

## Kolloquium Angewandte Informatik

### Peer-to-Peer Evolutionary Computation

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Abstract:

Evolutionary Algorithms (EAs) are a set of bio-inspired techniques able to solve optimization problems in reasonable time. However, the execution times in EAs can be high when tackling very demanding problem domains, as in e.g. design, simulation based search or large scale problem instances. It is at this point where parallelism arises as an alternative to improve the algorithm performance and to speed up times to solutions.

In that context, we present a spatially structured EA which takes full and seamless advantage of the large amount of available resources in Peer-to-Peer (P2P) platforms. Such an approach defines a decentralised population structure by means of a P2P protocol where individuals have the mating choice locally restricted within the P2P neighbourhood. The emergent population structure behaves as a small-world topology and plays an important role in the preservation of the genetic diversity. That way, population sizes can be minimized and execution times improve.

The talk will tackle the main challenges towards an efficient design of P2P EAs. Questions such as decentralization (such a computation paradigm is devoid of any central server), massive scalability (P2P systems are large-scale networks) or fault tolerance (given that computational resources are added and eliminated dynamically) become of the maximum interest and will be addressed.

Termin: Freitag, 24. Juni 2011, 14:00 Uhr

Ort: Englerstraße 11, 76131 Karlsruhe  
Kollegiengebäude am Ehrenhof (Geb. 11.40), 2. OG, Raum 231  
(Hinweise für Besucher: [www.aifb.kit.edu/Allgemeines/Besucher](http://www.aifb.kit.edu/Allgemeines/Besucher))

Veranstalter: Institut AIFB, Forschungsgruppe Effiziente Algorithmen

Zu diesem Vortrag lädt das Institut für Angewandte Informatik und Formale Beschreibungsverfahren alle Interessierten herzlich ein.

Andreas Oberweis, Hartmut Schneck (Org.), Detlef Seese, Wolfried Stucky, Rudi Studer, Stefan Tai