

Poster Abstract Book of

1st Iran-Russia

Joint Seminar & Workshop
on Nanotechnology

(IRN 2005)

28-30 May 2005

Editors:

— Ali Beitollahi

— Alireza Souri

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An Optimal System Designing and Simulation for Medical Nanorobots

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Abstract:

the aim of this project is designing and simulating the best model for medical and drug deliver robots. We study the most important fabrication and using affairs, then try to suggest the best solution with less danger and more efficiency. We use artificial neural network and virtual reality simulations for autonomos controllling the multi-nanorobotic teams in a complex wet nanotechnological enviroment. the sensor, motor and processors are following the biotechnological systems such as enzymes ,cellular flues and DNA molecule. Dynamic and kinematic analyses are performed to predict the performance of a new nanoscale biomolecular motor: The Viral Protein Linear (VPL) Motor. The motor is based on a conformational change observed in a family of viral envelope proteins when subjected to a changing pH environment .This paper presents the principle of operation of the VPL motor, the development of dynamic and kinematic models to study their performance. The neural motion control was successfully used in the scenery with real time response for the circumstance where the nanorobots must capture molecules and visit a pre-defined set of delivery points, avoiding random obstacles and collision with other mobile nanorobots, and trying at the same time to minimize the time required. The coherent behaviour displayed for the transport task can also be attributed to the common goal shared by the individual medical nanorobots along with an identical set of interaction rules, similar to the effect observed by collective decision-making in honey bees.

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