

Curriculum Vitae
Paul James Beckmann
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Citizen of The United States of America

Current Positions

MEMBER OF THE ADJUNCT FACULTY

University of Saint Thomas, Saint Paul, MN (2003 - present)

- General Psychology (>10 sections)
- Brain & Human Behavior (>5 sections)
- Sensation & Perception (Fall, 2005)
- Physiological Psychology (2006, 2010)
- Introductory Psychopharmacology (>5 sections)

University of Minnesota, Minneapolis, MN (2004, 2006, 2008)

- Psychology of Human-Machine Interaction

Metropolitan State University, Saint Paul, MN (2003 - 2006)

- Research Methods: 2 sections
- Psychology of Learning: (3 online sections)

RESEARCH ASSOCIATE

Minnesota Laboratory for Low-vision Research

University of Minnesota, Minneapolis, MN (2008-present)

- Navigation within Building Interiors – Spatial Language and Interfaces
- Design of Visually Accessible Spaces

Education

Doctor of Philosophy, Psychology

University of Minnesota, 1998, Minneapolis, MN

Thesis: *Limitations imposed on letter identification performance by display, optical, and retinal characteristics in central and peripheral vision.*

Advisor: Gordon Legge. Committee: Russell Hobbie, Biophysics; Jon Gottesman, Neuroscience; Daniel Kersten, Psychology, Neal Viemeister, Psychology.

Master of Science, Biophysical Sciences

University of Minnesota, 1982, Minneapolis, MN

Thesis: *Real-time firmware design for a microprocessor-based implantable device.*

Advisor: Russell Hobbie

Mentor: Otto H. Schmitt

Bachelor of Arts, Physics

Saint Mary's College, 1973, Winona, MN

Peer-reviewed publications

Beckmann, P.J. and Legge, G.E. (2002) *Preneural limitations on letter identification in central and peripheral vision*. Journal of the Optical Society A (19) 2349-2462.

Tjan, B.S., Beckmann, P.J., Roy, R., Giudice, N. and Legge, G.E. (2005) *Digital Sign System for Indoor Wayfinding for the Visually Impaired*. Proceedings of the First IEEE Workshop on Computer Vision Applications for the Visually Impaired. CVPR 2005. IEEE Computer Society.

Beckmann, P.J. and Legge, G.E. (1996), *Psychophysics of Reading XIV: The page-navigation problem in using magnifiers*. Vision Research (36) 3723-3733.

Presentations and Publications

Beckmann, P.J. (1998), *Display Image Quality*. Seminar presented at the annual meeting of the Society for Information Display (SID)

Beckmann, P.J. & Legge, G.E. (1998), *Effects of Preneural factors on letter acuity in central and peripheral vision*. ARVO (Association for Research in Vision and Ophthalmology) Poster.

Beckmann, P.J. (1997), *The effect of pixel pitch and profile on letter identification*. Paper presented at the annual meeting of the Society for Information Display (SID).

Beckmann, P.J. (1996), *Quantum efficiency for identification of Landolt rings in central and peripheral vision*. . ARVO Poster.

Beckmann, P.J. (1995), *Limitations imposed by optics and photoreceptors sampling on letter identification in central and peripheral vision*. Paper presented at the Optical Society of America meeting, Portland.

Beckmann, P.J. and Legge, G.E. (1994), *A sequential ideal-observer model of letter identification in central and peripheral vision*. ARVO Poster.

Beckmann, P.J., Legge, G.E., and Rentschler, C.A. (1993), *The page-navigation problem in low-vision reading*. ARVO Poster.

Beckmann, P.J. and Legge, G.E. (1992), *Are sensory attributes used in reading?* ARVO Poster.

Beckmann, P.J. and Legge, G.E. (1991), *Field-size and character-size requirements of low-vision magnifiers*. ARVO Poster.

Beckmann, P.J., Legge, G.E., and Luebker, A. (1991), *Reading: Letters, words and their spatial-frequency content*. Society for Information Display Technical Digest.

Beckmann, P.J. and Legge, G.E. (1990), *Does an antialiasing filter improve peripheral acuity?* ARVO Paper.

Beckmann, P.J. (1982) *Real-time firmware design for an implantable microprocessor - based device*. Paper presented at the 10th Northeast Bioengineering Conference.

Reviews

Representation and Recognition in Vision, by Shimon Edelman, for *Intelligence*, Magazine of the Association of Computing Machinery Special Interest Group on Artificial Intelligence. Published Summer 2000.

Service

Low-vision Research Group

- Membership administrator and mailing list moderator (1990-1998)
- Program Committee member (1998-2006)
- Chair (2000-2002)

Outreach

- *Helping the blind lead themselves: Mental maps, wayfaring and navigational aids*. (2001) Saint Mary's University of Minnesota. Hosts: Psi Chi and the SMU Psychology Club.
- *Psychophysics: an example of Physics & Psychology working together*. (2000) Saint Mary's University, Winona, MN. Hosts: Br. Jerome Rademaker, Dr. Marilyn Frost, Dr. Larry Luttmers
- *The role of pre-neural factors in letter identification performance across the visual field*. (1998) Center for Cognitive Sciences, University of Minnesota, Minneapolis, MN.
- *Chaos: How to be unpredictable without leaving the neighborhood*. Invited presentation to the Twin Cities chapter of the American Statistical Association.

U.S. Patents

Tachyarrhythmia Pacer

4,493,325, February 15, 1984, assigned to Medtronic, Inc.

EKG Telemetry Base Station

4,751,725, June 14, 1988, assigned to Medtronic, Inc.

Process of Forming a Microwaveable Food Product Having a Selected Color

5,073,392, December 17, 1991, assigned to The Pillsbury Company

Process for Microwave Browning

5,108,770, April 28, 1992, assigned to The Pillsbury Company

Professional Associations

- Society for Neuroscience
- Psi Chi Psychology Honor Society
- Sigma Pi Sigma Physics Honor Society

Awards

Best Student Paper Award, Society for Information Display, 1991 for:
Reading: Letters, Words and Their Spatial-frequency Content, a paper presented at the SID 1991 Symposium, May, 1991, Anaheim, CA.

Past Employment

ASSISTANT PROFESSOR OF PSYCHOLOGY

Augsburg College, Minneapolis, MN (2008-2009)

- General Psychology
- Research Methods
- Cognitive Psychology
- Introductory Psychopharmacology

OWNER & PRINCIPAL

Beckmann Research, LLC (1999 - 2008)

Beckmann Research pursued contracts for research and development in the areas of information display, display image quality and areas related to visual impairment and assistive technology.

ASSISTANT PROFESSOR OF PSYCHOLOGY, 2001-2002

St. Mary's University of Minnesota, Winona, MN

SECTION HEAD, 1998-1999

Vision and Lighting Group, Orfield Laboratories, Minneapolis, MN

Led a group of researchers in contract-driven work. Projects included evaluation of information uptake from displays containing pictures and text, design and evaluation of lighting systems for factories and offices and their effect on visual performance, and design of task-specific inspection lighting systems for factory applications.

ASSISTANT SCIENTIST, 1989-1998

Department of Psychology, University of Minnesota, Minneapolis, MN

This position combined the duties and responsibilities of laboratory administrator and researcher within the Minnesota Laboratory for Low-vision Research. Included administration of NIH grant renewal and continuation applications, supervision of undergraduate research assistants, research planning and coordination with other members of the laboratory staff, and pursuing an individual program of research.

SENIOR SCIENTIST, 1987-1989

The Pillsbury Company, Research and Development Laboratories, Minneapolis, MN

Developed several highly interactive graphical tools for computer design and modeling of food products. Taught product development teams how color and other qualities related to the physical properties of a food product as well as the effects of visual adaptation and environmental illumination on color appearance.

LEAD INVESTIGATOR & PROJECT MANAGER, 1982-1984

Medtronic, Inc., Applied Concepts Research

Developed an implantable electrolaryngeal device. Headed a team of two Medtronic scientists and two Washington University physicians in the design of a new implantable electrolaryngeal system.

BIOPHYSICAL SOFTWARE DESIGN ENGINEER, 1979-1982

Medtronic, Inc. Pacing Systems Group, Minneapolis, MN

This group was charged with developing an implantable cardiac pacemaker that would mimic biophysically-driven changes in heart rate.

RESEARCH ASSISTANT, 1977-1979

Department of Biophysics

University of Minnesota

Minneapolis, MN

updated February, 2010