NSF Award Abstract - #0424546

AWSFL008-DS3

MII: An Infrastructure for Wide-Area Large Scale Automated Information Processing

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Program Manager	Rita V. Rodriguez CNS DIVISION OF COMPUTER AND NETWORK SYSTEMS CSE DIRECT FOR COMPUTER & INFO SCIE & ENGINR
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NSF Program	7399 CISE MINOR INST INFRA (MII) PR
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Abstract

This project is developing a new conceptual framework for the automated processing of information arriving from physical sensors in a generalized wide-area, large-scale distributed network infrastructure. The project is focusing on water-related ecological and environmental applications, and it is addressing issues such as scalability, modularity, signal representation, data coherence, data integration, distributed query processing, scheduling, computer performance, network performance, and usability. This new framework treats signals as elements in prescribed sets and their associated structures. The project is constructing a computing and information processing (CIP) environment to deal with the algorithmic treatment of signal-based large scale content in order to extract information relevant and important to a user. It is also developing new theories and algorithms for computational signal processing to gather, process, and represent data obtained from physical sensors, at one end, as well as the development of new, non-traditional, concepts in software applications for reconfigurable, multimode

human-computer interfaces to render information important to a user, at the other end. The project is also developing new concepts in middleware integration, distributed query optimization, distributed query processing, and distributed scheduling algorithms to adapt to an ever changing network infrastructure and provide a pathway between a physical world sensory reality with its associated physical sensors, and a user with network and database infrastructure applications. This project is tailoring its work for strategic environmental and ecological applications in the identification, monitoring, assessment, and management of hydrological events in tropical areas. The project will further expand the department's already strong efforts to increase the number of Hispanic and female scientists and engineers.

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