# NRI-Computing of the Future

Larry Cooper
Arizona State University

**Abstract**
A brief history of the 35 year old Nanoelectronics Program of the Office of Naval Research will show how interests in future computing architectures were developed. These interests were constrained by the requirements of using nanoelectronic, nanooptical and nanomagnetic devices. Issues, such as circuit complexity, clocking speed, and power dissipation dominated the filtering and selection process as we tried to inspire novel architecture development. Important features in this selection process are the properties of the devices, such as non-volatile magnetics, photonic sensors, and high speed electronics. I will then focus on those architectures which are based on locally connected devices, such as Cellular Automata and Cellular Nonlinear Networks and their future. Finally, I will give my own perspective on future possibilities and applications that require cooperative interactions and integrations between several functionalities.