

# Professor Lucian N. VINTAN, PhD

Full-Member of The Technical Sciences Academy of  
Romania

European Commission Expert in Computing Systems



## Personal Web Page



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### My Web

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## Studies:

- 1993-1997: [PhD in Computer Science](#) ("*Contributions to Instruction Level Parallel Architectures*"), ["Politehnica" University of Timisoara](#), Romania, Supervisor: [Professor Crisan STRUGARU, PhD](#) - a pioneer of Microprocessors and Microsystems, Honorary Member of the "[Technical Sciences Academy of Romania](#)". Prof. Strugaru received the prestigious "Traian Vuia" Romanian Academy Award for Technical Sciences in 1983. [Here, some of my thoughts about Professor Strugaru](#)
- 1982-1987: [Faculty of Computer Engineering and Control Systems](#), ["Politehnica" University of Timisoara](#), Romania ([Master Degree](#), honors)
- (1981-1982: Obligatory Military Service; Officer Degree)
- 1977-1981: ["Gheorghe Lazar" High School of Mathematics and Physics](#) from Sibiu, Romania

## Professional Experience:

- 2001-2012 & 2015-present: [I was the first PhD Supervisor](#) in *Computer Science / Computer Engineering and Information Technology* (see [here!](#)) domain at ["Lucian Blaga" University of Sibiu](#). I supervised [the first 5 doctors in Computer Science domain](#) graduating at ["Lucian Blaga" University of Sibiu!](#)
- 2012-2015: [PhD Supervisor](#) in *Computer Engineering and Information Technology* domain at [Technical University of Cluj-Napoca](#) (due to the national legislative context)
- 2000-present: [Professor, Department of Computer Science & Electrical Engineering](#), Engineering School, ["Lucian Blaga" University of Sibiu](#) (Courses: Computer Architecture, Advanced Computer Architecture, Research Methods in Advanced Computing Architectures); I was also a [Visiting Research Fellow](#) at [University of Hertfordshire, United Kingdom](#).
- 1991-2000: Lecturer / Senior Lecturer/ Associate Professor, Department of Computer Science & Engineering, ["Lucian Blaga" University of Sibiu](#)

- **1987-1991:** Minisystems Testing/Diagnosing/Debugging Engineer at I.I.R.U.C. Bucharest / Sibiu Branch (I was specialised on the Romanian [I-102F/4M](#) computing system, compatible with [DEC PDP-11/44](#) minisystem.)

## Scientific Activity:

- I published **7 scientific books** in Computer Architecture domain (one in "[Romanian Academy Publishing House](#)", Bucharest, one in "[The Technical Publishing House](#)", Bucharest, four in "[Matrix Rom](#)" Publishing House, Bucharest and one in "[Lucian Blaga](#)" University Publishing House, Sibiu) - please see here my [Complete List of Publications](#).
- I published over 160 scientific papers, especially in Advanced Computer Architecture field, some of them in prestigious journals (*Clarivate Analytics Web of Science*) like: ***IEEE TRANSACTIONS ON Computer-Aided Design of Integrated Circuits and Systems*** (IEEE), ***Information Sciences*** (Elsevier), ***Concurrency and Computation: Practice and Experience*** (Wiley & Sons), ***Journal of Systems Architecture*** (Elsevier), ***IET Computers and Digital Techniques*** (IET, United Kingdom), ***Microprocessors and Microsystems*** (Elsevier), ***Proceedings of The Romanian Academy***, etc. and IEEE/ACM international conferences (Romania, USA, Italy, UK, Portugal, Hungary, Austria, Belgium, France, Germany, Poland, China, Spain, Turkey, Korea, etc.) - please see my [List of Publications](#).
- **I pioneered the application of Machine Learning techniques to Computing Systems research.** Just one fertile example: the *Dynamic Neural Branch Prediction* concept, that I firstly introduced in my [IJCNN '99 paper](#) (Washington, D.C.) and in a [subsequent one](#) (perceptron branch predictor, 2000), was further implemented in commercial advanced microprocessors like [Oracle Sparc T4-4](#) (2011), [AMD Bulldozer](#) (2011), [AMD Bobcat/Jaguar](#) (2014), [Samsung Exynos M1 Processor](#) (2016; my [initial paper](#) is cited!), [AMD Ryzen](#) (2017), [AMD Zen](#) (2016/2017; my [initial paper](#) is cited!), [IBM z14](#) (2017), etc. For some details, just click [here](#). **INDUSTRIAL & MEDICAL IMPACT of my idea related to Neural Branch Prediction - HERE!** **I pioneered not only using Machine Learning methods in Computing Systems research, but also the application of some techniques belonging to domains like Decision Systems, Fuzzy Logics, Information Theory, Optimization, Petri Nets, etc. in Computer Architecture research** (see especially my papers B11, B24, B25, B28, B35, B39, B48, B57, B65, B69, B70, B75, B77, B80, B81, B83, B94, B101, B102, B105, etc. from the List online available [here](#).)

- During 1998 - present I developed **12 Research Grants** as a **Project Manager (Principal Investigator)**, obtained through **National / European competitions** (financed by **European Commission** and **Romanian governmental institutions** like ANSTI, CNCSU/CNCSIS/[CNCS](#), [MEdC](#))
- Member of "[The International Association of Science and Technology for Development](#)" (IASTED), "Parallel and Distributed Computing and Systems" Section (2000 - present), Canada
- In 1996 I worked for a 3 months period as a **Visiting Researcher (European Commission TEMPUS-Phare IMG-95-RO-2011 Grant)** at the **University of Hertfordshire, UK** (*Hatfield Superscalar Architecture Project*, having [Professor Gordon B. Steven](#) as a Project Leader)
- **Visiting Researcher at University of Augsburg, Germany (DAAD-NATO Research Grant)** for a 3 months period in 2003, working with [Professor Theo Ungerer](#)'s research group in Context Prediction in Ubiquitous Computing field - [The Smart Doorplates Project](#))
- **Official Research Counselor at Siemens AG, CT IC, Munich, Germany, 2002 - 2006**, working with Siemens' [Vice-President, Prof. Dr.H.C. Hartmut Raffler](#) (he wrote me: "*Thank you very much for the excellent cooperation.*") and [Prof. Dr. Volker Tresp](#) in Document Classification / Clustering domain
- [PhD Supervisor in Computer Science/Engineering domain](#), at "**Lucian Blaga**" University of Sibiu / [Technical University of Cluj-Napoca](#) (2001 - present; I supervised [the first 5 doctors in Computer Science domain graduating at "Lucian Blaga" University of Sibiu!](#))
- [CNCSIS \(Romanian National Research Council\) Expert](#) in Computer Science & Engineering; **Member of the CNCSIS Engineering Sciences Commission** (2005 - 2009)
- **Journals Scientific Reviewer** - "[IEE Proceedings - Computer and Digital Techniques](#)", United Kingdom, (2001, 2003), [IEEE Transactions on Computers](#) (2008), [Transactions on HiPEAC](#) (from 2010), **Concurrency and Computation: Practice and Experience**, John Wiley & Sons, Ltd. (2008), **Studies in Computational Intelligence (SCI). Advances in Intelligent and Distributed Computing**, Springer (2008), **International Journal of Computers, Communication & Control**, **Microprocessors and Microsystems** (2011), [Buletinul Institutului Politehnic din Iasi, Automatic](#)

Control and Computer Science, ACM TECS (2016), Proceedings of The Romanian Academy: series A (2017), Journal of Universal Computer Science (2018) etc.

- **Member of over 160 International Program Committees Conferences until 2017 (selective):** Germany - [High Performance Computing & Simulation HPCS 2006](#), Prague - [HPCS 2007](#), Leipzig - [HPCS 2009](#), China - [Asia-Pacific Computer Systems Architecture Conference ACSAC 2006](#), Switzerland - [Architecture of Computing Systems ARCS 2007](#), Korea - [ACSAC 2007](#), France - [European Conference on Parallel Computing EuroPar2007](#), Romania - [International Symposium on Intelligent and Distributed Computing - IDC 2007](#), [SINTES 2007](#), [SACCS 2007](#), [ICCCC 2008](#), [RoEduNet 2006, 2007, 2010](#), Germany - [ARCS 2008](#), Austria - [IASTED PDCN 2008](#), Taiwan - [ACSAC 2008](#), Italy - [IDC 2008](#), Cyprus - [IDC 2009](#), Germany - [ARCS 2009](#), Romania-Bucharest - [CSCS 17 - 2009](#), Greece - [SAMOS IX - 2009](#), Germany - [ARCS 2010](#) and [PARMA Workshop](#), Morocco - [IDC 2010](#), India - [AST 2010](#), Greece - [SAMOS X - 2010](#), Italy - [ARCS 2011](#), Turkey - [HPCS 2011](#), The Netherlands - [IDC 2011](#), Bucharest - [CSCS 18 - 2011](#), Sinaia - [ICSTCC 15 - 2011](#), USA - [IASTED PDCS-2011](#), USA, San Jose - [ISCA-CBP3-2011](#), Sibiu - [EDCC 2012](#), Munich - [ARCS 2012](#), Calabria - [IDC 2012](#), Sinaia - [ICSTCC 2012](#), Craiova - International Conference on Web Intelligence, Mining and Semantics – [WIMS 12](#), Amsterdam - IEEE/ACM International Symposium on Nanoscale Architectures - [NANOARCH '12](#), Prague - [ARCS 2013](#), Luebeck - [ARCS 2014](#), ETC., ETC.
- **EUROPEAN COMMISSION (EC) DG Information Society Expert.**  
**Activities:** Scientific Reviewer of [FP6/FP7 NoE HiPEAC 1 & 2 Research Project 2004 - 2012](#) (Founder of HiPEAC: [Professor Mateo Valero](#) - see here [some of his words for me](#), UPC Barcelona). Review Meetings at: L'Aquila, Italy, July 2005 and 2006; University Politecnica Catalunya of Barcelona, Spain, November 2005 and 2007, March 2009; Gent University, Belgium, November 2006; EC Brussels June 2007, October 2008, June 2010 and May 2011; Paphos, Cyprus, January 2009; Munich, Germany, June 2009; Pisa, Italy, January 2010; Heraklion, Crete, January 2011; Goteborg, Sweden, April 2012. Also I worked as an evaluator in FP7-ICT-Call-1, STREPs Evaluation, Computing Systems, June 18-22, 2007, EC Brussels; FP7-ICT Evaluation, Computing Systems, May 25-29, 2009, EC Brussels; FP7-FET Open Evaluation, July 6-10, 2009, EC Brussels; FP7-ICT Call 7 Objective 3.4 - Computing Systems Evaluation, March 7-12, 2011, EC Brussels; FP7-ICT-2013.3.4 Advanced computing, embedded

and control systems, February 25-March 1, 2013, EC Brussels; H2020-FETOPEN-2014 Research and Innovation Actions, November 2014 (Remote Eval.); H2020-FETOPEN-2014-2015-RIA\_31-03-2015, May 2015 (Remote Eval.), HORIZON 2020 FET-OPEN - NOVEL IDEAS FOR RADICALLY NEW TECHNOLOGIES, October 2015, EC Brussels (I was *Vice-Chair*), etc. Since 2012 I am a [HiPEAC](https://www.hipeac.net/~lucian.vintan/) Member - see <https://www.hipeac.net/~lucian.vintan/>.

- Member of the Romanian Academy's [Microsystems Science and Technology Committee](#)

## Distinctions, Awards & Honours:

- I was elected [Full-Member](#) of the "[Technical Sciences Academy of Romania](#)" ("[Academia de Stiinte Tehnice din Romania - ASTR](#)", [IT&C Section](#), July 2012; I was elected [Correspondant Member](#) in April 2005, President [Academician Radu Voinea](#). During 2005-2012 I was the youngest Academy's Member.) See here [DIPLOMA - ASTR](#).
- "[Tudor Tanasescu](#)" [Romanian Academy Prize in 2005](#), for the book entitled "[Microarchitectures Simulation and Optimization](#)" (in Romanian), Matrix Rom Publishing House, Bucharest, 2003 (co-author: Dr. Adrian Florea, 443 pages, CD attached) - see [DIPLOMA - ACADEMIA ROMANA](#).
- [Visiting Research Fellow Title](#) from [University of Hertfordshire \(UH\)](#), UK (2002); "*I am pleased to confirm the title of Visiting Research Fellow. The title is intended to recognise your ongoing collaboration with our research activities.*" - [Professor J. M. Senior, PhD](#), Dean of the Faculty of Engineering and Information Sciences, UH (April 2003)
- Some old **National Awards** obtained in 1984 - in **MATHEMATICS** Domain - when I was a student in Computer Science & Engineering: [Diploma1](#), [Diploma2](#), [Diploma3](#)... and some more recent **LBUS Awards and Recognitions**: [Award1](#) (1999), [Award2](#) (2005), [Award3](#) (2013), [Award4](#) (2016), [Award5](#) (2018), etc.
- **Active EUROPEAN COMMISSION Expert** in Computing Systems Domain (from 2005 - present)
- **Best Paper Award** at *The IEEE RoEduNet 2010 International Conference* (with my PhD student [Horia Calborean](#)) - see [Diploma - RoEduNet](#)
- **International Program Committee Member** of the prestigious [Branch Prediction Championship - 2011](#) (with Professors [Yale Patt](#) and [Trevor Mudge](#), both [Eckert-Mauchly Awards](#), [André Seznec](#)) organized by **INTEL**

- Co.** and **JILP** (in conjunction with **ISCA-38 Conference** - the premier forum in Computer Architecture). See here: **Introduction** and **Results**
- Technical Sciences Academy of Romania **Jubilee Medal** (2012); Technical Sciences Academy of Romania **Anniversary Diploma** and **Anniversary Medal** (2017)
  - **Diploma of Excellence** from Matrix Rom Publishing House Bucharest "as recognition of your significant contribution in developing Romanian scientific literature" (2013)
  - **"Bologna Professor" Award** offered by The National Alliance of Student Organisations in Romania (ANOSR), Bucharest 2014. **Diploma**
  - **Diploma of Excellence** from Politehnica University of Bucharest "as a valuing sign for the significant contribution in developing Computer Engineering and Information Technology domain." (2014); **Honorary Diploma** from "Transilvania" University of Brasov (2016); **Jubilee Diploma** from Politehnica University of Timisoara (2016); **Jubilee Diploma** from University of Pitesti (2016), etc.
  - CNCSIS / UEFISCDI Awards for some published Web of Science journal papers (B57, B58, B59, B80, B94, B101, B102, B105, etc.)
  - **International Doctoral Committee Member** (professors from The Netherlands, France, Spain and Romania), Delft University of Technology (*Technische Universiteit Delft*), The Netherlands (November 2018). **Picture 1 Picture 2 Picture 3**

## Some citations of my papers & books:

I introduced some original architectural concepts (ex. **Dynamic Neural Branch Prediction** - *Wiki International*, Pre-Computed Branches, Dynamic Unbiased Branches, Selective Dynamic Instruction Reuse and Value Prediction, Dynamic Value Prediction focused on CPU's Context, Next Location Prediction in *UbiCom* Systems, **Meta-Optimization in Computer Architecture**, etc.), recognised, positively cited and debated through **over distinct 800 citations** published in prestigious international conferences and scientific journals (until 2017) like the following (below it is presented just a selective list; see also **Google's list of my citations**, H-Index=16, 2017):

- Chang M., Chou Y. (Chang-Gung University, Taiwan) - **Branch prediction using both global and local branch history information**, **IEE Proceedings - Computers and Digital Techniques**, Vol. 149, No. 2, United Kingdom, March 2002); **Employing both inter-branch and intra-branch correlation to improve the accuracy of branch prediction**, National Computer Symposium, Taiwan, pp. 2280-2284, 2003
- Steven F.L. - **An Introduction to the Hatfield Superscalar Scheduler**, University of Hertfordshire, United Kingdom, Technical Report No. 316/98, 1998 and in R.D.

- Potter - [Exploiting the Limitations of Fine Grained Parallelism for a Superscalar Architecture](#), PhD Thesis, University of Hertfordshire, U.K., October, 1998
- D. Jiménez, L. Calvin - [Neural Methods for Dynamic Branch Prediction](#), [ACM Transactions on Computer Systems](#) (TOCS), vol. 20, issue 4 (November 2002), pp. 369-397, ACM Press, New York, USA
  - Daniel A. Jiménez - [Fast Path-Based Neural Branch Prediction](#), Proceedings of the 36-th [Annual International Symposium on Microarchitecture](#) (MICRO-36), San Diego, CA, December 2003
  - Sunghoon Kim - [Branch Prediction using Advanced Neural Methods](#), Technical Report, University of California, Berkeley, 2003
  - A. Fern, R. Givan, B. Falsafi, and T. N. Vijaykumar - [Dynamic feature selection for hardware prediction](#), [Journal of Systems Architecture](#), vol. 52, no. 4, Elsevier, April 2006 + Technical Report TR-ECE 00-12, School of Electrical and Computer Engineering, Purdue University, 2000 (<http://min.ecn.purdue.edu/~afern/web-stuff/jsa-submission.pdf>)
  - Hunt S., Egan C., Shafarenko A. - [A simple yet accurate neural branch predictor](#), IASTED Int'l Conf. on Artificial Intelligence and Application (AIA), Malaga, Spain, September 2003
  - Falcon A., Stark J., Ramirez A., Lai K., [Valero M.](#) [[INTEL CO, UPC Barcelona](#)] - [Prophet/Critic Hybrid Branch Prediction](#), [International Symposium on Computer Architecture](#) (ISCA '04), Munich, Germany, 2004
  - Tarjan D., Skadron K. - [Revisiting the Perceptron Prediction Again](#), Technical Report CS-2004-28, University of Virginia, USA, 2004
  - Arun Lakshrinarayanan, Swmya Shriraghavan - [Neural Branch Prediction](#), CS6290 Project, College of Computing, Georgia Tech, USA
  - Petzold J., Bagci F., Trumler W., Ungerer T. - [Confidence Estimation of the State Predictor Method](#), Lecture Notes in Computer Science, Springer-Verlag Heidelberg, ISSN: 0302-9743, Volume 3295 / 2004
  - Monchiero M., Palermo G. - [The Combined Perceptron Branch Predictor](#), Technical Report No. 2004.35, 2004, Politecnico di Milano, Italy ([republished](#) in Proceedings of Int'l EuroPar Conference (LNCS), Lisboa, Portugal, August 30 - September 2, 2005)
  - Seznec A. - [The O-GEHL branch predictor](#), The JILP Championship Branch Predictors Workshop, December 4-8, 2004, Portland Oregon, USA
  - Haitham Akkary, Srikanth T. Srinivasan, Rajendar Koltur, Yogesh Patil, Wael Refaai [[INTEL CO - USA](#)] - [Perceptron-Based Branch Confidence Estimation](#), [International Conf. on High Performance Computer Architecture](#), Madrid, Spain, February 14-18, 2004
  - Seznec A. - [Analysis of the O-GEometric History Length Branch Predictor](#), 32-nd [Annual ISCA Conference](#), Madison, Wisconsin USA, June 4-8, 2005
  - Petzold J., Bagci F., Trumler W., Ungerer T. - [Next Location Prediction Within a Smart Office Building](#), 3-rd International Conference on Pervasive Computing, Munich, Germany, May 2005
  - Petzold J., Pietzowski A., Bagci F., Trumler W., Ungerer T. - [Prediction of Indoor Movements Using Bayesian Networks](#), First Int'l Workshop on Location and Context Awareness, Oberpfaffenhofen, Germany, May 2005



- Daniel A. Jiménez - [Improved Latency and Accuracy for Neural Branch Prediction](#), *ACM Transactions on Computer Systems*, vol. 23, no. 2, May 2005
- Falcon A., Stark J., Ramirez A., Lai K., Valero M. [[UPC, INTEL CO, HP](#)] - [Better Branch Prediction Through Prophet/Critic Hybrids](#), *IEEE Micro*, January/February 2005 (Vol. 25, No. 1)
- P. Nurmi, M. Martin, John A. Flanagan - [Enabling proactiveness through Context Prediction](#), Proceedings of the Workshop on Context Awareness for Proactive Systems, Helsinki, 16 - 17 June, 2005
- He Liqiang, Z. Liu - [A New Value Based Branch Predictor for SMT Processors](#), Proceedings of Parallel and Distributed Systems, ACTA Press, 2005
- Tarjan D., Skadron K. - [Merging Path and Gshare Indexing in Perceptron Branch Prediction](#), *ACM Trans. on Architecture and Code Optimization*, vol. 2, no. 3, September 2005
- Culpepper B., Gondre M. - [SVMs for Improved Branch Prediction](#), University of California, UC Davis, USA, ECS201A Technical Report, 2005
- Amilcar Arfel Molina D'iaz - [Plataforma de Comparacion para la Prediccion Dinamica de Saltos en Hardware FPGA](#), University Politecnica Catalunya, Barcelona, 2005
- Patil S et al. - [Branch Prediction by Checking Loop Terminal Conditions](#), Information Systems: New Generations (ISNG) Conference Proceedings, April 2005, Las Vegas, NV, USA
- Petzold J. - [Zustandspradiktoren zur Kontextvorhersage in ubiquitaren Systemen](#), PhD Thesis, University of Augsburg, Germany, November 2005
- Aamer M., et al. - [Efficiency of Pre-Computed Branches](#), Technical Report, University of Pennsylvania, USA, 2005
- Verdu J., Nemirovsky M., Garcia J., Valero M. - [Workload Characterization of Stateful Networking Applications](#), International Symposium on High Performance Computing (ISHPC-6), Nara City, Japan, September 2005
- Shatnawi A., Shatnawi M. - [Improving Branch Predictors by Combining with Predicated Execution](#), *Journal of Electrical Engineering*, vol. 56, no. 11-12, 2005
- Giese P. - [Characterizing the Performance of Value Prediction using Statistical Simulation](#), Technical Report, University of Alberta, Canada, 2005
- Gortz M. - [Effiziente Echtzeit-Kommunikationsdienste durch Einbeziehung von Kontexten](#), PhD Thesis, Darmstadt University, July 2005
- Verdu J., Nemirovsky M., Garcia J., Valero M. - [Architectural Impact of Stateful Networking Applications](#), 1-st International Symposium on Architectures for Networking and Communications Systems, Princeton, NJ, USA, October 2005
- Sez nec A. - [Genesis of the O-GEHL branch predictor](#), *Journal of Instruction Level Parallelism*, vol. 7, 2005
- Poojary V. - [Predicting Loop Unrolling Impact in Open MP Programs Using Machine Learning](#), MSc Thesis, North Carolina State University, USA, 2005
- Sez nec A., Michaud P. - [A case for \(partially\) TAGged Geometric history length branch prediction](#), *Journal of Instruction Level Parallelism*, vol. 8, 2006
- Desmet V. - [On the Systematic Design of Cost-Effective Branch Prediction](#), PhD Thesis, ISBN 90-8578-087-X, Gent University, Belgium, June 2006

- Ma Y., Gao H., Zhou H. - [Using Indexing Functions to Reduce Conflict Aliasing in Branch Prediction Tables](#), [IEEE Transactions on Computers](#), vol. 55, no. 8, August 2006
- Hammel K. - [An Analysis of Adding a Backside Level-Two Cache to an Existing Microprocessor](#), MSc Thesis, The University of Texas at Austin, USA, May 2006
- Singer J., Brown G., Watson I. - [Branch Prediction with Bayesian Networks](#), First Workshop on Statistical and Machine Learning Approaches applied to Architectures and Compilation (in conjunction with HiPEAC 2007 Conf.), pp. 96-112, Gent, Belgium, January 2007
- Silc J., Ungerer T., Robic B., [Dynamic Branch Prediction and Control Speculation](#), International Journal on High Performance Systems Architecture, vol. 1, no. 1, pp. 2-13, Inderscience Enterprises Ltd., 2007
- Hicks, M., Egan, C., Christianson, B. and Quick, P. – [Towards an Energy Efficient Branch Prediction Scheme Using Profiling and Delay Region Scheduling](#), Proceedings of the International Conference on Design & Technology of Integrated Systems in Nanoscale Era, Rabat, Morocco, September, 2007
- Aasaraai K., Baniasadi A. - [A Power-Aware Alternative for the Perceptron Branch Predictor](#), Lecture Notes in Computer Science, Advances in Computer Systems Architecture, vol. 4697, ISSN 0302-9743, Springer-Verlag Berlin / Heidelberg, 2007
- Yongfeng Pan, Xiaoya Fan, Liqiang He and Deli Wang - [A Bypass Mechanism to Enhance Branch Predictor for SMT Processors](#), Lecture Notes in Computer Science, Advances in Computer Systems Architecture, vol. 4697, ISSN 0302-9743, Springer-Verlag Berlin / Heidelberg, 2007
- Michael Black, [Applying Perceptrons to Speculation in Computer Architecture](#), University of Maryland, College Park, USA, 2007 (also in his book entitled *Applying Perceptrons to Speculation in Computer Architecture- Neural Networks in Future Microprocessors*, Vdm Verlag, 2007)
- A. Sez nec - [The L-TAGE Branch Predictor](#), [Journal of Instruction Level Parallelism](#), pp. 1-13, no. 9, 2007
- Hongliang Gao, Yi Ma, Martin Dimitrov, Huiyang Zhou, [Address-Branch Correlation: A Novel Locality for Long-Latency Hard-to-Predict Branches](#), The 14-th International Symposium on High Performance Computer Architecture (HPCA-14), February 2008
- Takashi Yokota, Kanemitsu Ootsu, Takanobu Baba, [Potentials of Branch Predictors —from Entropy Viewpoints—](#), Proceedings of ARCS 2008 Conference- Architecture of Computing Systems, TU Dresden, February 25th -28th 2008 - <http://arcs08.inf.tu-dresden.de/?n=6>
- Owen Kirby, Shahriar Mirabbasi, and Tor M. Aamodt - [Mixed-Signal Neural Network Branch Prediction](#), Technical Report, University of British Columbia, June 2007
- K. Slany - [Branch predictor on-line evolutionary system](#), Proceedings of the 10-th annual conference on genetic and evolutionary computation, Pages 1643-1648, Atlanta, GA, USA, 2008
- Davis, Mark C., Jourdan, Stephan, Hinton, Robert L., Phelps, Boyd S. - [Overriding a static prediction with a level-two predictor](#), [United States Patent 7533252](#), Assignee: [INTEL Corporation](#) (Santa Clara, CA, US), Publication Date 05/12/2009

- Verma, S., Maderazo, B., Koppelman, D.M. - [Spotlight - A Low Complexity Highly Accurate Profile-Based Branch Predictor](#), [Performance Computing and Communications Conference \(IPCCC\), 2009 IEEE 28-th International](#), ISBN: 978-1-4244-5737-3
- Rakvik R., Gonzalez J., Gonzalez A. et al., [Energy Efficiency via Threads Fusion and Value Reuse](#), [IET Comput. & Digit. Techn.](#), Vol. 4, Issue 2, pp. 114-125, March 2010
- Erich Bruns, Oliver Bimber - [Localization and Classification through Adaptive Pathway Analysis](#), [IEEE Pervasive Computing](#), ISSN: 1536-1268, April-June 2012
- ETC., ETC. A more complete list containing my citations is available at: <http://webspase.ulbsibiu.ro/lucian.vintan/html/Lista.doc>

## Some published comments related to my scientific work:

- [Dr. Daniel Jimenez \(Rutgers University, USA\)](#) wrote in one of his scientific papers ([MICRO-36 Conference, 2003](#)): *"Dynamic branch prediction with neural methods was first proposed by **Vintan**."*
- [Dr. Alan Fern et al. \(Purdue University, USA\)](#) wrote in another scientific paper ([Journal of Systems Architecture, Elsevier, 2006](#)): *"[...] prior to our original Dynamic Decision Tree Predictor there was only one such proposal [**Vintan**]."*
- [Dr. David Tarjan & Dr. Kevin Skadron \(Virginia University, USA\)](#) wrote in their paper ([ACM Transactions on Architecture and Code Optimization, 2005](#)): *"The idea of the neural branch predictor was originally introduced by **Vintan**."*
- [Dr. M. Monchiero & G. Palermo \(Politecnica di Milano\)](#): *"Branch predictors based on neural methods have been recently studied [**Vintan** 99], [Jimenez 02,03], showing that they are the most accurate predictor in the literature."* ([LNCS paper, 2005](#))
- [Dr. M. Aamer et al \(University of Pennsylvania, TR 2005\)](#): *"In this paper we detail and implement the pre-computed branch prediction algorithm described in [**Vintan et al**]."*
- [Prof. dr. Theo Ungerer \(University of Augsburg, Germany, Report, 2002 & Preface to my book, 2007\)](#): *"Prof. **Vintan** is one of the rare European scientist working in the research field of prediction techniques in computer architecture [...] his neural branch predictor is well-known in the research community."*
- [Prof. dr. Gordon B. Steven \(University of Hertfordshire, UK, Report, 2002\)](#): *"I have always been extremely impressed by Prof. **Vintan**'s novel research ideas and by the very large amount of research he manages to successfully undertake."*

- **Authors from (INTEL CO, USA, Symposium on HPCA, 2004):** „*Perceptrons have been proposed earlier for branch prediction [Vintan]...*”
- **Dr. Colin Egan (University of Hertfordshire, UK, in Journal of Systems Architecture, 2003, Elsevier):** "*The first known perceptron branch predictor was developed by Vintan.*"
- **Culpepper B., Gondree M. (University of California, UC Davis, USA, Techn. Rep. 2005):** "*There is a growing trend among researchers to apply machine learning techniques to the problem of branch prediction, starting with Vintan .*"
- **Amilcar Arfel Molina D'iaz (University Politecnica Catalunya, TR 2005, Barcelona, Cited Paper, 2005; see above):** "*La idea de este perceptron fue introducida originalmente por Vintan.*"
- **Dr. Jan Petzold (University of Augsburg, Germany, PhD Thesis, 2005):** "*Prof. dr. Lucian Vintan danke ich fur die Zusammen arbeit und die vielen hilfreichen Diskussionen wahrend und nach seines Aufenthaltes in Augsburg.*"
- **Dr. Veerle Desmet (Gent University, Belgium, PhD Thesis, 2006):** "*Vintan first proposed dynamic branch prediction based on neural networks.*"
- **J. Singer et al. (Workshop on Statistical and Machine Learning Approaches Applied to Architectures and Compilation, 2007):** "*Vintan pioneers the idea of using perceptrons for branch prediction.*"
- **Professors J. Silc, T. Ungerer, B. Robic (International Journal on High Performance Systems Architecture, vol. 1, no. 1, 2007):** "*The first dynamic neural branch predictors were proposed by Vintan.*"
- **Dr. M. Black ( Applying Perceptrons to Speculation in Computer Architecture - Neural Networks in Future Microprocessors, Vdm Verlag, 2007):** "*It is important to note that this (my note: referring to D. Jimenez's paper published in 2000) is not the very first neural branch predictor proposed. Two neural approaches were proposed in a paper by Vintan in 1999.*"
- **Dr. Pan et al (Northwestern Polytechnical University, Xi'an, China, ACSAC 2007):** "*These years, some new methods are introduced such as Lucian N. Vintan's pre-computed branches.*"
- **Dr. A. Sez nec (Journal of ILP-9, USA, 2007):** "*The introduction of the neural based branch predictors [Vintan, Jimenez] provided a solution for effectively combining several predictions.*"
- **O. Kirby (TR, Canada, 2007):** "*The earliest proposal for using neural networks to predict branches we are aware of was by Vintan.*"

- **V. Uzelac (MSc Thesis, USA, 2009):** *"Neural branch prediction is first proposed by **Vintan**. **Vintan** considers branch prediction as a particular problem in a broader class of pattern recognition problems that can be solved by neural networks."*
- **Dr. S. Verma (PhD Thesis, Louisiana State University, USA, December 2011):** *„The idea of neural branch prediction was originally introduced by **Vintan**."*
- **Dr. D. Jimenez (University of Texas at San Antonio, USA: An Optimized Scaled Neural Branch Predictor, Paper IEEE ICCD 2011 Conference):** *"The SNP/SNAP (Scaled Neural Analog Predictor) predictor is based on neural branch prediction, a technique introduced by **Vintan** [21] and refined by Jimenez et al. [8]."*
- **Professor Emeritus Lotfi A. Zadeh (University of California, Berkeley, USA, 2012):** *"[...] I appreciate what you wrote. [...] Your work [**Vintan**] appears to be very interesting."*
- **Wikipedia:** *"Machine learning for branch prediction using LVQ and multi-layer perceptrons, called "neural branch prediction", was proposed by Prof. **Lucian Vintan** (Lucian Blaga University of Sibiu) [in 1999]. One year later he developed the perceptron branch predictor."*
- **The famous Meltdown Paper (2018)** cited my IJCNN 1999 paper that introduces the fertile idea of neural branch prediction (some [citations of my paper are available here.](#)) The authors wrote that *"More recently, ideas to use neural branch prediction [34, (**- my paper, L. Vintan!**) 18, 32] have been picked up and integrated into CPU architectures [3]."* In their also famous [Spectre Paper](#) the same authors wrote that neural branch predictors involve *„even more complex speculative behavior."* It is well-known that the authors of these two papers and, independently, [Google Researchers](#) (2018), have discovered some bugs in commercial processors related to the subtle complex interaction between out of order and speculative instructions execution, caches and virtual memory protection mechanism.
- **Dr. Michaud P. ([ACM Transactions on Architecture and Code Optimization](#), 2018)** *„In 1999-2000, two research teams, independently, started exploring the use of artificial neural networks for branch prediction [**Vintan, Jimenez**]."*
- **[INDUSTRIAL & MEDICAL IMPACT of my idea related to Neural Branch Prediction - click HERE!](#)**

## **Academic Management Activity:**

- I coordinated (period **1999-2000**) the **EUROPEAN COMMISSION Tempus Phare Program JEP AC-13559 "RESUME"**, having academic partners in **England, Ireland, Germany and Spain**, with a budget about **200,000 Euro-ECU (about 70,000 ECU at LBU Sibiu)** and other **11 Research Grants**.
- **Academic visits and specialisations** at some prestigious universities, organisations and companies from **USA (University of Missouri-Columbia, USIA grant), Ireland, UK, Spain, Sweden, Germany, Italy, Belgium, Cyprus, Crete-Greek, The Netherlands**, etc.
- During **1999-2002**, I was **Vice - Dean (Research Coordination)**, **Faculty of Engineering**, "Lucian Blaga" University of Sibiu
- **2000-2008 & 2012-present: Member of the "Lucian Blaga" University Senate**
- **2004 - present, Director of the "Research Centre in Advanced Computer Architectures"**, "Lucian Blaga" University of Sibiu. See here our main **RESEARCH PROJECTS** and a short presentation of our **multi-objective optimization research**
- **Some of My Ideas in Academic Research Management (PPT slides; Plenary Speech in CNCSIS Conference, Bucharest, May 13, 2005)**
- **Some of My Ideas in Academic Publishing** (.pdf, 2005, in Romanian) and about **Academic Organization** (2013) and **Academic Values** (.pdf, 2014, in Romanian)
- **2005 - 2009, Member of CNCSIS "Engineering Sciences" Board**
- **Evaluator** of many National Academic Programs (Didactic and Research - ARACIS, CNCSIS)
- **Expert Evaluator of "The Romanian Agency for Quality Assurance in Higher Education" (ARACIS)**. I passed the specific exam in 2010.
- Involved as an **expert** in some **Academic National Development Projects: Quality and Leadership (2009, 2010), PhD Excellency Schools (2010, 2011)**, etc.
- **2006 - present, Member of the *National Council for Academic Titles - CNATDCU* ("Computer Science, Information Technology and Systems Engineering" Committee)**

## **Fields of Interest:**

- Advanced Computer Architecture, Instruction and Thread Level Parallelism, Embedded Computing Architectures, Chip Multi-Processors (Multicores), New Computing Paradigms, Dynamic Instruction Reuse and Value Prediction, (Pareto) Multi-Objective Optimization using Domain-Knowledge, Meta-Optimization, Context Prediction in Ubiquitous Computing Systems, Text &

Web Mining, History of Computers ([Masters of Computer Engineering, PDF, in Romanian](#)), *Varia Mathematica* (some of my proposed mathematical problems)

## Some Pictures & Links:

- [With Professor Yale Patt](#) (The University of Texas at Austin) and [Dr. Josh Fisher](#) (Senior HP Fellow), Pioneers of Superscalar and respectively VLIW (EPIC) Architectures, both winners of the prestigious **IEEE/ACM Eckert - Mauchly Award** (L'Aquila, Italy, July 2005)
- [With Professor Gurindar Sohi](#) (University of Wisconsin-Madison), **IEEE/ACM Eckert-Mauchly Award**, A Pioneer of Out of Order Instructions Processing, Trace-Cache, Dynamic Instruction Reuse, etc. (L'Aquila, Italy, July 2005)
- [With Professor Avi Mendelson](#) (Intel Research Lab, Haifa), A Pioneer of Dynamic Instruction Value Prediction, **CMP architect of the Intel Core Duo** (L'Aquila, Italy, July 2005)
- [With Professors Acad. Mircea Petrescu, Vladimir Cretu and Adrian Petrescu](#) after committing a fresh doctor: [Adrian Florea](#) (Bucharest, June 2005)
- [Getting "Tudor Tanasescu" Romanian Academy Prize - a picture...](#) and [another one](#) (Bucharest, December 2005)
- **[RADU, MY SON - a picture at 7 years old ... and another one, both in 2005. His Silver Medal Diploma obtained from the National Mathematical Olympiad-2012; His Bronze Medal Diploma obtained from the National Mathematical Olympiad-2015; His Informatics Olympiad Diploma-2015; His Gold Medal Diploma obtained from the National Mathematical Olympiad-2016; His National Mathematical Olympiad Award \(3-rd Place, at country level!\) from the Ministry of Education and Scientific Research-2016; His Silver Medal Diploma obtained from the National Mathematical Olympiad-2017; His National Award from the Ministry of Education and Scientific Research-2017. Starting from 2017 RADU is a "BEST.IN.TUM STUDENT!" at Technical University of Munich, in Computer Science domain \(DAAD grant, obtained through national & international competitions.\)](#)**
- Committing my first official PhD graduate, Daniel Morariu: [picture1](#), [picture2](#) and [another one](#) (from the PhD committing ceremony, April 2007)
- **[MY WIFE, Professor DANA-MARIA VINTAN, PhD](#)**

- **MY PhD GRADUATES:** [Dr. Adrian Florea](#) (informal), [Dr. Daniel Morariu](#), [Dr. Arpad Gellert](#), [Dr. Radu Cretulescu](#), [Dr. Ciprian Radu](#), [Dr. Horia Calborean](#), [Dr. Radu Chis](#), and [Dr. Ion D. Mironescu](#)
- My Invited Talk at Augsburg University, February 2010 ([Picture 1](#), [Picture 2](#), [Picture 3](#))
- [IT&C Romanian Technical Academy Section Monograph \(1997-2009\)](#)
- My Invited Talk at TEDx Sibiu-2010 about *Parallelism, Prediction and Speculative Processing in Advanced Computer Architectures* ([Picture 1](#), [Picture 2](#), [Picture 3](#)); [See the film on YouTube!](#)
- [Automatic Multi-Objective Optimization of Mono-Core and Multi-Core Architectures using Domain-Knowledge](#), Invited Scientific Presentation, *CONTINENTAL AUTOMOTIVE R&D Sibiu Branch*, March 4-th 2013
- Some of my pictures: [P1](#), [P2](#), [P3](#) and [P4](#)
- [International Doctoral Committee Member](#) at Delft University of Technology (The Netherlands, Delft, November 2018). [A picture... and another one](#)

## Some of my Books & Papers:

Some of my published scientific works are online available at [ResearchGate](#), too.

- My book entitled "[Instruction Level Parallel Architectures](#)" (PDF, in Romanian, 264 pages, "[Arhitecturi de procesoare cu paralelism la nivelul instructiunilor](#)"), [Romanian Academy Publishing House](#), Bucharest, 2000 (ISBN 973-27-0734-8); [Cover](#)
- My book entitled "[Advanced Microarchitectures](#)" ("[Microarhitecturi de procesare a informatiei](#)", in Romanian, 312 pages), [Technical Publishing House, Bucharest](#), 2000 (co-author: [Adrian Florea](#)); [Cover](#)
- My book entitled "[Microarchitectures simulation and optimization](#)" - "[Simularea si optimizarea arhitecturilor de calcul in aplicatii practice](#)" (ZIP, in Romanian), [Matrix Rom Publishing House](#), Bucharest, 2003 (co-author: [Adrian Florea](#), 443 pages, CD attached); [Cover](#)
- My book entitled "[A Systematic Approach to Predict Unbiased Branches](#)" (PDF, in English), "[Lucian Blaga](#)" University Press, Sibiu, 2007 (co-authors: [Arpad Gellert](#) and [Adrian Florea](#))
- My book: "[Prediction Techniques in Advanced Computing Architectures](#)" (PDF, in English, 292 pages), [Matrix Rom Publishing House](#), ISBN 978-973-755-137-5, Bucharest, 2007, with a [Foreword by Professor Theo Ungerer](#). For ordering the book go to: <http://www.matrixrom.ro>; [Cover](#) (and another [Cover](#) that I like)



- My newest book entitled "[Fundamentals of Microprocessors' Architecture](#)" (in Romanian, "[Fundamente ale arhitecturii microprocesoarelor](#)", 547 pages), Matrix Rom Publishing House, Bucharest, 2016; [Foreword & Contents](#) (in Romanian); [Presentation on Academy of Technical Sciences' Site](#) and [Cover](#)

## Papers (Selection):

Some of my published scientific works are online available at [ResearchGate](#), too.

- STEVEN G., VINTAN L. – [Modelling Superscalar Pipelines with Finite State Machines](#), *Proceedings of the 22-nd Euromicro'96 Conference. Beyond 2000: Hardware/Software Design Strategies*, September 1996, Prague, Czech Republic, pp.20-25, IEEE Computer Society Press, California, USA (*ISI Thomson Proceedings*)
- VINTAN L., STEVEN G.B. – [Memory Hierarchy Limitations in Multiple Instruction-Issue Processor Design](#), *Proceedings 23-rd Euromicro Conference*. New Frontiers of Information Technolog", September 1997, Budapest, Hungary, pp. 252-257, IEEE Computer Society Press, California, USA (*ISI Thomson Proceedings*)
- STEVEN F. L., POTTER R., STEVEN G. B., VINTAN L. – [Static Data Dependence Collapsing in a High Performance Superscalar Architecture](#), *The 3-rd International Conference on Massively Parallel Computing Systems (MPCS '98)*, Colorado Springs, USA, 6-9 April, 1998 (*ISI Thomson Proceedings*)
- VINTAN L., ARMAT C., STEVEN G. – [The Impact of Cache Organisation on the Instruction Issue Rate of a Superscalar Processor](#), *Proceedings of Euromicro 7-th Workshop on Parallel and Distributed Systems*, pp. 58-65, ISBN 0-7695-0059-5, Funchal, Portugal, 3rd – 5th February, IEEE Computer Society Press, 1999 (*ISI Thomson Proceedings*)
- VINTAN L., EGAN C. – [Extending Correlation in Branch Prediction Schemes](#), *Proceedings of 25-th Euromicro International Conference*, Milano, Italy, 8-10 September, IEEE Computer Society Press, ISBN 0-7695-0321-7, 1999 (*ISI Thomson Proceedings*)
- VINTAN L. – [Towards a High Performance Neural Branch Predictor](#), *Proceedings of The International Joint Conference on Neural Networks - IJCNN '99* (CD-ROM, ISBN 0-7803-5532-6), Washington DC, USA, 10-16 July, 1999 ([highly cited](#)). **[This was the first paper proposing a Dynamic \(Hardware\) Neural Branch Predictor](#)**. Recently the idea of neural branch prediction was implemented in some commercial processors

like [Oracle Sparc T4-4](#) (2011), [AMD Bulldozer](#) (2011), [AMD Bobcat/Jaguar](#) (2014), [Samsung Exynos M1 Processor](#) (2016; my paper is cited !), [AMD Ryzen](#) (2017), [IBM z14](#) (2017), etc. Below, I present some comments from year 2017 about my idea about neural branch prediction:

- *Congratulations! You deserve this recognition.* „, You did very good pioneer contribution with your branch predictor... you should be very proud of you!” – [Prof. Mateo Valero](#) (IEEE/ACM Eckert-Mauchly Award), UPC Barcelona & Barcelona Supercomputing Center
- „You can be proud that you have contributed to efforts that had real impact.” – [Prof. Douglas Comer](#), Purdue University, USA
- “Congrats with this great achievement!” – [Prof. Rainer Leupers](#), RWTH Aachen University, Germany
- “I'd like to congratulate you for the significant industrial application of your proposed solution.” - [Prof. Cristina Silvano](#) (IEEE Fellow), Politecnico di Milano, Italy
- „My congratulation for your impressive scientific achievements, first of all for being the first proposing the use of dynamic neural branch prediction that became finally commercially employed in a number of processors.” – [Prof. Dezső Sima](#), Obuda University, Hungary
- „Propunerea unui predictor [neuronal implementat în] hardware a fost excelentă chiar dacă industria așteaptă cam 15 ani pentru concretizări.” – [Prof. Traian Munteanu](#), Head ERISCS Research Group, Aix-Marseille University, France
- “Este ceva remarcabil să deschizi o pârtie, să fii omul din capătul de început pentru Neural Branch Prediction, tehnică ce foarte curând va deveni normă pentru toate arhitecturile de microprocesoare.” – [Prof. Gh. Toacșe](#), Universitatea „Transilvania” Brasov
- Etc.
- **VINTAN L.** – [Towards a Powerful Dynamic Branch Predictor](#), *Romanian Journal of Information Science and Technology (ROMJIST)*, vol. 3, no. 3, pg. 287-301, **Romanian Academy, Bucharest, 2000 (ISI Thomson Journals)**. **This was the first paper proposing a Dynamic (Hardware) Perceptron Branch Predictor.**
- **STEVEN G., EGAN C., VINTAN L.** – [Dynamic Branch Prediction using Neural Networks](#), *Proceedings of International Euromicro Conference DSD '2001*, Warsaw, Poland, September 2001 (**ISI Thomson Proceedings**)
- **STEVEN G., EGAN C., VINTAN L.** – [Applying Caching to Adaptive Branch Prediction](#), *Proceedings of International Euromicro Conference DSD '2001*, Warsaw, Poland, September 2001 (**ISI Thomson Proceedings**)
- **STEVEN G., EGAN C., SHIM, VINTAN L.** – [A Cost-Effective Two-Level Adaptive Branch Predictor](#), *Proceedings of The 13-th International*

Conference on Control Systems and Computer Science (CSCS 13), Bucharest, Romania, May 2001

- EGAN C., STEVEN G., VINTAN L. – [Cached Two-Level Adaptive Branch Predictors with Multiple Stages](#), **Lecture Notes in Computer Science**, vol. 2299, Springer-Verlag, ISSN 0302-9743, ISBN 3-540-43409-7, pp. 179-191, Berlin Heidelberg, 2002 (**ISI Thomson Journals**)
- VINTAN L., et al. – [An Alternative to Branch Prediction: Pre-Computed Branches](#), **ACM SIGARCH Computer Architecture News**, Vol. 31, Issue 3 (June), ISSN: 0163-5964, ACM Press, NY, USA, 2003
- EGAN C., STEVEN G., QUICK P., ANGUERA R., VINTAN L. – [Two-Level Branch Prediction using Neural Networks](#), **Journal of Systems Architecture**, vol. 49, issues 12-15, pg.557-570, ISSN: 1383-7621, **Elsevier**, Amsterdam (**ISI Thomson Journals**), December 2003
- PETZOLD J., BAGCI F., TRUMLER W., UNGERER T., VINTAN L. – [Global State Context Prediction Techniques Applied to a Smart Office Building](#), **Communication Networks and Distributed Systems Modeling and Simulation Conference (CNDS'04)**, San Diego, California, USA, January 18-21, 2004
- VINTAN L., GELLERT A., UNGERER T., PETZOLD J. – [Person Movement Prediction Using Neural Networks](#), **KI 2004 Workshop on Modeling and Retrieval of Context**, University of Ulm, Germany, ISSN 1613-0073, September 2004
- VINTAN L. – [Value Prediction and Speculation into the Next Microprocessors Generation](#), **Proceedings of The Romanian Academy**, Series A, Volume 5, Number 3, ISSN 1454-9069, Bucharest, 2004 (**ISI Thomson Journals - Q1 Web of Science**)
- FLOREA A., VINTAN L. – [Advanced Techniques for improving Indirect Branch Prediction Accuracy](#), **Proceedings 19-th European Conference on Modelling and Simulation (formerly referred to as ESM 2005)**, ISBN 1-84233-112-4 (set) / ISBN 1-84233-113-2 (CD), Riga, Latvia, June 1st – 4th, 2005
- VINTAN L., FLOREA A., GELLERT A. – [Focalising Dynamic Value Prediction to CPU's Context](#), **IEE Proceedings. Computers & Digital Techniques (Present-day Title: IET Computers & Digital Techniques)**, United Kingdom, Vol. 152, No. 4, ISSN 1350-2387, July 2005 (**ISI Thomson Journals**)
- D. MORARIU, L. VINTAN, V. TRESP – [Evaluating some Feature Selection Methods for an improved SVM Classifier](#), **International Journal of Intelligent Technology**, Vol. 1, No. 4, ISSN 1305-6417, (pp. 288-298), 2006
- GELLERT A., VINTAN L. – [Person Movement Prediction Using Hidden Markov Models](#), **Studies in Informatics and Control**, Vol. 15, No. 1, pp. 17-30, Bucharest, March 2006 (**ISI Thomson Journals**)

- L. VINTAN, A. GELLERT, A. FLOREA, M. OANCEA, C. EGAN – [Understanding Prediction Limits through Unbiased Branches](#), **Lecture Notes in Computer Science**, vol. 4186-0480, pp. 483-489, Springer-Verlag, ISSN 0302-9743, Berlin Heidelberg, 2006 (**ISI Thomson Journals**)
- A. GELLERT, A. FLOREA, L. VINTAN et al. – [Unbiased Branches: An Open Problem](#), **Lecture Notes in Computer Science**, vol. 4697, pp. 16-27, Springer-Verlag, ISSN 0302-9743, Berlin Heidelberg, 2007 (**ISI Thomson Journals**)
- I. D. MORARIU, M. VINTAN, L. N. VINTAN – [Aspects concerning SVM Method's Scalability](#), **Studies in Computational Intelligence (SCI)**. Advances in Intelligent and Distributed Computing, Volume 78, pp. 125-134, Springer-Verlag Berlin Heidelberg, ISSN 1860-949X, ISBN 978-3-540-74929-5, 2008
- VINTAN L., FLOREA A., GELLERT A. – [Random Degrees of Unbiased Branches](#), **Proceedings of The Romanian Academy**, Series A, Volume 9, Number 3, ISSN 1454-9069, Bucharest, 2008 (**ISI Thomson Journals - Q1 Web of Science**)
- GELLERT A., FLOREA A., VINTAN L. – [Exploiting Selective Instruction Reuse and Value Prediction in a Superscalar Architecture](#), **Journal of Systems Architecture**, ISSN: 1383-7621, Elsevier, North-Holland, Volume 55, Issue 3, March 2009 (**ISI Thomson Journals**)
- GELLERT A., PALERMO G., ZACCARIA V., FLOREA A., VINTAN L., SILVANO C. (*IEEE-Fellow*) – [Energy-Performance Design Space Exploration in SMT Architectures Exploiting Selective Load Value Predictions](#), **Design, Automation & Test in Europe International Conference (DATE 2010)**, March 8-12, 2010, Dresden, Germany (**ISI Thomson Proceedings**)
- CRETULESCU R., MORARIU D., VINTAN L., COMAN I. D. – [An Adaptive Meta-classifier for Text Documents](#), **The 16-th International Conference on Information Systems Analysis and Synthesis: ISAS 2010**, vol. 2, pp. 372-377, ISBN-13: 978-1-934272-88-6, Orlando Florida, USA, April 6th – 9th 2010
- H. CALBOREAN, R. JAHR, T. UNGERER, L. VINTAN – [Optimizing a Superscalar System using Multi-objective Design Space Exploration](#), **Proceedings of the 18-th International Conference on Control Systems and Computer Science (CSCS-18)**, Bucharest, May 2011
- R. JAHR, T. UNGERER, H. CALBOREAN, L. VINTAN – [Automatic Multi-Objective Optimization of Parameters for Hardware and Code Optimizations](#), **International Conference on High Performance Computing & Simulation (HPCS-2011)**, Istanbul, Turkey, July 2011

- JAHR R., CALBOREAN H., VINTAN L., UNGERER T. – [Boosting Design Space Explorations with Existing or Automatically Learned Knowledge](#), [Lecture Notes in Computer Science](#), Vol. 7201, pp. 221-235, ISSN 0302-9743, Springer-Verlag Berlin Heidelberg, 2012
- Á. GELLÉRT, H. CALBOREAN, L. VINTAN, A. FLOREA – [Multi-Objective Optimizations for a Superscalar Architecture with Selective Value Prediction](#), [IET Computers & Digital Techniques](#), United Kingdom, Vol. 6, Iss. 4, ISSN: 1751-8601, 2012 (ISI Thomson Journals)
- C. RADU, MD. S. MAHBUB, L. VINTAN – [Developing Domain-Knowledge Evolutionary Algorithms for Network-on-Chip Application Mapping](#), [Microprocessors and Microsystems](#), Vol. 37, Issue 1, pp. 65-78, ISSN: 0141-9331, Elsevier, February 2013 (ISI Thomson Journals)
- MORARIU D., CRETULESCU R., VINTAN L. – [Vector versus Tree Model Representation in Document Clustering](#), [Romanian Journal of Information Science and Technology \(ROMJIST\)](#), vol. 16, no. 1, pp. 81-102, ISSN: 1453-8245, Romanian Academy, Bucharest, 2013 (ISI Thomson Journals)
- R. CHIS, L. VINTAN – [Multi-Objective Hardware-Software Co-Optimization for the SNIPER Multi-Core Simulator](#), [Proceedings of 10-th International Conference on Intelligent Computer Communication and Processing](#), IEEE Computer Society Press, Cluj-Napoca, 2014 (ISI Thomson Proceedings)
- JAHR R., CALBOREAN H., VINTAN L., UNGERER T. – [Finding Near-Perfect Parameters for Hardware and Code Optimizations with Automatic Multi-Objective Design Space Explorations](#), [Concurrency and Computation: Practice and Experience](#), DOI: 10.1002/cpe.2975, vol. 27, issue 9, ISSN 1532-0626, John Wiley & Sons, 2015 (ISI Thomson Journals - Q2 Web of Science)
- VINTAN L., CHIS R., MD. ALI ISMAIL, COTOFANA C. – [Improving Computing Systems Automatic Multi-Objective Optimization through Meta-Optimization](#), [IEEE TRANSACTIONS ON Computer-Aided Design of Integrated Circuits and Systems](#), ISSN: 0278-0070, DOI 10.1109/TCAD.2015.2501299, vol. 35, issue 7, 2016 (ISI Thomson Journals - Q1 Web of Science, Impact Factor = 1.942, AIS (Average Influence Score) = 1.342); [Journal's Cover](#)
- VINTAN L., MORARIU D., CRETULESCU R., VINTAN M. – [An Extension of the VSM Documents Representation](#), [International Journal of Computers, Communications & Control](#), ISSN 1841-9836, Vol. 12, Issue 3, pp. 403 - 414, June 2017 (Thomson Reuters Web of Science Journals - Clarivate Analytics)

- L. N. VINȚAN – [Towards Synergic Meta-Algorithmic Approaches in Complex Computing Systems](#), *Romanian Journal of Information Science and Technology (ROMJIST)*, Vol. 20, No. 3, ISSN: 1453-8245, **Romanian Academy**, Bucharest, 2017(**Thomson Reuters WoS Journals - Clarivate Analytics**)
- CHIS R., VINTAN L. – [Developing Automatic Multi-Objective Optimization Methods for Complex Actuators](#), *Advances in Electrical and Computer Engineering*, Vol. 17, Issue 4, ISSN: 1582-7445, 2017 (**Clarivate Analytics Web of Science Journals**)
- CHIȘ R., FLOREA A., BUDULECI C., VINȚAN L. – [Multi-Objective Optimization for an Enhanced Multi-Core SNIPER Simulator](#), *Proceedings of The Romanian Academy, Series A: Mathematics, Physics, Technical Sciences, Information Science*, Volume 19, Number 1, pp. 85-93, Bucharest, January-March 2018 (**Impact Factor = 1.752; Clarivate Analytics Web of Science Journals - Q2 Web of Science - JCR 2017, published in June 2018; Q1 Web of Science - JCR 2015**)
- Á. GELLÉRT, A. FLOREA, U. FIORE, P. ZANETTI, L. VINȚAN – [Performance and Energy Optimisation in CPUs through Fuzzy Knowledge Representation](#), *Information Sciences*, Volume 476, ISSN: 0020-0255, DOI: 10.1016/j.ins.2018.03.029, **Elsevier**, February 2019 (available online 12 March 2018, **Clarivate Analytics Web of Science Journals, Impact Factor = 4.832 - Q1 Web of Science - JCR 2017, published in June 2018.**) [Here, a copy of the paper!](#)
- GELLÉRT Á., VINȚAN L. – [A Multicore Architecture with Selective Load Value Prediction](#), *Proceedings of The Romanian Academy, Series A: Mathematics, Physics, Technical Sciences, Information Science*, Volume 19, Number 4, ISSN 1454-9069, Bucharest, October-December 2018 (**Impact Factor = 1.752; Clarivate Analytics Web of Science Journals - Q2 Web of Science - JCR 2017, published in June 2018; Q1 Web of Science - JCR 2015**)

[A Long List of Publications](#), [A Short Selective List](#), [A Short CV](#), [CV \(in Romanian\)](#) and [DBLP Bibliography 1](#) + [DBLP Bibliography 2](#)

## Some Teaching Documents (especially for my students):

- *Computer Architecture - "Sisteme cu microprocesoare"* (COMPUTER SCIENCE 3-RD YEAR students - Second Semester). The corresponding text-book entitled ["Fundamentals of Microprocessors' Architecture"](#) (2016, in Romanian, 547 pages) was published by *Matrix Rom Publishing House*, Bucharest, and it may be acquired [online](#).

- *Computer Architecture Simulation and Optimization. COMPUTER SCIENCE 4-TH YEAR - First Semester, Course documents (ZIP File) [How to read them?](#)*
- *Advanced Computer Architectures. COMPUTER SCIENCE 4-TH YEAR - Second Semester, Course documents (ZIP File) [How to read them?](#)*
- *Research Methods in Advanced Computer Architecture. MASTER - ADVANCED COMPUTING SYSTEMS, Course documents (ZIP File Containing Research Papers, PhD Theses, etc.) [How to read them?](#)*
- *My Plenary Lecture at the Computer Engineering Graduating Festivity, May 2008 (slides support) - Dynamic Branches with "Random" Behaviour*
- *My Plenary Lecture at the Computer Engineering Graduating Festivity, May 2009 (slides support) about Challenges in Multicore Systems (Paper in Romanian, full-text, PDF); My Invited Speech at the Computer Engineering Graduating Festivity, May 2017 (in Romanian); My Invited Talk at the Computer Engineering Graduating Ceremony, May 2018 - Slides and Paper Support*
- My *Invited Talk* at University of Augsburg, February 2010, entitled *Anticipatory Techniques in Advanced Processor Architectures (slides support)*
- My *Invited Talk* at *CONTINENTAL AUTOMOTIVE R&D, Sibiu Branch, March 2013 (slides support)* entitled "*Automatic Multi-Objective Optimization*". After this presentation we solved a complex technical problem for *CONTINENTAL*. Our solution was presented in a *scientific paper that is available here.*
- If you are thinking of pursuing a PhD in Computer Engineering with me, the following comments may be useful (in Romanian) - *[click here!](#)*

Accesses since September 2007 (Courtesy of Amazing Counters)

**58774**

Last updated: December 2018