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 **NTNU**

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## Special Session on Evolutionary Development

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### CALL FOR PAPERS



### Introduction

Over the recent years researchers in the evolutionary computation community have created an increasing number of evolutionary developmental systems with varying levels of complexity. Much attention has been paid to the creation of these systems and the evaluation of their abilities to produce large, complex, modular, and robust phenotypes.

Due to the inherent complexity of developmental systems and of the created solutions, the analysis of developmental processes and their outcome proves to be very difficult. Results often have to be restricted to basic experimental status, whilst a detailed understanding of the dynamics in the system is frequently not available. To address these issues and to lead science towards an enhanced understanding of the processes involved in artificial EvoDevo systems, a revision of methods and tools for analysis seems necessary.

Concepts and ideas for the development of these methods might be found by simultaneously integrating multiple scales, combining for example the dynamics on developmental timescale with dynamics on evolutionary timescale, or for multi-cellular representations, the behavior of single cells, groups of cells, and the resulting character of the phenotype.

The aim of this special session is to promote discussion of evolutionary developmental systems with a focus on their analysis and understanding, as well as to suggest possible approaches to exploit the features unique to developmental systems with respect to system design.

### Topics of interest

- analysis and modeling of dynamic systems for genotype-phenotype mapping
- generative systems
- analysis and modeling of regulatory networks for evolutionary development
- multi-scale and multi-level modeling of evolutionary development
- regulatory vs. functional mechanisms in evolutionary development
- applications for evolutionary development
- transfer of system-level biological properties to computational and technical systems
- relation between structural and functional analysis of biological systems
- genotype - phenotype maps
- analysis and modeling of cellular representations
- self assembly
- hierarchical modeling in developmental systems
- self-replicating systems

For more information, please visit <http://www.tud-network.org/CEC2009/>

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