NATIONAL SCIENCE FUND
MINISTRY OF EDUCATION AND SCIENCE

CURRICULUM VITAE

(FNSF-2006)

Name: **Yoshifuru SAITO**
(Family name, First Name, Second name)

Date of birth: 07/24/1946 **Birthplace:** Fukuoka Prefecture JAPAN

Office address:

Y.Saito Lab.
Department of Electric and Electronic Engineering
Faculty of Engineering and Science, Hosei University
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Education (University/Higher School, Faculty/Department, Course, Year of Graduation):

- **Doctor Course in Graduate School of Engineering, Hosei University, 1975**
- **Doctor of Engineering, March 24th 1975**

Honours/Titles/Qualifications (Organization, Title, Year of Award):

- **Research Fellow of Hosei University, (1975-1976)**
- **Lecturer of Hosei University, (1976-1978)**
- **Associate Professor of Hosei University, (1978-1987)**
- **Professor of Hosei University, (1987-)**

Previous Experience (Organization, Position, Title, Dates):

- **Vice-Secretary, Faculty of Engineering Hosei University (1985-1987)**
- **Chairman of School of Electrical Engineering Hosei University (1993-1994)**
- **Chairman of Graduate School of Electrical Engineering Hosei University (1994-1996)**
- **Director of the Computational Science Research Center Hosei University (1996-1998)**

Main Fields of Scientific Research (keywords)**:Magnetics, Power Electronics, Computational Electromagnetics, Bio-Magnetism, Inverse Problems of Electromagnetic Fields, Vectored Computer Graphics, Vectored Image Processing, Discrete Wavelets Transform**

Professor Saito is author or co-author over 100 reviewed papers and book chapters, including ***Modeling of magnetization and faster magnetodynamic field computations*** (*Journal of Applied Physics, Vo. 63, No.8, Part Ⅱ A, pp.3174-3178, April 15, 1988).* His professional interests are in Magnetics, Computational Electromagnetics and Visualized Electromagnetism.

Membership in Scientific and Professional Institutions, Bodies and Organizations:

Member of Japan Institute of Electrical Engineering
Member of Japan Society of Mechanical Engineering
Member of Japan Society of Applied Electromagnetics and Mechanics
Member of Japan Institute of Electro-commutation and Information
Member of Japan Applied Magnetics Society

Professional and Scientific Awards:

- Best Text Book Award concerned of Wavelets Transform by Mathematica, Japan Society of Applied Electromagnetics and Mechanics, March 18th 1997
- Innovative New Contribution of Computer Graphics and Image Processing By Field Theory, Japan Society of Applied Electromagnetics and Mechanics, March 18th 2003
- Best Paper Award concerned of Wavelets Multi-resolution Analysis to Eddy Flow, Japan Society of Visualization, July 24th 2005
- Best Technical Award concerned of Biter Magnetic Dynamic Domain Visualization and Frequency Characteristics Extraction, Japan Society of Applied Electromagnetics and Mechanics,Nov.21st 2007
- Lifetime Achievement Award concerned of the Contribution to Japan Visualizing Society, Japan Society of Visualization, July 24th 2009

Foreign Languages (level of proficiency)**:**

- English, Excellent
- German, little
- Chinese, Excellent on Reading

International Experience (country, Institution, duration, year)**:**

- **Visiting Researcher at McGill University in Canada (1980-1981)**
- **Visiting Senior Scholar at Tsinghou University in China (2001-2002)**
- **Visiting Professor at South Australia University in Australia (2002-2003)**
- Dr. Saito served on the International Steering Committee of the ISEM, Tokyo (1988), the Local Steering Committee of the COMPUMAG, Tokyo (1989), as Chief Secretary of the ISEM Kanazawa (1990), Scientific Committee of the 2nd Japanese-Polish Joint Seminar (1990), and International Steering Committee of the ISEM Sendai (1991), academic staff of the Professional Meeting on the High Frequency Magnetics (IEEJ) (1998-2000), chairman of the Professional Meeting on the Electromagnetic Devices Analysis (1999-2001) and Editorial Board of the International Journal of Applied Electromagnetics in Materials (Elesevier 1990-).

Referees:

1. Professor Zoltan Cendes Carnegie Mellon University
2. Professor David Lather, McGill University
3. Professor Kezo Miya, The University of Tokyo

Principal Publications[1]:

1.The theory of the harmonics of the m,n-symmetrical machines, ETZ-AH. 10, Oct., 1974, pp. 526-530,
2.Numerical methods for polyphase induction motors,Comp.Meths.Appl.Mech. Eng, Vol.11, No.2, May,1977, pp.151-164North-Holland,
3.Three - dimensional analysis of nonlinear magnetodynamic fields in a saturable reactor, Comp. Meths. Appl. Mech. Eng, Vol.22,No.3,June,1980,pp.289-308North-Holland,
3.Three - dimensional analysis of magnetodynamic fields in electromagnetic devices taken into account the dynamic hysteresis loops, IEEE Transaction on Magneics,Vol.MAG-18, No.2, Mar., 1982,pp.546-551,
3.Modelling of nonlinear inductor exhibiting hysteresis loops and its application to the single phase parallel inverters, IEEE Transaction on MagneticsVol.MAG-19, No.5, Sep., 1983, pp. 2189-2191,
4.Digital simulation of parallel inverters, Comp. Meths. Appl. Mech.. Eng, North-Holland Vol.49, No.1,May,1985,pp.109-119,
5.Field computations by the complementary networks, IEEE Transaction on Magnetics, Vol. MAG-21, No.6,Nov.,1985,pp.2280-2283,
6.A representation of magnetic hysteresis by Fourier series, Journal of Magnet-ism and Magnetic Materials, North-Holland Vol.54-57, 1986,pp.1613-1614,
7.Faster magnetic field computation using locally orthogonal discretization, IEEE Transaction on MagneticsVol.MAG-22, No.5, Sep.,1986,pp.1057-1059,
8.A representation of magnetic aftereffect, IEEE Transaction on Magnetics, Vol.MAG-22, No.5,Sep.,1986,pp.647-649,
9.Application of a Chua type model to the loss and skin effect calculations, IEEE Transaction on Magnetics, Vol.MAG-23, No.5, Sep.,1987, pp.2227-2229,
10.Finite element of open boundary magnetic fields, IEEE Transaction on Magnetics, Vol. MAG-23, No.5,Sep.,1987,pp.3569-3571,
11.Modelling of magnetization characteristics and faster magnetodynamic field computation, Journal of Applied Physics,Vol.63, No.8, April, 1988,pp.3174-3178,

[1] Continue on a separate sheet if necessary

12.The strategic dual image method, Journal of Applied Physics, Vol.63, No.8, April, 1988,pp.3369-3371,
13.Finite element solution of open boundary eddy current problems, Proceedings of the First International Symposium on Applied Electromagnetics in Materials, Pergamon Press, Oct., 1988, pp.237-247,
14.Faster eddy current computation using Voronoi-Delaunay transformation, Proceedings of the First International Symposium on Applied Electromag-netics in Materials, Pergamon Press,Oct.,1988,pp.271-282,
15.A parameter representing eddy current loss of soft magnetic materials and its constitutive equation, Journal of Applied Physics,Vol.64, No.10, Nov., 1988,pp.5684-5686,
16.Dual mesh approach for semiconductor de-vice simulator, IEEE, Transaction on Magnetics, Vol. MAG-25, No.4,July,1989,pp.2953-2955,
17.Development of finite element approach for the electomagneticodynamic problems, NSF (USA) Workshop on Future Direction in Electromagnetic Research Report,
18.Experimental verification of a Chua type magnetization model, IEEE Transaction on Magnetics, Vol. MAG-25, No.4,July,1989,pp.2968-2970,
19.Application of the Voronoi-Delaunay transformation method to eigen value problems, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.1, 1990, pp.59-64,
20.Faster open boundary magnetic field computation using the strategic dual Image and Voronoi-Delaunay transformation methods, Journal of Applied Physics,Vol.67, No.9, May, 1990,pp.5824-5826,
21.A Formulation of the inverse problems in magnetostatic fields and its application to a source position searching of the hu-man eye fields, Journal of Applied Physics, Vol.67, No.9, May, 1990, pp.5830-5832,
22.A representation of magnetization characteristics and its application to the ferroresonance circuits, Journal of Applied Physics, Vol.67, No.9, May, 1990,pp.4738-4740,
23.Faster electromagnetic field computation using the Vorono-Delaunay transformation, Journal of Electromagnetic Waves and Applications, Jhon Wiley and Sons、Vol.4, No.11, 1990, pp. 1107-1115,
24.Dual discretization method for semiconductor device simulator, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.2, 1990,pp.91-98,
25.Frequency characteristics of the complex permeability and its application to the FEM solutions of hysteretic fields, Journal of Applied Physics,Vol.69, No.8, April, 1991, pp. 4838-4840,
26.A new type high frequency transformer,IEEE Transaction on Magnetics、Vol.MAG-27, No.6,Nov.,1991,pp.5205-5207,
27.An estimation of the current distributions in human heart by the factor analysis, Elsevier Studies in Applied Electromagnetics in Materials, Vol.3, Jan., 1992,pp.73-76,
28.An estimation of the current distributions in human heart by the correlative analysis, Elsevier Studies in Applied Electromagnetics in Materials, Vol.3, Jan., 1992,pp.77-80,
29.A representation of magnetization characteristics for computational magnetodynamics, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.2, 1992, pp. 353- 358,
30.Electromagnetic field source searching from the local field measurements,Elsevier Studies in Applied Electro-magnetics in Materials, Vol.3, Jan., 1992,pp.185-188,
31.A representation of magnetization characteristics for computational magnetodynamics, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.2, 1992, pp. 353-358,
32.Crack identification in metallic materials, IEEE Transaction on MagneticsVol.MAG-29, No.2, March, 1993,pp.1861-1864,
33.A neural behavior estimation by the generalized correlative analysis, IEEE Transaction on MagneticsVol.MAG-29, No.2, March, 1993,pp.1389-1394,
34.Electromagnetic field source searching from the local field measurement, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.3, 1993,
35.Realization of a core-less transformer and its application to a DC/DC converter, Elektrotechn. CAS., 44 (1993),No.7,PP.238-241,
36.The locally orthogonal coordinate systems for analyzing inverse problems of magnetostaic fields, IEEE Transaction on MagneticsVol.MAG-29, No.6, Nov.,1993,pp.3343-3345,
37.A new inductor having a noise filtering capability, IEEE Transaction on Magnetics, Vol. MAG-30, No.6, Nov.,1994,pp.4761-4763,
38.Hybrid MCG and ECG approach to medical diagnosis in human heart, IEEE Transaction on Magnetics,Vol.MAG-30, No.6,Nov.,1994,pp.4704-4706,
39.The optimum configurations of SQUID sensors for the magnetocardiogram and magnetoencephalogram, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994,pp.419-422,

40.The film transformer, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994, pp.257-260,
41.Massively parallel neural networks for the inverse source problems, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994,pp.167-170,
42.Leakage magnetic field source searching by the correlative analysis, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994,pp.37-40,
43.Projective sampled pattern matching method for the defect recognition in conductive materials, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994,pp.33-36,
44.A coreless film shape induction motor for the application to small devices, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994, pp.261-264,
45.New complex permeability measurement device for thin magnetic films, Journal of Applied Physics, Vol.75, No.10, May, 1994,pp.6887-6889,
46.Ployphase eddy current testing, Journal of Applied Physics, Vol.75, No.10, May, 1994, pp. 5904-5906,
47.Defect recognition in conductive materials by local magnetic field measurement, Journal of Applied Physics, Vol.75, No.10, May, 1994,pp.5907-5909.
48.Development of film transformer, IEEE Transaction on Magnetics, Vol. MAG-30, No.6, Nov., 1994,pp.4758-4760,
49.Magnetic core shape design by the sampled pattern matching method, IEEE Transaction on Magnetics, Vol.MAG-31, No.3,May,1995,pp.1976-1979,
50.Space power method for human heart diagnosis, IEEE Transaction on Magnetics, Vol. MAG-31, No.6, Nov., 1995, pp.4262-4264,
51.An application of the wavelets to the magnetic field source searching, Journal of Applied Physics, Vol.79, No.8, April, 1996,pp.4699-4701,
52.Magnetic field distribution caused by a notebook computer and its source searching, Journal of Applied Physics, Vol.79, No.8, April, 1996, pp.5214-5216,
53.A thin film common mode noise filter and its evaluation by wavelets analysis, IEEE Transaction on Magnetics, Vol. MAG-32, No.5, Sep., 1996, pp.5001-5003,
54.Wavelet solution of the inverse source problems, IEEE Transaction on Magnetics, Vol. MAG-33, No.2, March, 1997,pp.1935-1938,
55.Wavelet solution of the inverse parameter problems, IEEE Transaction on Magnetics, Vol. MAG-33, No.2, March,1997, pp.1962-1965,
56.SDI solution of PCB containing magnetic material, IEEE PESC'98, Vol.2,（May）. 1998 pp. 1675-1680,
57.Coil impedance computation having arbitrary geometrical shape, IEEE PESC'98, Vol.2,（May.1998）,pp. 1991-1996,
58.Application of Wavelets Analysis to Magnetic Field Source Searching, INVERSE PROBLEMS IN ENGINEERING MECHANICS (M.Tanaka, G.S.Dulikravich Eds., Elsevier), pp. 477-484、（Mar.1998）,
59.Optimal Sensor Lay-out for Minimum Norm Approach to Searching for Radioactive Source, INVERSE PROBLEMS IN ENGINEERING MECHANICS (M.Tanaka, G.S.Dulikravich Eds., Elsevier), pp.503-508,（Mar.1998）,
60.Application of Two-Dimensional Orthogonal Wavelets Multi-resolution Image Analysis of a Turbulent Jet, Transactions of the Japan Society for Aeronautical and Space Sciences, Vol.42, No.137, pp.120-127 (Nov. 1999).

Until 2009 189 Full Refereed Papers

Yoshifuru Saito

March 26th 2010

INTRODUCTION

of

Yoshifuru SAITO

- History and Academic Degrees
- Works in University
- Works in Academic Society
- Representative Papers
- Major Past Works
- Recent Works
- Summary and Future Works

History and Academic Degrees

- Boned in Fukuoka Prefecture Japan on July 24 1946.
- Married & Two Daughters.
- Hosei University (about 150 Years History Privat University in Tokyo Metropolitan Area).
- B.E. 1969.
- M.E. 1971.
- Ph.D. 1975.

Works in University

- Research fellow (1975-76).
- Lecturer (1976-78).
- Associate Professor (1978-87).
- Visiting Researcher at McGill University in Canada (1980).
- Professor (1987-).
- Vice-Secretary of Faculty of Engineering (1985-1987).
- Chairman of School of Electrical Engineering (1993-1994),
- Chairman of Graduate School of Electrical Engineering (1994-1996)
- Director of the Computational Science Research Center (1996-1998).

Works in Academic Societies

- International Steering Committee of the ISEM, Tokyo , 1988.
- Local Steering Committee of the COMPUMAG, Tokyo , 1989.
- Chief Secretary of the ISEM Kanazawa ,1990.
- Scientific Committee of the 2nd Japanese-Polish Joint Seminar 1990.
- International Steering Committee of the ISEM Sendai 1991,
- Academic staff of the Professional Meeting on the High Frequency Magnetics , IEEJ,1998-2000.
- Chairman of the Professional Meeting on the Electromagnetic Devices Analysis, 1999-2001.
- Editorial Board of the International Journal of Applied Electromagnetics in Materials, Elesevier, 1990-.
- The Best Book Author Award entitled “Wavelets Transform by Mathematica” by The Japan Applied Electromagnetics Society , 1996.

Representative Papers 1

- The theory of the harmonics of the m,n-symmetrical machines, ETZ-AH. 10, Oct., 1974.
- Numerical methods for polyphase induction motors,Comp.Meths.Appl.Mech. Eng, Vol.11, No.2, May,1977.
- Three - dimensional analysis of nonlinear magnetodynamic fields in a saturable reactor, Comp. Meths. Appl. Mech. Eng, Vol.22,No.3, 1980.
- Three - dimensional analysis of magnetodynamic fields in electromagnetic devices taking into account the dynamic hysteresis loops, IEEE Transaction on Magneics,Vol.MAG-18, No.2, Mar., 1982.
- Modelling of nonlinear inductor exhibiting hysteresis loops and its application to the single phase parallel inverters, IEEE Transaction on MagneticsVol.MAG-19, No.5, Sep., 1983.

Representative Papers 2

- Digital simulation of parallel inverters, Comp. Meths. Appl. Mech.. Eng, North-Holland Vol.49, No.1,May,1985,
- Field computations by the complementary networks, IEEE Transaction on Magnetics, Vol. MAG-21, No.6,Nov.,1985.
- A representation of magnetic hysteresis by Fourier series, Journal of Magnet-ism and Magnetic Materials, North-Holland Vol.54-57, 1986.
- Faster magnetic field computation using locally orthogonal discretization, IEEE Transaction on MagneticsVol.MAG-22, No.5, Sep.,1986.
- A representation of magnetic aftereffect, IEEE Transaction on Magnetics, Vol.MAG-22, No.5,Sep.,1986.
- Application of a Chua type model to the loss and skin effect calculations, IEEE Transaction on Magnetics, Vol.MAG-23, No.5, Sep.,1987.
- Finite element of open boundary magnetic fields, IEEE Transaction on Magnetics, Vol. MAG-23, No.5,Sep.,1987.

Representative Papers 3

- Modeling of magnetization characteristics and faster magnetodynamic field computation, Journal of Applied Physics,Vol.63, No.8, April, 1988.
- The strategic dual image method, Journal of Applied Physics, Vol.63, No.8, April, 1988.
- Finite element solution of open boundary eddy current problems, Proceedings of the First International Symposium on Applied Electromagnetics in Materials, Pergamon Press, Oct., 1988.
- Faster eddy current computation using Voronoi-Delaunay transformation, Proceedings of the First International Symposium on Applied Electromagnetics in Materials, Pergamon Press,Oct.,1988.
- A parameter representing eddy current loss of soft magnetic materials and its constitutive equation, Journal of Applied Physics,Vol.64, No.10, Nov., 1988.

Representative Papers 4

- Dual mesh approach for semiconductor de-vice simulator, IEEE, Transaction on Magnetics, Vol. MAG-25, No.4,July,1989.
- Development of finite element approach for the electomagneticodynamic problems, NSF (USA) Workshop on Future Direction in Electromagnetic Research Report,
- Experimental verification of a Chua type magnetization model, IEEE Transaction on Magnetics, Vol. MAG-25, No.4,July,1989.
- Application of the Voronoi-Delaunay transformation method to eigen value problems, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.1, 1990.
- Faster open boundary magnetic field computation using the strategic dual Image and Voronoi-Delaunay transformation methods, Journal of Applied Physics,Vol.67, No.9, May, 1990.

Representative Papers 5

- A Formulation of the inverse problems in magnetostatic fields and its application to a source position searching of the human eye fields, Journal of Applied Physics, Vol.67, No.9, May, 1990.
- A representation of magnetization characteristics and its application to the ferroresonance circuits, Journal of Applied Physics, Vol.67, No.9, May, 1990.
- Faster electromagnetic field computation using the Vorono-Delaunay transformation, Journal of Electromagnetic Waves and Applications, Jhon Wiley and Sons、Vol.4, No.11, 1990.
- Dual discretization method for semiconductor device simulator, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.2, 1990.
- Frequency characteristics of the complex permeability and its application to the FEM solutions of hysteretic fields, Journal of Applied Physics,Vol.69, No.8, April, 1991.
- A new type high frequency transformer,IEEE Transaction on Magnetics、Vol.MAG-27, No.6,Nov.,1991.

Representative Papers 6

- An estimation of the current distributions in human heart by the factor analysis, Elsevier Studies in Applied Electromagnetics in Materials, Vol.3, Jan., 1992,
- An estimation of the current distributions in human heart by the correlative analysis, Elsevier Studies in Applied Electromagnetics in Materials, Vol.3, Jan., 1992.
- A representation of magnetization characteristics for computational magnetodynamics, International Journal of Applied Electromagnetics in Materials,Elsevier、Vol.2, 1992.
- Electromagnetic field source searching from the local field measurements,Elsevier Studies in Applied Electro-magnetics in Materials, Vol.3, Jan., 1992.
- A representation of magnetization characteristics for computational magnetodynamics, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.2, 1992.

Representative Papers 7

- Crack identification in metallic materials, IEEE Transaction on MagneticsVol.MAG-29, No.2, March, 1993.
- A neural behavior estimation by the generalized correlative analysis, IEEE Transaction on MagneticsVol.MAG-29, No.2, March, 1993.
- Electromagnetic field source searching from the local field measurement, International Journal of Applied Electromagnetics in Materials, Elsevier、Vol.3, 1993,
- Realization of a core-less transformer and its application to a DC/DC converter, Elektrotechn. CAS., 44,,No.7,1993.
- The locally orthogonal coordinate systems for analyzing inverse problems of magnetostaic fields, IEEE Transaction on MagneticsVol.MAG-29, No.6, Nov.,1993.
- A new inductor having a noise filtering capability, IEEE Transaction on Magnetics, Vol. MAG-30, No.6, Nov.,1994.
- Hybrid MCG and ECG approach to medical diagnosis in human heart, IEEE Transaction on Magnetics,Vol.MAG-30, No.6,Nov.,1994.

Representative Papers 8

- The optimum configurations of SQUID sensors for the magnetocardiogram and magnetoencephalogram, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994.
- The film transformer, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994.
- Massively parallel neural networks for the inverse source problems, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994.
- Leakage magnetic field source searching by the correlative analysis, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994.
- Projective sampled pattern matching method for the defect recognition in conductive materials, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994.
- A coreless film shape induction motor for the application to small devices, Elsevier Studies in Applied Electromagnetics in Materials, Vol.5, Jan., 1994.

Representative Papers 9

- New complex permeability measurement device for thin magnetic films, Journal of Applied Physics, Vol.75, No.10, May, 1994.
- Ployphase eddy current testing, Journal of Applied Physics, Vol.75, No.10, May, 1994.
- Defect recognition in conductive materials by local magnetic field measurement, Journal of Applied Physics, Vol.75, No.10, May, 1994.
- Development of film transformer, IEEE Transaction on Magnetics, Vol. MAG-30, No.6, Nov., 1994.
- Magnetic core shape design by the sampled pattern matching method, IEEE Transaction on Magnetics, Vol.MAG-31, No.3, May,1995.
- Space power method for human heart diagnosis, IEEE Transaction on Magnetics, Vol. MAG-31, No.6, Nov., 1995.
- An application of the wavelets to the magnetic field source searching, Journal of Applied Physics, Vol.79, No.8, April, 1996.

Representative Papers 10

- Magnetic field distribution caused by a notebook computer and its source searching, Journal of Applied Physics, Vol.79, No.8, April, 1996.
- A thin film common mode noise filter and its evaluation by wavelets analysis, IEEE Transaction on Magnetics, Vol. MAG-32, No.5, Sep., 1996.
- Wavelet solution of the inverse source problems, IEEE Transaction on Magnetics, Vol. MAG-33, No.2, March, 1997.
- Wavelet solution of the inverse parameter problems, IEEE Transaction on Magnetics, Vol. MAG-33, No.2, March,1997.
- SDI solution of PCB containing magnetic material, IEEE PESC'98, Vol.2, May, 1998.

Representative Papers 11

- Coil impedance computation having arbitrary geometrical shape, IEEE PESC'98, Vol.2, (May.1998) ,pp. 1991-1996,
- Application of Wavelets Analysis to Magnetic Field Source Searching, INVERSE PROBLEMS IN ENGI-NEERING MECHANICS (M.Tanaka, G.S.Dulikravich Eds., Elsevier), Mar.1998.
- Optimal Sensor Lay-out for Minimum Norm Approach to Searching for Radioactive Source, INVERSE PROBLEMS IN ENGINEERING MECHANICS (M.Tanaka, G.S.Dulikravich Eds., Elsevier), Mar.1998.
- Application of Two-Dimensional Orthogonal Wavelets Multi-resolution Image Analysis of a Turbulent Jet, Transactions of the Japan Society for Aeronautical and Space Sciences,Vol.42, No.137,Nov. 1999.

Major Past Research Works

- Electric Machines, Induction Machines.
- Power Electronics, Inverters and Reactors.
- Modeling of Ferromagnetic Materials.
- Computational Electromagnetic Fields.
- Inverse Problems on MEG, MCG, Nondestructive Inspection and EMC Problems.
- Semiconductor Device Simulators.
- DC to DC Switching Converters.
- Wave Guide Cavity Problems.
- Wavelets and Its Applications including Fluid Dynamics.

Until 1999

- Over 100 Reviewed Papers.
- 6 Books.
- Over 20 Patents.

From 1999

- Smart Visualized Information Processing makes it possible to work out human eyes capability.

Smart Visualized Information Processing

- **Svip** aims to carry out the extraction of the rules and laws from all of the electronically visualized images on the computer screen.
- **Svip** is based on the compilation of classical physics: Field Theory, e.g. Sound, Electro-magnetism and Quantum mechanics.
- **Svip** utilizes the discrete mathematics: Numerical analysis, e.g. FEM, and pure discrete mathematics, e.g. discrete wavelets.

Applications

- 1. Image Processing by Field Theory
- 2. Modal Wavelets Analysis
- 3. Eigen Patterns of Images
- 4. Dynamic Image Cognition

Summary and Future Works

- **Svip should be realized in products : Security, Expert systems and so on.**
- **Svip should be used in order to extract the Rules and Laws from the Physical Systems.**

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