

A high-angle, blurred photograph of a crowd of people walking on a light-colored pavement. The motion blur is horizontal, suggesting a busy, fast-moving environment. The people are dressed in casual to business-casual attire.

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PhD Student

Decision-theoretic Fine Tuning of Multi-objective Co-Evolutionary Algorithms

Evoperf Work Package 3

About me

- European school of Luxembourg '96
- Technical University of Denmark '02
 - *MScEE, informatics, digital electronics, control*
- Husky '05
 - *Injection molding machines*
- Intorel '08
 - *Broadcasting systems monitoring, consumer applications*
- PricewaterhouseCoopers '11
 - *Portfolio audit and pricing software*

My PhD Thesis

- Starting date 15. September 2011
- Decision-theoretic fine tuning of Multi-objective co-evolutionary algorithms
 - Prof Pascal Bouvry, Prof Nikos Vlassis, Dr Grégoire Danoy
- Project Evoperf, work package 3
 - Evolutionary Computing and Performance Guarantee
- Interdisciplinary research
 - Luxembourg Centre for Systems Biomedicine (LCSB)

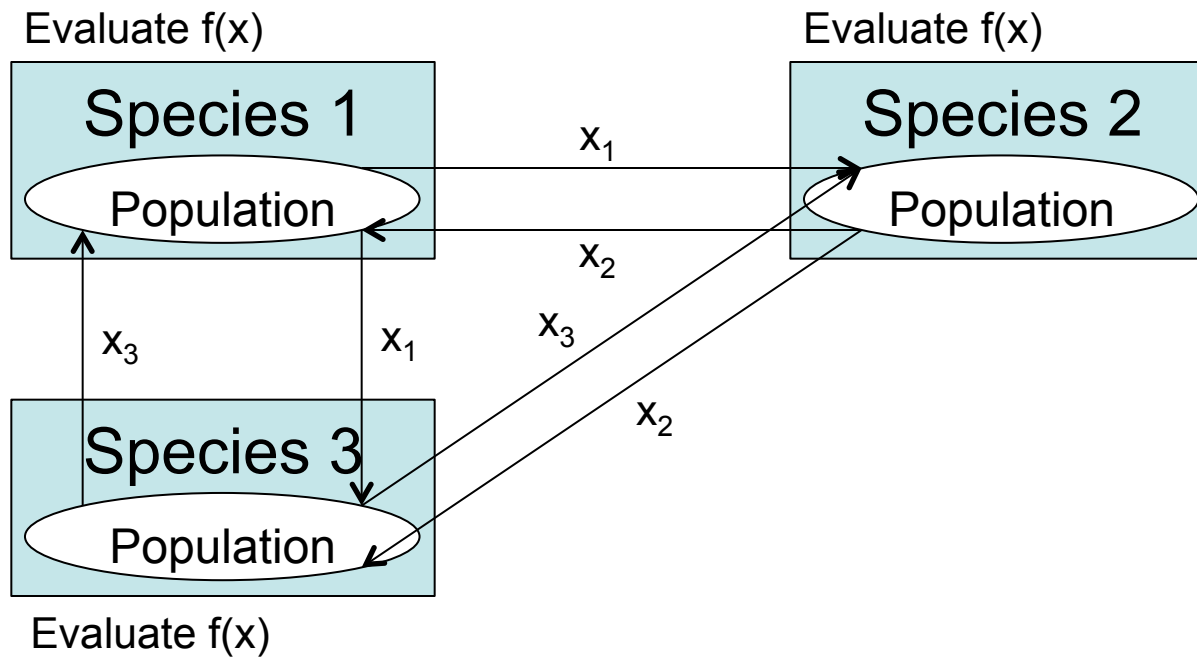
Co-evolutionary algorithms

- An evolutionary optimization approach
 - Minimize objective function(s)
 - Iteration over generations of solutions
- Fitness evaluation is based on interaction of multiple individuals or sub-populations

Co-evolutionary algorithms

- Example: Cooperative algorithm

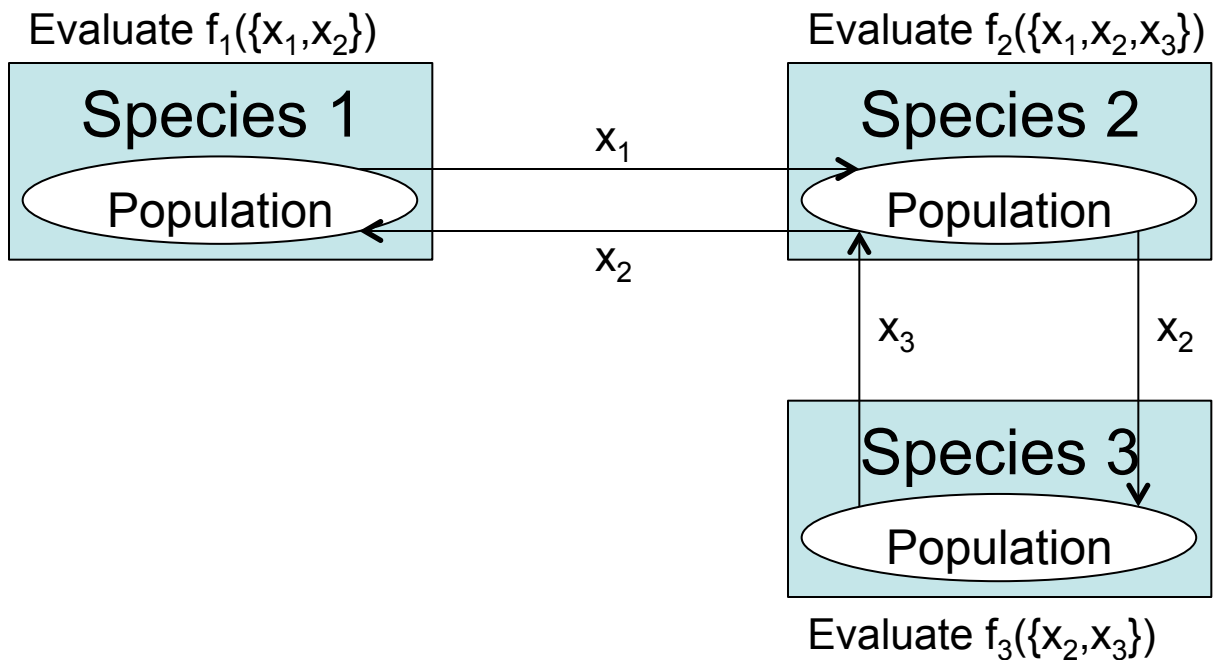
$$x = \{x_1, x_2, x_3\}$$



Co-evolutionary algorithms

- Example: Competitive algorithm
 - Loosely Coupled Genetic Algorithm (LCGA)

$$x = \{x_1, x_2, x_3\}$$



Objectives and innovations

- Previous work
 - Mainly in co-operative algorithms (CCGA)
 - Some work in LCGA
 - Hybrid LCGA (hLCGA)
 - Dynamic LCGA (dLCGA)
- Current work
 - Literature study
 - Focus on LCGA and adaptiveness

Objectives and innovations

- Design and implement a novel adaptive multi-objective competitive algorithm
 - Decision-theoretic agent based approach
 - Markov decision theory, game theory and Fuzzy logic
- Validate experimentally on gene / protein interaction networks

Questions

