

BIOMEDICAL SIGNAL PROCESSING LABORATORY

Dr. James McNames, Associate Professor
Electrical and Computer Engineering
Maseeh College of Engineering and Computer Science
Portland State University
PO Box 751
Portland, OR 97207
503-725-5390

Summary of Research

The mission of the Biomedical Signal Processing Laboratory is to advance the art and science of extracting clinically significant information from physiologic signals. The objectives for this research program are to: 1. Develop new methods of signal processing that extract useful information from physiologic signals; 2. Advance the knowledge of pathophysiology through the investigation of behavior manifest in physiologic signals; 3. Ground students with a solid foundation in statistics, signal processing, algorithm design, and algorithm assessment and provide them with the opportunity to experience the process of knowledge discovery, apply research methodology, disseminate knowledge, and learn the standards of peer review; and 4. Contribute to the regional needs of Portland and Oregon.

The research primarily focuses on clinical projects in which the extracted information can help physicians make better critical decisions and improve patient outcome. Dr. McNames collaborates closely with Oregon Health & Science University .

Potential for Commercialization and Job Creation

Dr. McNames has an international patent application filed for one of his main research projects. There is also commercial potential for one of the devices that being developed, but that work is in the early stages and commercialization is probably at least five years away.

Total Research Funding

Among the active research projects Dr. McNames is involved with are: “Wafer Sampling Optimization, Variance Isolation, and Process Monitoring,” */LSI Logic/*, Gresham, OR, 1/1/04 – 12/31/04, \$90,021 (This funding was bundled with another simultaneous grant from LSI Logic to W. R. Daasch. The combined funding for the grant was \$170,046. The amount listed includes only McNames’ portion of the funding); B. Goldstein (PI), J. McNames (Co-PI), W. Wakeland (Co-PI), “Modeling intracranial pressure dynamics in pediatric traumatic brain injury,” */Thrasher Research Fund/*, 10/1/03 – 9/30/06, \$319,882. (\$168,811 subcontract to Portland State University). Dr. McNames has several grant proposals that are in review and he is expecting a new \$60k research grant from LSI to start Jan. 1, 2005.

Student Involvement

Dr. McNames is supervising five MS students and two BS students. One of the MS students will apply to PSU’s PhD program next year and continue working with in the laboratory. Dr. McNames and his students have had many successful projects and have

written many publications in the last few years. One example is that they won an international competition to diagnose patients with sleep apnea based only on their electrocardiograms.

Website

<http://bsp.pdx.edu>