

Cooperation in self-organized heterogeneous swarms

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Cooperation in self-organized heterogeneous swarms is a phenomenon from nature with many applications in autonomous robots. I specifically analyzed the problem of auto-regulated team formation in multi-agent systems and several strategies to learn socially how to make multi-objective decisions. To this end I proposed new multi-objective ranking relations and analyzed their properties theoretically and within multi-objective metaheuristics. The results showed that simple decision mechanism suffice to build effective teams of heterogeneous agents and that diversity in groups is not a problem but can increase the efficiency of multi-agent systems.