Yehuda Salu, Ph.D.

Resume

Educational Background

Ph. D. in Physics, (1973) Tel-Aviv University, Israel.
M.Sc. in Physics, (1964) The Hebrew University, Jerusalem, Israel.

Professional Experience

1981-2017 Department of Physics and Astronomy, Howard University, Washington DC.

[1981 Assistant Professor, 1983 Associate Professor, 1987 Professor]

Teaching graduate and undergraduate courses in physics including: Introductory Physics (algebra-based, calculus-based, physics for health professionals, physics for architects), Electromagnetic Theory, Modern Physics, Thermodynamics and Statistical Physics, Mathematical Methods, and Biophysics.

Activities in committees including: Executive, Undergraduate, Graduate, Undergraduate Curriculum, Graduate Curriculum, College of Liberal Arts Curriculum Review, Student Evaluation of Teaching, Computer Implementation, Judiciary Board.

Conducting research in biomedical physics, neural networks, and remote sensing.
Research topics included:
Modeling the electrical activity of the heart. Developing algorithms for the localization of bio-electric foci in the heart and in the brain, based on the electric potential that they generate on the surface of the body. Building data acquisition systems for studying the electrical activities of the heart and the brain, and using them for non-invasive studies in man.
Developing neural networks that simulate basic thinking processes.
Applying neural networks to the analysis of the spectra of land pixels obtained by satellites.

1976-1980 Department of Electrical Engineering and The Cardiovascular Research Center, The University Of Iowa, Iowa City, Iowa.

Research Associate and Assistant Professor.

Conducted research in Biomedical Physics. Co-advised Ph.D. Students.
Studied the electrical activity of the heart.

1973-1976 Department of Physics and Astronomy, The University of Iowa, Iowa-City, Iowa.

Research Scientist.

Conducted research in Plasma Physics. Developed algorithms for simulating two and three dimensional turbulences in plasmas.

Research Areas

Developing models of neural networks that can solve specific AI and classification problems. Studying the electrical activity of biological systems. Analysis of remote-sensing data. Physics education.

Books:

Understanding Brain and Mind: A Connectionist Perspective. by Yehuda Salu. ISBN 981-02-4792-3, World Scietific, New Jersey, Singapore, 2001.

Physics for Architects by Yehuda Salu. ISBN 0-7414-1929-7, Infinity Publishing, PA, 2004, (second edition 2009)
Micropsychology. By Yehuda Salu. Create Space publishing, 2008 ISBN 1-434-847-810

Grants and Awards

- Localizing Sources of Cardiac Activity, 1978-1982. NIH, Principal Investigator.
- Noninvasive Dipole Localization in the Heart. 1983-1986. NIH, Principal Investigator.
- Localizing Dipolar Brain Sources. 1987-1989. NIH, Principal Investigator.
- ASEE summer fellowship, Navy Surface Warfare Center, 1990. Organized a workshop on neural networks for scientists and engineers at NSWC/ White Oak.
- National Academy of Science/ NRC Fellowship at NASA Goddard Space Flight Center, 1991 - 1992. Conducted research on the application of neural networks to classification problems related to NASA's mission.
- NASA grant for Howard University's Center for the Study of Terrestrial and Extra-terrestrial Atmospheres (CSTEA), 1992-1995. Co-P.I.
- ASEE Summer Faculty Fellowship Research Program, NRL, 1998, 1999 Conducted research on the application of neural networks in acoustics.
- Preparing Future Physics Faculty. 1999-2001. American Association of Physics Teachers, Principal Investigator.
- Developing a Text for Physics for Architects Course. 2001-2004. NSF, P.I.

PUBLICATIONS

Yehuda Salu, Ph.D.

A Monograph: Yehuda Salu: Understanding Brain and Mind – a Connectionist Perspective. World Scientific Publishing Company, 2001.
ISBN 981-02-4792-3, ISBN 981-02-4795-8 9 (pbk)

A textbook: Physics for Architects by Yehuda Salu. 2004, Infinity Publications. ISBN: 0-7414-1929-7 Second Edition February, 2009

Micropsychology by Yehuda Salu, Lulu publishing, 2008, ISBN 978-1-4357-0437-4

PAPERS

An asterisk (*) indicates a published reviewed paper, that has also been presented in a meeting.

Plasma Physics

Y. Salu. "Effects of parallel waves in homogeneous plasma in uniform magnetic fields." J. Plasma Physics. 7, 255, 1972.

S. Cuperman and Y. Salu. "The complete isothermalization by collective EM interactions of strongly anisotropic magnetized collisionless plasma." Plasma Physics 15, 107, 1973.

S. Cuperman and Y. Salu. "Magnetospheric implications of non linear whistler instability, obtained in computer experiments." J. Geophys. Res. 78, 4792, 1973.

S. Cuperman, Y. Salu, W. Bernstein, D.J. Williams. "A computer simulation of cold plasma effects on the whistler instability for geostationary orbit plasma parameters." J. Geophys. Res. 78, 7372, 1973.

S. Cuperman and Y. Salu. " Nonlinear development and Fourier analysis of the whistler mode instability." J. Plasma Physics, 9, 295, 1973.

S. Goldstein and Y. Salu. "On a family of exact non linear waves in plasma." J. Plasma Physics 10, 231, 1973.

S. Cuperman and Y. Salu. "Optimum cold plasma density for maximum whistler instability.' J. Geophys. Res. 79, 135, 1974.

Y. Salu and G. Knorr. "Use of the spectral method for two and three dimensional guiding center plasmas." J. Computational Physics, 17, 68, 1975.

C. Seyler, Y. Salu, D. Montgomery, and G. Knorr. "Two dimensional turbulence in inviscid fluids of guiding center plasmas." Physics of Fluids, 18, 803, 1975.

Y. Salu and G. Knorr. "Numerical solutions of three dimensional guiding center plasmas." Plasma physics 18, 769, 1976.

Y. Salu and D. Montgomery. "Turbulent diffusion from a kinematical point of view." Physics of Fluids, 20, 1, 1977.

Bio-Medical Physics

Y. Salu. "Computer simulation of the electrical activity of the heart." J. Theoretical Biology, 43, 43, 1974.

Y. salu and M. Marcus. "Computer simulations of the QRS complex". American Heart Journal, 92, 758, 1976.

Y. Salu, D. Laughlin, P. Rogers, and M. Marcus. "Effects of torso geometry and inhomogeneity on an inverse algorithm for electrocardiography." J. of Electrocardiography, 11, 143, 1978.

Y. Salu. "Relating the multipole moments of the heart to activated parts of the epicardium and endocardium." Annals of Biomedical Engineering, 6, 492, 1978.

Y. Salu. "Implementing a consistency criterion in numerical solution of the bioelectrical problem." IEEE Transactions on Biomedical Engineering, Vol BME 27, 338, 1980.

* E. Berbary, Y. Salu, S. Collins, R. Arzbaecher. "A computer model for verification of noninvasive His-Purkinje system recordings." Computers in Cardiology, 47, 1980.

Y. Salu, C.V. Bischof, N. Pandian. "A noninvasive method for localizing a cardiac dipolar source in humans." J. of Electrocardiography, 15, 249, 1982.

E. Berbary, S. Collins, Y. Salu, R. Arzbaecher. "Orthogonal lead recording of His-Purkinje activity." IEEE Transactions on Biomedical Engineering, Vol BME 30, 160, 1983.

* Y. Salu, C. Bischof, N. Pandian. "Locating cardiac ectopic foci noninvasively." AAMI Technology Update, 1983.

Y. Salu, L.G. Cohen, D. Rose, S. Sato, C. Kufta, and M. Hallett. "An improved method for localizing electric brain dipoles." IEEE Transactions on Biomedical Engineering, 37, 699-705, 1990.

Neural Networks, Theory and Applications

Y. Salu. "Computer simulations of learning in neural systems." Computers and Biomedical Research, 16, 176-187, 1983.

* Y. Salu. "Learning in neural networks." Proceedings of The IEEE International Conference on Systems, Man, and Cybernetics, 325-329, 1984.

Y. Salu. "Theoretical models and computer simulations of neural learning systems." J. Theoretical Biology, 31, 111-122, 1984.

Y. Salu. "Learning and coding of concepts in neural networks." BioSystems 18, 93-103, 1985.

* Y. Salu. "Learning of sequential events by neural networks." IEEE International Conference on Systems Man and Cybernetics. 1081-1084, 1987.

Y. Salu. "Models of neural novelty detectors, with similarity to cerebral cortex." BioSystems 21, 99-113, 1988.

* Y. Salu. "A neural network that stores and retrieves ambiguous information like the brain." in Models of Brain Function, R.M.J. Cotterill (ed) pp 553-561, Cambridge University Press, 1989.

* Y. Salu and J. Tilton. " Non-parametric analysis of Landsat maps using neural nets and parallel computers" SPIE Vol. 1623, 20th AIPR Workshop. 174-183 1991.

* Y. Salu. "Classification of satellite multi-spectral image data by the binary diamond neural network". Advances in Neural Information Processing Systems 6, 1143-1150, 1994.

Y. Salu and J. Tilton " Classification of multi-spectral image data by the Binary Diamond neural network and by non-parametric, pixel-by-pixel methods" IEEE Transactions on Geoscience and Remote Sensing, 31, 606-617, May 1993.

* Y. Salu "The use of the binary diamond neural network in learning letter-phoneme associations" International Joint Conference on Neural Network, July 1993.

* Y. Salu "A neural network for analogical reasoning" World Congress on Neural network, IV pp 418-423, 1994, and Proceedings of IEEE International Conference on Neural Networks, VII pp 4772-4777, 1994.

Y. Salu "Binary Diamond: la rete neurale per l'uso del suolo" Sistema Terra, IV, 71-72, 1995. (Invited paper, translated into Italian).

Y. Salu "Sub-pixel localization of highways in AVIRIS images." in Summaries of the fifth JPL annual airborne earth science workshop. JPL Publication 95-1, Vol 1, 137-141, 1995.

* Y. Salu "Detection of contradictions in a semantic neural network" Proceedings of the IEEE 1996 International Conference on Neural Networks, Washington, DC. Vol 2, 762-767, 1996.

Y. Salu "The roots of sexual arousal and sexual orientation" Medical Hypotheses 76 384-387 2011

Y. Salu "The role of the amygdala in the development of sexual arousal" Electronic Journal of Human Sexuality Vol 16, June 9, 2013

Physics Education

* Y. Salu "Physics for Architects: A Textbook for Architecture Students" 129th AAPT National Meeting, Sacramento, CA July 31- Aug. 4, 2004

Y. Salu "Revisiting the ladder on a wall problem" The Physics Teacher 49(5) 289-290 December 2010

Y. Salu "A left hand rule for Faraday's Law" The Physics Teacher 52(1) January 2014

In Retirement

Conference Presentations

Innate Neural Networks and Voice Dimorphism Determine the Development of Sexual Orientation During Childhood. Yehuda Salu, SSSS Annual Meeting 2019, November 7-11.

Preprints

Salu, Y. Nature Controls Nurture in the Development of Sexual Orientation, and Voice is Nature's Agent. Preprints 2020, 2020030134.
https://doi.org/10.20944/preprints202003.0134.v1

SALU, Y. Human Voice Took Over the Role of Pheromones in Establishing Sexual Orientations. Preprints 2021, 2021030568. https://doi.org/10.20944/preprints202103.0568.v1

Salu, Y. Translating the Biology of Rodents' Sex-Recognition and Mate-Recognition to Humans': Bridging the Pheromonal-Visual Gap. Preprints 2022, 2022020310. https://doi.org/10.20944/preprints202202.0310.v1

Salu, Y. Human Sex Recognition: A Developmental Voice-Centered Model. Preprints 2025, 2025121610. https://doi.org/10.20944/preprints202512.1610.v1

Papers

Salu Y (2026) Human sex recognition: a developmental voice-based model of brain circuits. Front. Behav. Neurosci. 20:1714154. doi: 10.3389/fnbeh.2026.1714154

Books

From Instincts to Love: Micropsychology of Human Nature

Yehuda Salu, 2026
ISBN 979-8-9977354-0-1, Micropsychology Press