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Editors

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Introduction

The SPIE proceedings Volume 6979, *Independent Component Analyses Wavelets, Unsupervised Learning, Nano-Bio-mimetic Sensors, and Neural Networks VI*, has a special significance, representing a decade-long history of several new trans-disciplines merging together naturally. This synergy can help us design smart sensors for a safer and better home care system for an aging population of baby boomers.

Along with an Office of Naval Research (ONR) ad hoc think tank led by me, Veteran Affairs (VA) has explored ways to establish the degree of user-friendliness for the majority of healthy retirees in their second or third careers, in terms of four known principles: "noninvasive, noncontact, nontethered, and non-stop-to-measure," in order to collect personalized biomedical data called "wellness baseline profiling (WBP)." These four known rules were derived from retired 60 year-old navy veterans who received routine clinical visits with an attached questionnaire. In a typical breakdown of 60-year-old seniors, 90% considered themselves healthy, while 10% considered themselves to be feeble and/or ill. The cohort statistics viewpoints are distinctly different between the 10% of seniors who are feeble or ill versus those who are healthy and often in a second career.

Thus, we are the basic group of "jack of all trades." Applied researchers decided to involve, other than the traditional Wavelet Pioneer Award presented during the last 15 years and the Unsupervised Learning ICA Award for the last five years, a new category of Nanoengineering Award related to the nano-robot controlled by the computer-aided design (CAD), such as the automated nano-manipulator, which can produce a reliable productivity beyond 25%. Moreover, in 2007 we introduced another new category called the Biomedical Wellness (BMW) Engineering Award. The reason behind the incorporation of new award categories is that we must encourage the development of smart pair devices to save the exorbitant cost of health care for the aging population. Federal Reserve Chair Ben Bernanke has warned Congress that federal government fiscal budgets will not be sustainable when all the post-war baby boomers retire (78 million will cost $^1/_5$~$^1/_4$ of the GDP in the U.S. alone). We need affordable and effective household devices for the daily sampling of wellness baseline profile to compile unsupervised learning of personnel diagnostic aids: A stitch in time saves nine.

The selection procedure for a qualified recipient is identical to the Wavelet Pioneer Award and the Unsupervised Learning ICA Award. Namely, the new winners of the Nanoengineering Award and the Biomedical Wellness (BMW) Engineer Award will automatically assume the position of next year's chair of the selection committee for the following year's award recipients, and will also participate or replace the next retired committee member as the new member of the committee to select subsequent recipients. In other words, the

management of the conference shall not be involved in the selection process of awardees, but rather will facilitate the information for the new award recipients who are responsible for giving an extended presentation at the conference, submitting a manuscript for publication in the conference proceedings, organizing/chairing an hour-long panel discussion and a special session, and teaching a short course.

This procedure of separating the honor from the management has maintained the credibility of these awards over the years, and we are sure this will work for these two new awards. This useful education process will ensure that all in attendance can fully benefit from his or her presence at the conference and record in the proceedings and tutorial notes. Also, the money gained from teaching the course can sustain and financially support his or her travel and lodging expenditure. Such a quality assurance will be extended to the Nano-Engineering Award and Biomedical Wellness (BMW) Award in 2008.

We look forward to your advice and active participation. We are planning a new "System Biology Award" category; we believe system biology is a new trend of computational intelligence approach to biology, covering nine orders of magnitude: from DNA (SNP) to cells; from molecular signaling to organ; to the wellness physiology. If you would like to contribute to such a specific talk, chair a session, or recommend old or new speakers including yourself, please write the conference management.

Harold H. Szu