عنوان مقاله:

a bio-inspired self -configuring observer/controller for organic computing systems

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خلاصه مقاله:

The increase in the complexity of computer systems has led to a vision of systems that can react and adapt to changes.Organic computing is a bio-inspired computing paradigm that applies ideas from nature as solutions to such concerns.This bio-inspiration leads to the emergence of life-like properties, called self-* in general which suits them well for pervasive computing. Achievement of these properties in organic computing systems is closely related to a proposedgeneral feedback architecture, called the observer/controller architecture, which supports the mentioned properties through interacting with the system components and keeping their behavior under control. As one of these properties, selfconfigurationis desirable in the application of organic computing systems as it enables by enabling the adaptation to environmental changes. However, the adaptation in the level of architecture itself has not yet been studied in the literature of organic computing systems. This limits the achievable level of adaptation. In this paper, a self-configuringobserver/controller architecture is presented that takes the self-configuration to the architecture level. It enables the system to choose the proper architecture from a variety of possible observer/controller variants available for a specificenvironment. The validity of the proposed architecture is formally demonstrated. We also show the applicability of this architecture through a known case study.

کلمات کلیدی:

Organic Computing; Observer/ Controller Architecture; Self- Properties; Self-Configuration; Formal Verification