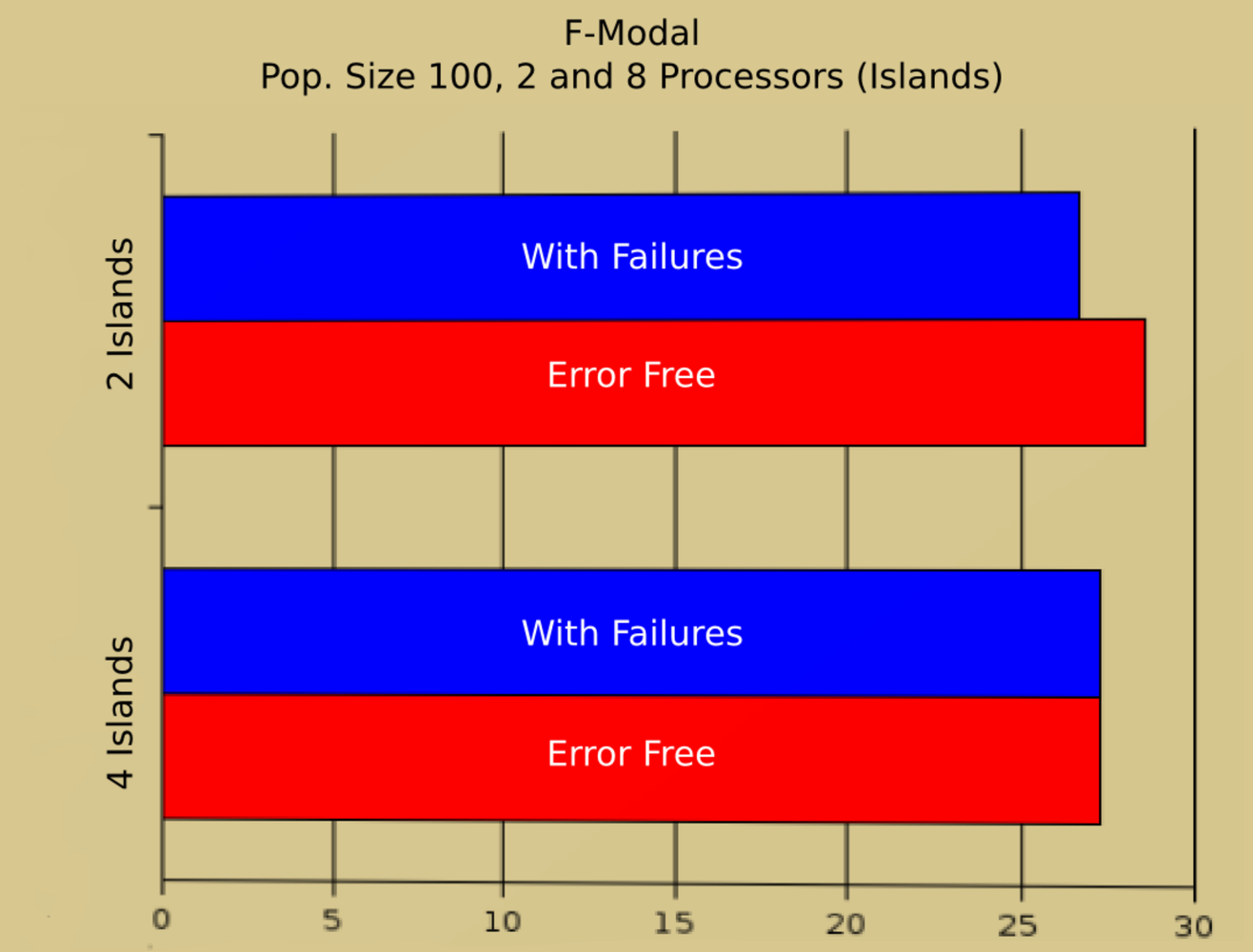
Using a Distributed environment implies handling connection & computer/node failures.
Different techniques are used: checkpointing, redundancy, rejuvenation frameworks, etc.
Using those techniques we increase the complexity of our scientific algorithm.

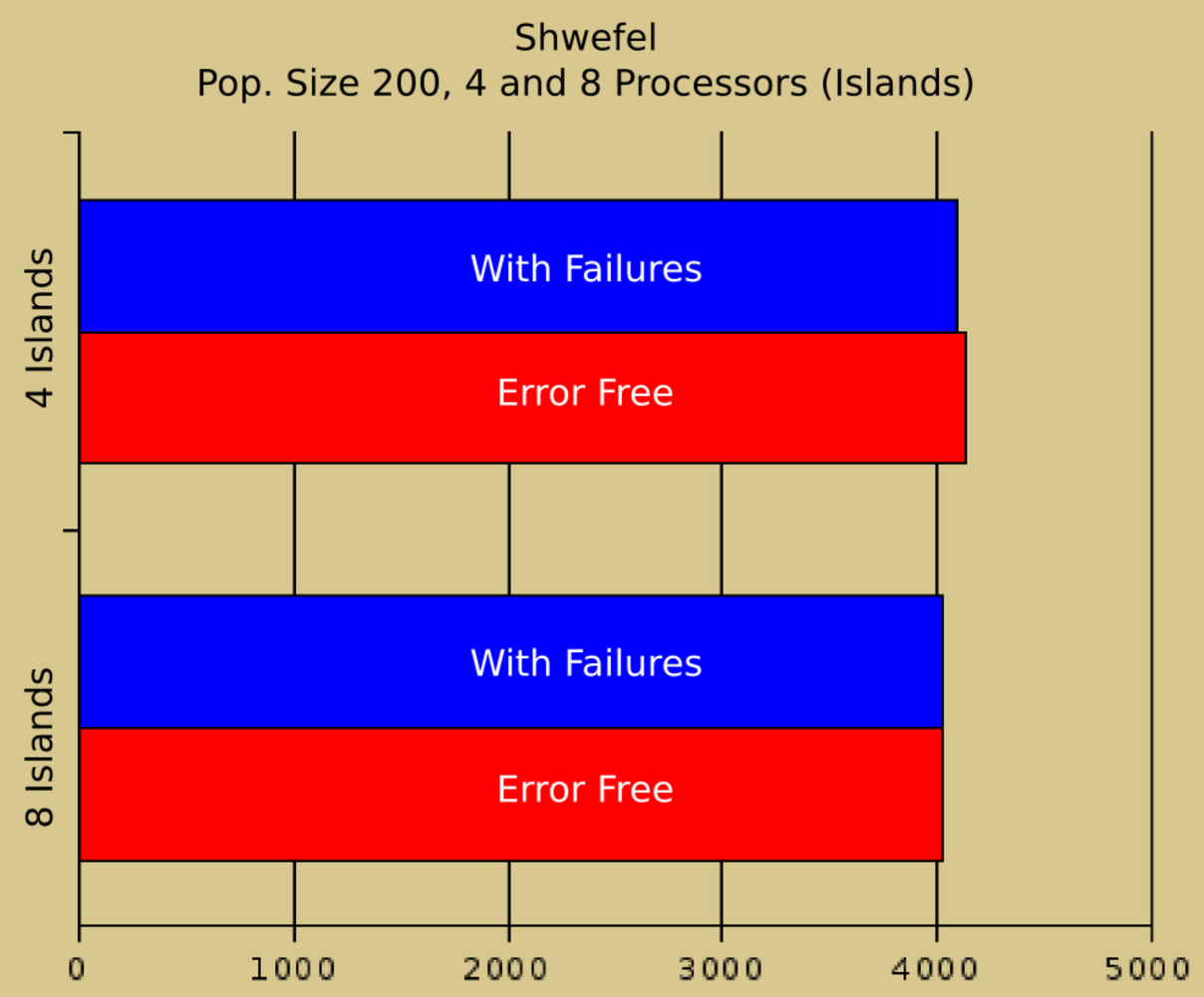
Our Proposal

Instead of trying to use any of those techniques we propose to ignore each failure.
Basically we are going to ignore the failures and continue the execution of the algorithm.
We have researched this new technique with F-modal and Shwefel non-trivial problems for GAs.

Results

An environment is tested under two policies: a) Error Free and b) Failures.
The Best Found Individual Fitness is in both policies similar.
These results suggest that Island Model Parallel Distributed GAs are Fault Tolerant by nature.





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