Principal Researcher	Yoshihiko NAKAMURA	Number of Researchers	5
Research Institution Department Title	Professor, Department of Mechano-Informatics, Graduate School of Information Science and Technology, University of Tokyo	Location of Institution	Bunkyo-ku, Tokyo

Title of Project	Deployment of Dynamical Information Processing Model of Intelligence

Abstract of Research Project	The essence of human intelligence and mind is considered lying in the behavior of nonlinear dynamics that emerged from the structured and multi layered hierarchy of the body sensory-motor system and the nervous system. This research sets its own goal at building a hypothetical model that reaches machine intelligence on the basis of dynamical information processing. The machine intelligence here implies the principal mechanism that obtains the cognitive skills of symbol manipulation, linguistic extrospection and introspection, and communications through multi layered hierarchical developments of sensory and motor map. We take proof-by-synthesis approaches to establish the principal mechanism. The verification is to be done by experiments using humanoid robots and simulation using musculoskeletal human body models. The uniqueness of this research is in the fact that we design the information processing system based on continuous behavior of dynamics and applying it to the machines with as much complexity as a humanoid robot. This research project is not only challenging from informatics point of view, but also of academic significance exploring the missing link between neural and cognitive sciences.

References	(1) Yoshihiko Nakamura, Woojin Chung and Ole Jacob. Sordalen, "Design and Control of the Nonholonomic Manipulator," IEEE Trans. on Robotics and Automation, Vol.17, No.1, pp.48-59, February, 2001. (2) Y. Nakamura and K. Yamane, "Dynamics Computation of Structure-Varying Kinematic Chains and Its Application to Human Figures," IEEE Trans. on Robotics and Automation, Vol.16, No.2, pp.124-134, 2000.

Term of Project	Fiscal years 2003-2007 . (5years)

Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	14,700	27,900	23,300	14,000	14,000	93,900

Homepage Address	http://www.ynl.t.u-tokyo.ac.jp