Innokentiy Vassily Semushin

Nationality:	Russian	Citizenship:	Russia
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1 Profile

- ▷ Highly self-motivated and results driven researcher and teacher in a career spanning 38+ years
- ▷ A committed team player and strong leader able to motivate others to deliver results
- ▷ Author of many publications known in identification and adaptive stochastic control community
- ▷ High level of qualifications complemented by some good administrative skills
- ▷ Long term teaching experience resulted in formulating the effective approaches to teaching Mathematical Information Technology (MIT)
- ▷ Strong adherent to and active user of modern computer technology in various aspects
- ▷ First class communication skills with the ability to liaise with people at all levels
- ▷ Currently seeking a challenging, career-enhancing opportunity in an Education & Research position where my skill set can make a valuable contribution

2 Multidisciplinary Expertise

2.1 Expertise Summary

- ▷ Strong foundations in theoretical Computer Science, Applied Mathematics, and Mathematical Information Technology coupled with the knowledge in Electrical Engineering and Electronics
- ▷ Extensive practical work in system modeling, analysis and design

2.2 Mathematical Information Technology (MIT)

- ▷ Linear Programming
- ▷ Linear Least Squares Computations that are robust and cost effective
- ▷ Filtering and Stochastic Control in Dynamical Systems
- ▷ Computational Linear Algebra

2.3 Decision & Control Science (DCS)

- ▷ Detection of Abrupt Changes
- ▷ Signal Recognition
- ▷ Unsupervised (Self-learning) Systems
- ▷ Fault Tolerant & Adaptive Control

2.4   Modeling, Analysis & Design (MAD)

▷ System Identification: Foundations and Methods
▷ Stochastic Models, Estimation and Control: Theory with applications (to the complex conditions of uncertainty and changeability)
▷ Modern Control Systems: Modeling, Analysis and Design of Linear Systems
▷ Combined Navigational Systems: Error Budget Analysis and Optimization

2.5   Computer Science (CS)

▷ Basic Discrete Mathematics
▷ Computer Engineering: Algorithms & Digital Automata Design

2.6   Education (Edu)

▷ Curriculum Development and Instructional Programs Design
▷ Educational material and media. Educational technology

3   Qualifications

3.1   Education & Degrees

1983–1985 **Doctoral study**, Ulyanovsk State Technical University, Ulyanovsk, Russia.
Dissertation: Active Adaptation and Fault Detection for Stochastic Discrete Time Control Systems.
Defended: April 09, 1987, St. Petersburg State University of Aerospace Instrumentation, St Petersburg (former Leningrad), Russia.
Degree conferred: Doctor of Science (Eng) in Data Processing and Control Systems. Certificate: TN No. 007038 by The Supreme Attestation Commission, Council of Ministers of the USSR. Protocol No. 33d/11, September 4, 1987, Moscow, Russia.

1968–1970 **PhD study**, St. Petersburg Electrical Engineering University "LETI", St Petersburg (former Leningrad), Russia.
Dissertation: Closed-loop Adaptive Filters Investigation.
Defended: October 30, 1970, St. Petersburg Electrical Engineering University "LETI", St Petersburg (former Leningrad), Russia.
Degree conferred: Candidate of Science (PhD equivalent) in Automatic Control. Certificate: MTN No. 059978. St. Petersburg Electrical Engineering University "LETI", Council Resolution No. 21, October 30, 1970, St Petersburg (former Leningrad), Russia.

1959–1964 **Diploma study**, St. Petersburg Electrical Engineering University "LETI", St Petersburg (former Leningrad), Russia.
Diploma Thesis: Statistical Accuracy Analysis and Design of Analog-to-Digit Convereters.
Defended: December 19, 1964, St. Petersburg Electrotechnical University "LETI", St Petersburg (former Leningrad), Russia.

Degree conferred: Diploma Engineer in Mathematical Computing and Computer Engineering. Degree Certificate with Distinction: O No. 191118, St. Petersburg Electrical Engineering University "LETI", State Examination Commission Resolution, December 19, 1964, St Petersburg (former Leningrad), Russia.

3.2   Honors, Awards & Academic Titles

Date	Classification	Issuer
2009	**"Honoured Professor of Ulyanovsk State University"**	Ulyanovsk State University, April 2009, Ulyanovsk, Russia.
2008	**"Honoured Science and Technology Worker of Ulyanovsk Region"**	Government of Lenin Order Ulyanovsk Region, November 2008, Ulyanovsk, Russia.
2003	**"The PAGU Scholar Prizewinner"**[1]	Middle Volga State Universities Association (PAGU), February 2003, Ulyanovsk, Russia.
2003	**"The Liubischev Scholar Prizewinner"** for Scientific Developments in Ecology, Technology and Humanities	Government of Lenin Order Ulyanovsk Region, January 2003, Ulyanovsk, Russia.
2003	**"The Man of Year 2003"** & Biographical Entry in the book "2000 Outstanding Intellectuals of the 21st Century"— 2nd Edition	International Biographical Centre, Cambridge CB2 3QP England.
1999	**"Honorary Figure of Russian Higher Education"**[2]	President of the Russian Federation, Decree No. 878, July 6, 1999, Moscow, Russia. Certificate: 3 No. 100189.
1993	**"Honorary Citizen of Oklahoma City"** in the context of successful negotiations for establishing the Russian-American College between Oklahoma City University and Lomonossov Moscow State University Branch in Ulyanovsk	Governor of the State Oklahoma, Oklahoma City, U.S.A, October 1993.
1990	**"Professor of Mathematical Cybernetics and Informatics"**. Certificate: PR No. 006489	The State Committee of the USSR for Public Education. Resolution No. 531/p, December 13, 1990, Moscow, Russia.
1975	**"Docent of Computer Science"**. Certificate: MDC No. 095049	The Supreme Attestation Commission. Protocol No. 50/37, October 22, 1975, Moscow, Russia.

[1]   PAGU, as abbreviated in Russian, stands for the Middle Volga State Universities Association.

[2]   The Russian Federation's Outstanding Achievement Award in University Education.

4 Work History

4.1 University Professional Experience

Tenure	University	Position	Responsibilities
2006– date	Ulyanovsk State University,[3)] Ulyanovsk, Russia.	**Professor** of Mathematics and Information Technologies.	Scholarly research, advising Ph.D. students, developing and teaching applied mathematics courses.
1989– 2006	Ulyanovsk State University,[3)] Ulyanovsk, Russia.	**Professor** of Mathematical Cybernetics and Informatics.	Scholarly research, advising Ph.D. students, developing and teaching applied mathematics courses.
1988– 1989	Moscow State University Branch, Ulyanovsk, Russia.	**Professor** of Higher Mathematics and Informatics.	Scholarly research and teaching applied mathematics courses.
1985– 1988	Ulyanovsk State Tech University, Ulyanovsk, Russia.	**Professor / Senior Lecturer** of Computer Science.	Scholarly research, advising graduate students, and teaching computer science courses.
1983– 1985	Ulyanovsk State Tech University, Ulyanovsk, Russia.	**Senior Research Fellow**, Computer Science Department.	Directing industry related projects and pursuance of research under the topic of doctoral dissertation.
1971– 1983	Ulyanovsk State Tech University, Ulyanovsk, Russia.	**Senior Lecturer / Lecturer** of Computer Science.	Scholarly research, advising graduate students, and teaching computer science courses.

[3)] Before July of 1996 Lomonossov Moscow State University Branch in Ulyanovsk.

4.2 Administrative Experience

Tenure	University	Position	Responsibilities
2006– 2009	Ulyanovsk State University, Ulyanovsk, Russia.	**Director - Organizer** of Russian-American Consortium.	Coordinating the cooperation between the three universities (Samara - Ulyanovsk - Texas).
1989– 2006	Ulyanovsk State University, Ulyanovsk, Russia.	**Head of Department** of Mathematical Cybernetics and Informatics.	Developing and leading the department, determining the course offerings, and developing the major curricula.
1992– 2006	Ulyanovsk State University, Ulyanovsk, Russia.	**Head of the Lab** of Mathematical Modeling.	Leading the laboratory, determining a research agenda, and directing projects.
1990– 1991	Lomonossov Moscow State University Branch in Ulyanovsk.	**Dean**, School of Mathematics and Mechanics.	Developing a graduate program in Applied Mathematics, and faculty search and recruitment.
1989– 1990	Lomonossov Moscow State University Branch in Ulyanovsk.	**Dean**, Schools of Mathematics /Mechanics & Physics/Technology.	Helping to foster a stimulating atmosphere for the two newly organized and growing schools.

4.3 Further Professional Experience

Term	University	Position	Responsibilities
Oct., 2000	Gerhard Mercator University Duisburg, Germany.	**Guest Professor**, Fachbereich 11 Mathematik.	Presenting scientific research and discussing collaborative projects
1998–2002	Russian / American College[4], Ulyanovsk, Russia.	**Professor**[5] of Applied Mathematics.	Teaching a course of Linear Algebra (in English).
1995–date	Ulyanovsk State University of Technology, Ulyanovsk, Russia.	**Professor**[5] of Applied Mathematics.	Teaching graduate and undergraduate courses and directing Ph.D. dissertations.
Oct., 1993	Oklahoma City University, Oklahoma, the U.S.A.	**Guest Professor**, Mathematics and Physics Division.	Lecturing in Recursive Least Squares and negotiating for organizing the Russian / American College[4].

[4] Within the structure of Ulyanovsk State University, Ulyanovsk, Russia.

[5] A part-time position.

4.4 Present Full-Time Position

Professor
Department of IT, School of Mathematics and Information Technology
Ulyanovsk State University
Ulyanovsk, Russia

5 Teaching

Institution	Term	Course	Hpw[6]
Ulyanovsk State University, Ulyanovsk, Russia	2012–date	Basics of Research	3
	2007–2011	Decision Science	3
	2005–2012	Basic Modeling	3
	2004–2012	Discrete Mathematics	3
	2003–2012	Linear Programming	3
	2003–2012	Methods of Optimization	3
	2001–date	Computational Mathematics	3
	1997–date	Numerical Methods	3
	1998–2006	Recursive Least Squares	3
	1995–2006	Modern Control Systems	4
	1992–1993	Statistical Decision Theory	3
	1990–1996	Numerical Linear Algebra	3
	1989–date	Stochastic Models, Estimation and Control	5

[6] Hours per week.

Institution	Term	Course	Hpw[6]
Oklahoma City University, Oklahoma City, U.S.A.	Oct., 1993	Computational Techniques of Recursive Least Squares	3
Ulyanovsk State Technical University, Ulyanovsk, Russia	2013–date	Research Typesetting Systems	3
	2011–date	Modeling	3
	2011–date	Complex Systems Modeling	3
	1998–2000	Control Theory	3
	1996–date	Numerical Methods	3
	1996–2012	Optimization Methods	3
	1997–1998	Stochastic Models	4
	1996	Trends in Modern Computers	2
	1985–1988	Error Detecting for Computers	2
	1985–1988	Digital Automata Theory	3
	1971–1988	Computer Theory and Design	4
Russian / American College[7]	1998–2002	Linear Algebra *(in English)*	4

[6] Hours per week.

[7] Within the structure of Ulyanovsk State University, Ulyanovsk, Russia.

6 Interdisciplinary Research

6.1 Fields of Interest (2000 Mathematics Subject Classification)

62-xx Statistics

   62F03 Hypothesis testing

   62J20 Diagnostics

   62L10 Sequential analysis

   62M20 Prediction; filtering

93-xx Systems theory; control

   93Exx Stochastic systems and control

   93Bxx Controllability, observability, and system structure

97Dxx Education and instruction in mathematics

   97D40 Teaching methods and classroom techniques. Lesson preparation. Educational principles

   97D50 Teaching problem solving and heuristic strategies

65-xx Numerical analysis

   65C20 Models, numerical methods

   65Fxx Numerical linear algebra

   65Pxx Numerical problems in dynamical systems

90Cxx Mathematical programming

   90C05 Linear programming

   90C31 Sensitivity, stability, parametric optimization

97Uxx Educational material and media. Educational technology

   97U40 Problem books; student competitions, examination questions

   97U70 Technological tools (computers, calculators, software, etc.) and their use in the classroom

6.2 Past Research

Mostly on stochastic systems and control theory, modeling of uncertain systems and signals, including those with unforeseen changes in their characteristics, and application of the theory to separately or jointly performed state estimation, change detection and parameter identification in a statistical framework.

6.3 Industry Related Projects

Term	Project Title	Supported by
2013–date	CLASS-M (Computational Laboratory for Adaptive Stochastic Systems Modeling)	Russian Foundation for Basic Research
1988–1992	The Quickest Detection of Changes in the Models of Vehicle Motion	Ministry of Shipbuilding Industry, Russia Federation
1984–1988	Inertial Navigation System Error Sources Identification	Ministry of Aerospace Instrumentation Industry, Russia Federation
1968–1970	Adaptive Filtering in Radio-Navigation Systems	Ministry of Electronic Industry, Russia Federation

7 Activities

7.1 Developed Initiatives

Term	Role	Initiative Title	Result
2012–2012	Guest Editor	Special Issue on Models, Algorithms and Applications (MAA) of International Journal of Communications, Network and System Sciences published by Scientific Research Publishing (SCIRP)	Volume 5, Number 9A, September 2012 (Special Issue on Models and Algorithms for Applications)
2006–2007	Co-author	Consortium of Three Universities: Korolev Samara State Aerospace University (SSAU) Samara, Russia, and Ulyanovsk State University (USU) Ulyanovsk, Russia, and Texas Tech University (TTU)	Memorandum of Agreement has been signed by all three parties
2005	International Co-Chair for Russia, Focus Symposium Organizer	Concurrent Engineering CE-2005 Focus Symposium on "Recursive Dynamics and Iterated Mappings in Service Modeling and Design" 25–29 July, 2005, Renaissance Worthington Hotel, Ft. Worth/Dallas, USA	Organized Focus-Symposium at the 12$^{\text{th}}$ International Conference CE-2005 (19 papers accepted)

Term	Role	Initiative Title	Result
2004	Member of the IPC, Mini-Symposium Co-organizer	"ECCOMAS-2004 Mini-Symposium on Dynamic and Evolutionary Methods in Replication-Selection Systems". 4th European Congress on Computational Mathematics in Applied Sciences, ECCOMAS-2004, July 24–28, 2004, Jyväskylä, Finland	Organized Mini-Symposium at the 4th ECCOMAS (12 papers accepted)
2004	Member of the IPC, Reviewer	Membership in the IPC of the 11th ISPE International Conference on Concurrent Engineering CE-2004, – Beijing, China	8 papers reviewed
2004	Co-leader	SCALE (Stochastic, Cybernetic and Adaptive Logistic Engineering). The initiative united 19 universities of the seven countries (Hungary, Italy, Poland, Russia, Romania, USA, Finland).	Focus Symposium at CE-2005
2003	Member of the IPC, Workshop Organizer	Workshop on Recursive and adaptive signal/image processing - RASIP. The 3d International Conference on Computational Science, - St. Petersburg, Russia, and Melbourne, Australia	Organized the Workshop (11 papers accepted)
2003	Member of the IPC, Workshop Organizer	Workshop on Concurrent Engineering for Addressing Uncertainty. The 10th ISPE International Conference on Concurrent Engineering, - Madeira, Portugal	Organized the Workshop (8 papers accepted)
1993	Negotiator	Russian / American College in the stucture of Lomonossov Moscow State University Branch at Ulyanovsk	Established in 1995. Transformed into Russian / American Faculty of the Ulyanovsk State University in 2000
1986–1988	Member of the working group	Establishing the Lomonossov Moscow State University Branch at Ulyanovsk	Established in 1988. Transformed into the Ulyanovsk State University in 1996

7.2 Memberships in Professional Organizations

2013–date	Global World Communicator (GWC). Education and Science, Council Member
2012–date	IEEE Membership
2010–date	Editorial Board Membership, International Journal of Communications, Network and System Sciences, a journal published by Scientific Research Publishing (SCIRP)
2008–date	Machine Intelligence Research Labs (MIR Labs) Membership for Russia
2000–date	American Mathematical Society (AMS) Membership

7.3   Memberships in Dissertation Committees

2001–date	Dissertation Committee D 212.278.02 on Mathematical Modeling, Numerical Methods and Integrated Software	Ulyanovsk State University, Ulyanovsk, Russia
2001–2012	Dissertation Committee D 212.277.02 on Mathematical Modeling, Numerical Methods and Integrated Software	Ulyanovsk State Tech University, Ulyanovsk, Russia
2001–2004	Dissertation Committee K 212.278.03 on Theory and Methods of Vocational Education	Ulyanovsk State University, Ulyanovsk, Russia
1998–2000	Dissertation Committee K 053.37.06 on Mathematical Modeling, Numerical Methods and Integrated Software	Ulyanovsk State University, Ulyanovsk, Russia
1997–2000	Dissertation Committee K 064.21.03 on Applications of Computers, Mathematical Modeling and Mathematical Methods in Scientific Research	Ulyanovsk State Tech University, Ulyanovsk, Russia
1990–2000	Dissertation Committee D 064.21.01 on Information and Computer Aided Design Systems	Ulyanovsk State Tech University, Ulyanovsk, Russia
1994–2000 (Chair up to 1997)	Dissertation Committee K 053.37.03 on Mathematical Cybernetics, Mathematical Logic, Algebra and Number Theory	Ulyanovsk State University, Ulyanovsk, Russia

7.4   Directing Ph. D. dissertations of My Post-Graduate Students

YoD[8)]	Ph.D. Student	Thesis Title | Specialty | Date of defense | Diploma #
2014	Kliment V. Zakharov	**Title:** Ship Maneuver Detection with Consideration of Indirect Attributes | **Specialty:** 05.13.18—Mathematical Mogeling, Numerical Methods and Integrated Software | **DoD:** Tentatively 26.03.2014 | **Diploma #:** TBA
2010	Alexander I. Moiseev	**Title:** Mathematical Modeling of the Littoral Observation System Placement | **Specialty:** 05.13.18—Mathematical Mogeling, Numerical Methods and Integrated Software | **DoD:** 23.12.2010 | **Diploma #:** DKN # 134695 of 13 May 2011, # 20/44
2010	Ilia S. Yastrebov	**Title:** 05.13.18—Mathematical Models and Implementation of the Role-Context Based Access Guarding for a Distributed Physical Experimentation Control System | **Specialty:** Mathematical Mogeling, Numerical Methods and Integrated Software | **DoD:** 23.12.2010 | **Diploma:** DKN # 131968

[8)]   Year of defence.

YoD[8]	Ph.D. Student		Thesis Title | Specialty | Date of defense | Diploma #
2007	Maria	A. Fedorova	**Title:** Computational and Evolutionaty Methods in Stochastic Systems with Detection and Adaptation | **Specialty:** 01.01.09—Discrete Mathematics and Mathematical Cybernetics | **DoD:** 07.11.2007 | **Diploma:** DKN #052033
2005	Olga	A. Fat'yanova	**Title:** Auxiliary Performance Indices and Stability in Stochastic Identification Problems | **Specialty:** 05.13.18—Mathematical Mogeling, Numerical Methods and Integrated Software | **DoD:** 16.06.2006 | **Diploma:** DKN #00661
2005	Alexey	E. Kondrat'ev	**Title:** Diagnosis Methods for Stochastic Adaptive Systems Construction | **Specialty:** 05.13.18—Mathematical Mogeling, Numerical Methods and Integrated Software | **DoD:** 16.06.2006 | **Diploma:** DKN #006617
2005	Vladimir	V. Ugarov	**Title:** Computer Models and Program Packages in Project-based Learning | **Specialty:** 05.13.18—Mathematical Mogeling, Numerical Methods and Integrated Software | **DoD:** 22.12.2005 | **Diploma:** KT #180745 of 12.05.2006
2005	Maria	V. Kulikova	**Title:** Methods for Logarithmic Likelihood Function and Its Gradient Computation in the Kalman Filtering Algorithms | **Specialty:** 01.01.09—Discrete Mathematics and Mathematical Cybernetics | **DoD:** 22.12.2005 | **Diploma:** KT #174691
2002	Oleg	Yu. Gorokhov	Mathematical Cybernetics & Discrete Mathematics
2000	Julia	V. Tsyganova	Mathematical Cybernetics & Discrete Mathematics
1998	Victor	V. Taratukhin	Information and Computer Aided Design Systems
1997	Leonid	V. Kalinin	Applications of Computers, Mathematical Modeling and Mathematical Methods in Scientific Research
1997	Eugene	V. Dulov	Mathematical Cybernetics & Discrete Mathematics
1996	Anatoli	G. Skovikov	Applications of Computers, Mathematical Modeling and Mathematical Methods in Scientific Research
1992	Sergei	V. Vershinin	Information and Computer Aided Design Systems

[8] Year of defence.

8 Funding Received

- 2014–2015

  Classification: Research grant "Providing Educational Process with the Effective Tools for Active Learning of Difficult Disciplines of Information and Computing Technologies."

  Sponsor: Russian Foundation for Basic Research, project No. 14-07-00665.

- 2013–2014

  Classification: Research grant "Active Principle of Adaptation-Based Human Body Thermal Homeostasis Adaptive Stochastic Modeling."

  Sponsor: Russian Foundation for Basic Research, project No. 13-01-9703513.

- 2004

  Classification: Research grant "COMBINE-for-PACE. Component Based Integration Environment: Performance Assessment of a Complex Enterprise."

  Sponsor: The European Commission. A program of EU-RU RTD cooperation: FP6, IST, project ADMIRE-P.

- 2003–2004

  Classification: Research grant "Solutions to the Joint Problems of Fault Detection, Diagnosis, Identification, and Parring in Stochastic Control Systems."

  Sponsor: Ministry for Education of the Russian Federation. Project No. T02-03.2-3427.

- 2002–2003

  Classification: Research grant "Improving Efficiency of Identification Methods for Discrete Stochastic Adaptive Systems" to support post-graduates' studies in the Russian Federation universities (post-graduate student O. A. Fatyanova).

  Sponsor: Ministry for Education of the Russian Federation. Project No. A03-3.16-414.

- 2002–2003

  Classification: Research grant "Iterative Three-stage Re-design for Discrete Stochastic Adaptive Systems with the Control Input" to support post-graduates' studies in the Russian Federation universities (post-graduate student A. E. Kondratiev).

  Sponsor: Ministry for Education of the Russian Federation. Project No. A03-3.16-409.

- 2002

  Classification: Travel Grant to participate in Concurrent Engineering Conference, CE-2002, 27–31 July, 2002, Cranfield, United Kingdom

Sponsor: International Science and Technology Center, Moscow, Travel Support Program, Project No. TSP-EU-029-030/2002

- 2002

  Classification: Travel Grant to participate in the 2d International Conference on the Teaching of Mathematics (at the undergraduate level), ICTM-2, 1–6 July 2002, Hersonissos, Crete, Greece

  Sponsor: Russian Foundation for Basic Research, Project No. 02-01-10751

- 2000

  Classification: Travel Grant to participate in the European Congress on Computational Methods in Applied Sciences and Engineering, ECCOMAS-2000, 11–14 September 2000, Barcelona, Spain

  Sponsor: Russian Foundation for Basic Research, Project No. 00-01-10874

- 1999

  Classification: Travel Grant to participate in the 3rd European Conference on Numerical Mathematics and Advanced Applications, ENUMATH-1999, 26–30 July 1999, Jyväskylä, Finland

  Sponsor: Russian Foundation for Basic Research, Project No. 99-01-10717

- 1992–1996

  Classification: Research Scholarship within the 1st National Program "Universities of Russia"

  Sponsor: Russia Federation Committee for the Highest Education, Project: Nonlinear Dynamical Systems, No. NDS-34

- 1983–1985

  Classification: Senior Research Scholarship to complete doctoral dissertation research

  Sponsor: Ulyanovsk State Polytechnical Institute, Ulyanovsk, Russia

9 List of Publications

Available upon request.

10 Leisure Activities

▷ Music: Classic. Member of the Ulyanovsk Philharmonic Society Friends League
▷ Books: English reading & audition
▷ Sports: Swimming and skiing

11   References

Available upon request.

Date: January 17, 2014   Signature: