

Project Summary

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Title: "The Chai-Calculus: A Computational Formalism and its Relationship to Biological Processes"

Biotic systems have been described and analyzed for years. What is attempted here is the creation of a computational formalism which abstracts various principles of these simple systems and provides a consistent structure based on the theory of computation. Existent computational calculi are examined and found to fall short, based on certain criteria related to biological defensibility, which are held to be necessary for a proper abstraction. Therefore, the creation and description of a more biologically defensible calculus, the chai-calculus, is undertaken. This calculus is based upon the pi-calculus, a formalism whose foundation is interaction, rather than function. The chai-calculus, its relationship to biology, as well as future directions for this new formalism are examined.