

Evolutionary Computing & Hyper-Heuristics

Automated Design of Algorithms

- Create highly customized solutions for repeated solving of instances of the same problem class, where high a priori computational cost is effectively amortized
- Create tools to assist practitioners with automating the design of algorithms for custom applications

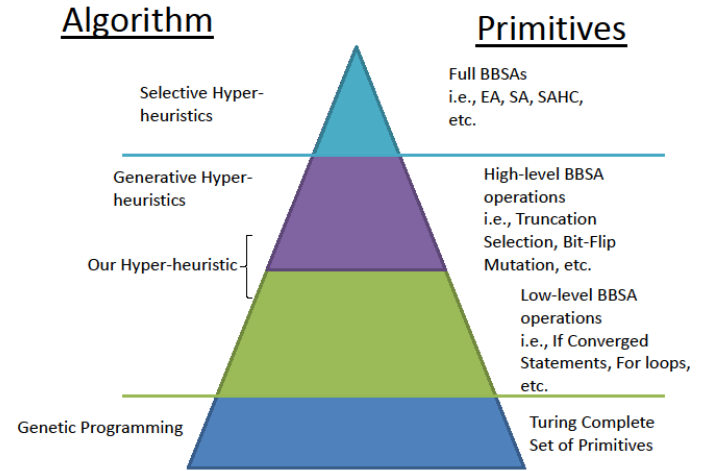
Coevolutionary Computational Game Theory

- Approximate Nash Equilibria with Coevolution to support real-world game theoretic problems
- Automate the identification of adversarial threats
- Automate the mitigation of identified threats

Cyber Security

- Create Hyper-Heuristics to automate the design of SAT Solvers for program understanding
- Coevolve attackers & defenders for enterprise computer networks

Primitive Granularity



**Daniel's Pyramid Classification of Hyper-heuristics
Ranked by their Primitive Granularity**

PoC: Daniel R. Tauritz, Associate Chair,
Department of Computer Science
Associate Professor of Computer Science
tauritzd@mst.edu, <http://web.mst.edu/~tauritzd>



Recent Funding

- Los Alamos National Laboratory
- Sandia National Laboratories
- National Security Agency

Keywords

- #EvolutionaryComputing, #ComputationalIntelligence, #HyperHeuristics, #AutomatedDesignOfAlgorithms, #CyberSecurity, #ComputationalGameTheory, #CriticalInfrastructureProtection, #ArtificialIntelligence

Recognitions

- Senior Member, ACM & IEEE
- S&T Faculty Service Award: 2014
- S&T Outstanding Teaching Award: 2007, 2008, and 2011