Implantable and Wearable Bionics

N. Lovell

Graduate School of Biomedical Engineering, University of New South Wales, Sydney, Australia

Abstract- The role of telemetry and communications technology will be explored in a number of medical devices developed at the Graduate School of Biomedical Engineering, University of New South Wales. Topics discussed will include clinical measurement devices used for home telecare, triaxial accelerometers for personal alarming in the elderly, implantable heart pumps and vision prostheses.

In particular, a review of the state-of-art with regards vision neuroprostheses, with an emphasis on retinal prostheses, will be presented. Through an examination of the neurobiology and biophysics at the electrode tissue interface and by drawing heavily on biologically-inspired designs, critical areas that require concentrated

research and development will be described. Briefly covered are topics relating to application specific integrated circuits (ASIC), appropriate image processing for prosthetic vision, the psychophysics of prosthetic vision, and models of parallel stimulation at multiple electrode sites.

Address of the corresponding author:

Author: Nigel Lovell
Institute: Graduate School of Biomedical Engineering,
University of New South Wales
City: Sydney, NSW 2052
Country: Australia
Email: n.lovell@unsw.edu.au