CURRICULUM VITAE

NAME: MIRCEA IVANESCU
First Last

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Business Address: The University of Craiova - Department of Mechatronics, 1100 CRAIOVA - ROMANIA

Date of Birth: May, 3, 1943 Place of Birth: Larga, R.Moldova
Sex: Male; Marital Status: married; Children: Alina-Nirvana (1974)
Religion: Orthodox Christian. Citizenship: Romanian
Highest Degree earned: Ph.D.; From what institution: University of Craiova-Romania;
On which what date: 1975.
Present Position: Professor; Since what date: 1990.

I. HIGHER EDUCATION

INSTITUTION; Politechnical Institute of Bucharest
MAJOR AND MINOR FIELDS: Automatic Control
DATES OF ATT.: 1960-1965
DEGREES: MD 1965
PhD 1975
NAMES of Thesis Advisory: Prof. Sergiu Calin (Polytechnic Institute of Bucharest; prof. Constantin Belea (University of Craiova); prof. Nicolae Budisan (Polytechnic Institute of Timisoara)

II. PREVIOUS POSITIONS

Institution	Rank	Responsibilities	Dates
I.S.P.	Dipl.Eng.	design	1966-1967
Univ.Craiova	Assistant	teaching	1967-1972
Univ.Craiova	Lecturer	teaching-research	1972-1976
Univ.Craiova	Ass.Prof.	teaching-research	1976-1990
Univ.Craiova	Head-Computing Centre	teaching-research	1981-1990
Univ.Craiova	Professor	teaching-research	1990-1992
Univ.Craiova	Rector	President-Senate	1990-2004
Univ.Craiova	President		2004-2008

III. DESCRIPTION OF ACADEMIC EXPERIENCE

1. ACADEMIC COURSES
A. Impulse Technique and Switching Circuits (Static characteristics of a junction transistor as a switch. Dynamic characteristics. Basic switching circuits. Bi-stable circuits. A-stable circuits. Blocking oscillators. Switching functions. Combinational logic networks. Logic gates. Flip-Flops. Sequential circuits. Digital-to-digital converters. SSI, MSI, LSI circuits).

B. Discrete Industrial Automatisations (Sampled data control systems. Discrete transfer functions. Stability of sampled data systems. The state space model. Graphs of systems. Time-domain and frequency-domain analysis in state space. Asynchronous and synchronous machines. Structure of sequential machines. Linear sequential machines. Finite state recognises. Sequential and iterative networks. State-identification and fault-detection experiments. Microprocessors. Fundamental concept. Microprocessor applications. Interfacing techniques).

2. INDUSTRIAL COURSES

A. Numerical Control of Machine-Tools (Introduction to numerical control as an advances concept of machine-tool control. Problems of control loops, controlling the relative position of the tool with respect to the workpiece. Conventional types of numerical control. Position transducers, technical characteristics. Methods for encoding, codes for numerical control field, combinational or sequential logic techniques. Arithmetic units, converters, decoders, registers, pulse counter. Conventional numerical control structure. Control systems of motion, spindle speed control and feed axis control of the machine tools. Control systems using asynchronous motors, d.c. motors, electrical and hydraulic systems. Manual programming. Computer control: direct numerical control and computerised control. Adaptive numerical control).

B. Industrial Robots (Robot co-ordinate systems. Position and orientation. Rotations. Homogeneous co-ordinates. Co-ordinates frames. Kinematics of positions. Differential motions and Jacobean actuators. Sensors. Control. Path control. Force control and compliance. Computer vision. Computational architectures. Robot programming languages).

IV. DESCRIPTION OF RESEARCH WORK

The research work includes the following directions: distributed parameter systems, system theory, control system design, logic and digital systems, control system optimisation and robot control systems.

The research field comprising the largest number of results refers to distributed parameter systems: optimal control of distributed parameter systems using variational calculus, dynamic conventional programming, dynamic incremental and differential programming, stability of distributed systems. - This was the subject of my Ph.D.Thesis.

All these papers bring forward important theoretical contributions (the control of distributed parameter systems depending on space, the Popov's stability criterion for distributed systems, the prediction functional in differential programming, the properties the functional performance in these systems, etc.), but, at the same time they are characterised by a marked practical character, the control systems described by partial derivative equations (distributed systems) are applied in chemical engineering, thermal, hydrodynamic and pneumatic systems, etc.

Simultaneously with my research work reading distributed parameter systems, my preoccupations were focused towards the general aspects of the system theory, control system design in state space, compensatory and regulator design.

Others results have been applied in numerical simulation, electronic and integrated circuits, digital control via microprocessors, optimal control of mechanic arms in industrial robots-allowing that new methods of synthesis be obtained from the adaptive and learning systems. An important part of the papers is focused on special class robots, the tentacle robots, with infinite number of degrees-of-freedom. In this field, I've created three models:TEROB 01, TEROB 02 and TEROB 03 (Tentacle ROBot), and I have obtained very

important results concerning the control of these robots by using the multimicroprocessor systems.

My papers received 65 citations, 36 from prestigious international authors. My model of variable structur controller was cited in the papers of Robinson, Mochiyama, Chirikjian, Jones, Carrozza, Wang, Tatlicioglu in [CIT1, CIT2, CIT 3, CIT4, CIT5, CIT6, CIT8, CIT12, CIT14, CIT16].The dynamic model of Hyperredundant structure was used by Chirikjian,Burdick,Hayashi in [CIT17, CIT18, CIT23, CIT25, CIT26.The energy methods for tentacle position control was developed in the papers of Braganza, Dawson, Walker, Nath [CIT30, CIT32]. The fuzzy logic control for distributed parameter systems were cited in the papers of Katic, Vulobratovic, Wang, Sheng, Ma, Qin in [CIT 43, CIT44, Cit45]. The smart materials for hyperredundant robot driving was also cited in the papers of Jones, McMahan,Walker, Lanteigne, Jnifene [CIT46, CIT47, CIT48, CIT49]. The length variable models for tentacle robots were cited in the papers of Jones, Walker, Braganza, Dawson, Nepalli, Tatlicioglu [CIT50, CIT51, CIT52, CIT53, CIT54, CIT55, CIT56].The development of the algorithms for hyperredundant robots was cited in the papers of Garg, Kumar, Ko, Lau [CIT60, CIT61] and new fuzzy controllers based on the nonconventional technologies were appreciated in the papers of Clemmensen, Favre-Bulle, Kuo si Lin in [CIT63, CIT64, CIT65].

V. PROFESSIONAL MEMBERSHIPS

- Technical Academy of Romania
- Romanian Society of Specialists in Automatics
- Romanian Society of Education
- President of Romanian Society of Robotics

VI. TEXTBOOKS AND MONOGRAPHS

1. Ivanescu M., Control in Mechanical Engineer's Handbook, pp.610-716, Editors J.D.Irwin,D.Marghitu, Academic Press, New York, 2001;

2. Belea, C., Ivanescu M., Sisteme cu parametri distribuiti in Sisteme automate complexe,pg 472-505, Editura Tehnica, Bucuresti, 1972;

3. Ivanescu M., Cautil I., Automate industriale, Editura "Scrisul Romanesc" - Craiova, 1984;

4. Ivanescu M., Roboti industriali - Algoritmi si sisteme de conducere, Editura Universitaria, Craiova, 1994;

5. Ivanescu M., Cojocaru D., Diaconu I., Introducere in mecatronica, Editura Universitaria, Craiova, 2002;

6. Ivanescu M., Nitulescu M., Stoian V., Sisteme neconventionale pentru conducerea robotilor, Editura Universitaria, Craiova, 2002.

7. Ivanescu M., Sisteme avansate de conducere in robotica, Editura Scrisul Romanesc, Craiova, 2004;

8. Ivanescu,M., From Classical to Modern Mechanical Engineering-Fundamentals, Ed Academia Romana, Bucharest, 2007.

ςII. ΠΑΠΕΡΣ (Selection)

1. Ivanescu, M., Dynamic Control of a Tentacle Manipulator, Robotics and Factories of the Future, Springer-Verlag, pp.317-326, 1984.
2. Ivanescu, M., A New Manipulator Arm: A Tentacle Model, "Recent Trends in Robotics", North Holland, pp.51-56, 1986.
3. Ivanescu, M., An Inverse Model of a Parabolic Distributed System, AMSE Review, AMSE Press, vol.5, No.4, pp.9-16, 1987.
4. Ivanescu, M., Electro-Rheological fluid controllers, Journal of Intelligent Material Systems and Structures, vol.9, no.8, vol.I, pp.607-615, 1998.
5. Ivanescu, M., Fuzzy Controllers by Unconventional Technologies for Tentacle arms, Lecture Notes in Computer Science series, no.1625, pp.232-245, Ed.Springer Verlag, Dortmund Germany, 1999.
6. Marghitu, M., Ivanescu, M., Fuzzy Logic Control of Parametrically Excited Rotating Beam Using Inverse Model, Dynamics and Control, vol.9, pp.319-338.
7. Ivanescu,M., On the dynamic control of hyper-redundant manipulators, Advances in Automatic Control, Kluwer Academic Publishers,pp 141-158,2004.
8. Ivanescu, M., A Robust Fuzzy Controller for Cooperative Robot Systems, IEEE int. Conference on Robotics and Automation, Edited by Institude of Electrical and Electronics Engineers, Inc., Detroit, USA, May, 21-26, 1999, pp.2125-2132.
9. Ivanescu, M., Two Level Hierarchical Fuzzy Controller for Hyperredundant Cooperative Robots, IEEE Int.Conference on Robotics and Automation, Edited by Institude of Electrical and Electronics Engineers, Inc., San Francisco, April, 24-28, 2000, pp. 2845-2858.
10. Ivanescu, M., An Intelligent Control System for Hyperredundant cooperative Robots, Proceeding of the 2nd International Symposium on Robotics and Automation-ISRA '2000, vol.I, pp.201-206, Monterey, Mexic, 2000.
11. Ivanescu, M., A fuzzy controller for mobile robots- 4th international Conference on Climbing and Walking Robots, 2001, Professional Engineering Publishing Limited, Karlsruhe, Sept., 14-23, pp.236-245.
12. Ivanescu, M., An Intelligent Fuzzy Controler for Cooperative Tasks of Tentacle Robots (ACRA/ICMT 2001), Robotics and Mechatronics Congress 5th International Conference on Mechatronics Technology, pp.318-3245, Singapore, 2001.
13. Ivanescu, M., Stoian, V., A non-conventional Controller for Electrorheological Fluid Actuated Walking Robot, Proceedings of the 5th Conference on Climbing And Walking Robots, (CLAWARR '2002), Professional Engineering Publishing Limited, Sept.25-27, Paris, France, pp.203-210.
14. Ivanescu, M., Dynamic Control of Position for a Tentacle Manipulator-Int.Conference on Robotics and Automation, Edited by Institude of Electrical and Electronics Engineers, Inc ., 2002, Washington, May, 19-25, pp.3245-3253.
15. Ivanescu, M., Energy Based Control for a Hyperredundant Manipulators, IFAC Conference on Mechatronics, Barkeley, Dec. 4-8, 2002, pp.765-773.
16. Ivanescu, M.,Bazdoaca,N., Control of Hyperredundant Manipulators with SMA Actuators, IEEE International Conference on Robotics and Automation, edited by Institute of Electrical and Electronics Engineers, Taipei, Sept. 2003, pp. 2786-2792.
17. Ivanescu, M., Control System for a Tentacle Manipulator with Variable Length, IFAC/IEEE Conference on Management and Control of production and Logistics, Nov. 2004, pp. 1-7.

18. Ivanescu, M., Unconstrained and Constrained Control for a Tentacle Manipulator, 2004 ASME, International Mechanical Engineering Congress, Anaheim, Nov. 2004, pp. 3820-3826.
19. Ivanescu,M.,Popescu,N.,Popescu,D.,A Variable Length Hyperredundant Arm Control System, IEEE International Conference on Mechatronics and Automation, Ontario, Canada, July, 29-August, 1 2005, pp1998-2004.
20. Ivanescu, M., Stoian,V., "Fuzzy Controllers by Unconventional Technologies for Tentacle Arms", 6th Fuzzy Days in Dortmund - International Conference on Computational Intelligence, May 25-27, 1999, Dortmund, Germany, Proceedings of the "6 Fuzzy Days", Ed. Springer Verlag, *Lecture Notes in Computer Science* series, no. 1625, pp. 232-245, ISBN: 3-540-66050-X.
21. Ivanescu, M., Florescu, M., Popescu, N., Popescu, D., *Position and Force Control of the Grasping Function for a Hyperredundant Arm*, IEEE International Conference on Robotics and Automation (ICRA 2008), 19-23 mai 2008, Pasadena, California, S.U.A., IEEE Catalog CFP08RAA-DVD, ISBN 978-1-4244-1647-9, ISSN 1050-4729, pp. 2599-2604.
22. Ivanescu, M., Florescu, M., Popescu, N., Popescu, D., *Stability Control of a Hyperredundant Arm for a Grasping Operation*, The 7th International Conference VIBROENGINEERING 2008, Kaunas, Lithuania, 9-11 octombrie 2008, publicat in Journal of Vibroengineering, ISSN 1392-8716, vol.11, nr.1, pp. 83 - 91.
23. Ivanescu, M., Florescu, M., Popescu, N., Popescu, D., *The Control of the Hyper-redundant Manipulator by Frequency Criteria*, revista "Studies in Informatics and Control" (SIC), septembrie 2009, vol. 18, nr. 3, ISSN 1220-1766, pp. 279 – 288.
24. Ivanescu, M., Florescu, M., Popescu, N., Popescu, D., *Position and Force Control of the Grasping Function for a Hyperredundant Arm*, IEEE International Conference on Robotics and Automation (ICRA 2008), 19-23 mai 2008, Pasadena, California, S.U.A., IEEE Catalog CFP08RAA-DVD, ISBN 978-1-4244-1647-9, ISSN 1050-4729, pp. 2599-2604.
25. Ivanescu, M., Cojocaru, D., Bizdoaca, N., Florescu, M., Popescu, N., Popescu, D., Dumitru, S., *Boundary Control by Boundary Observer for Hyper-redundant Robots*, revista „International Journal of Computers, Communications & Control", (IJCCC), ISSN 1841 – 9836, E-ISSN 1841 – 9844, Covered in ISI Web of Science, JCR 2009, 0.373, vol. 5 (2010), No.5.
26. Ivanescu, M., Cojocaru, D., Bizdoaca, N., Florescu, M., Popescu, N., Popescu, D., Dumitru, S., *A Boundary Sensor Control for a Hyper-Redundant Arm*, revista "Studies in Informatics and Control" (SIC), nov 2010 .

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