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CURRICULUM VITAE

M.Sc M.A. Sebastián Basterrech, Ph.D.

Personal information

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Publons id: publons.com/a/1292618/

RESEARCH INTERESTS

Numerical Optimization, Dynamical Systems, Neural Computing, Evolutionary Computation, Time-Series Problems, Sequential Learning, Clustering.

CURRENT POSITION

Researcher, *Feb. 2019 - Present*
(Czech denomination: *Vědecký pracovník*)
Department of Computer Science, Faculty of Electrical Engineering and Computer Science
VŠB-Technical University of Ostrava, Czech Republic.
Main contact: Assoc. Prof. Jan Platoš (Jan.Platos@vsb.cz).
Main research topics: Neural Computing, Deep Learning, Numerical Optimization

ACADEMIC BACKGROUND

Researcher, *Feb. 2017 - Jan. 2019*
(Czech denomination: *Vědecký pracovník*)
Department of Computer Science, Faculty of Electrical Engineering
Czech Technical University, Prague, Czech Republic (<http://cs.felk.cvut.cz>).
Advisor: Professor Michal Pěchouček (pechoucek@fel.cvut.cz).
Main tasks: working in projects related to Cybersecurity, Robotics and Data Analysis.

Researcher, *Jan. 2016 - Jan. 2017*
(Czech denomination: *Pracovník pro vědu a výzkum*)
Department of Computer Science,
Faculty of Electrical Engineering and Computer Science (<http://www.fei.vsb.cz/en>),
VŠB-Technical University of Ostrava, Ostrava, Czech Republic.
Advisor: Professor Vaclav Snašel (vaclav.snasel@vsb.cz).
Main research topics: Big Data, Neural Computing, Soft-Computing, Time-series problems.

Post-doctoral researcher, *May. 2013 – Dec. 2015*
IT4I, National Supercomputing Center (<http://www.it4i.cz/?lang=en>)
Ostrava, Czech Republic.
Advisor: Professor Vaclav Snašel (vaclav.snasel@vsb.cz).
Main research topics: Big Data, Neural Networks, Soft-Computing, Time-series problem.

Ph.D. in Computer Science, *Jan. 2009 – Nov. 2012*
Institut National de Recherche en Informatique et Automatique (INRIA) and
University of Rennes I, France. Doctoral research fellowship of INRIA-Rennes, France.
Advisor: Professor Gerardo Rubino (Gerardo.Rubino@inria.fr).
Title: *Learning with Random Neural Networks and Reservoir Computing models.*
Graduation date: November 15, 2012. Mention: *Très honorable* (French scale).
Fields of specialization: Machine Learning and Neural Computing,
Clustering, Bio-inspired Algorithms, Numerical Optimization Algorithms.

M.A. in Computer Arts, *Sep. 2011 – May 2013*
(French denomination: *Master Arts Lettres Langues, Mention Arts*)
University of Rennes II, France.
Advisors: Professor Boris Bossis and Associate Professor Joël Laurent.
Fields of specialization: Human-Computer Interaction, Visual Arts,
Digital Arts, Experimental Aesthetics.

M.Sc in Applied Mathematics, *Sep. 2007 – Sep. 2008*
(French denomination: *Master Sciences, Mention Mathématiques et applications*)
Faculty of Sciences, Aix-Marseille University, France.
Advisors: Professor Denys Pommeret and Associate Professor Badih Ghattas.
Fields of specialization: Bioinformatics, Ensemble Predictor Models.

Computer Engineering, *Mar. 1997 – Jun. 2006*
Student of Engineer in Computer Science (Not yet graduated),
Faculty of Engineering. University of the Republic, Uruguay.

AWARD OF GRANTS FOR RESEARCH

· **Huawei Innovation Research Program (HIRP):** *June 2018*
Selected project in the international HIRP competition, project entitled:
Continuous Pattern Matching Stream Processing with Time-Series.
Project budget US\$ 37000, contact: Stefano Bortoli (stefano.bortoli@huawei.com).

· **INRIA fellow,** INRIA-Rennes, France, *January 2009*
Doctoral grant for 39 months, contact: Prof. G. Rubino (Rubino@inria.fr)

PUBLICATIONS

Please find attached a document with the full list of publications.

Summary:

- **Scopus:** total of documents 40, total of citations 161, Scopus h-index 7.
- **Web of Science:** total of documents 26, total of citations 69, WoS h-index 4.
- **Google scholar:** total of citations 244, h-index 8, index i10 6 .
- Articles in journals:
 - According to Journal Impact Factor (IF): 5 published and one recently accepted.
 - According to SJR: Q1 (1 article), Q2 (3 articles), Q3 (3 articles).

- Peer-reviewed journals without impact factor: 3 published articles and 1 article in press.
- Conference articles (including IJCNN, CEC, SMC, ESANN):
 - IEEE Conferences: 15 published articles.
 - Springer Publisher (conference proceedings and book chapters): 11 published articles.
 - ACM Digital Library: 1 published article.
 - Other International Conferences, Symposiums and Workshops: 6 accepted articles.

Editor:

- Book editor: Performance Management of Integrated Systems and its Applications in Software Engineering, Editors: Millie Pant, Tarun K. Sharma, Sebastián Basterrech and Chitresh Banerjee. Part of the Asset Analytics book series (ASAN), Springer Singapore, ISSN 2522-5162, 2018. DOI: <https://doi.org/10.1007/978-981-13-8253-6>.
- Special Issue on: Intelligent Solutions to Industrial Problems through Swarm Intelligence Algorithms, International Journal of Advanced Intelligence Paradigms (journal in press, more information on <https://goo.gl/H4JrSc>), 2017.

MEMBERSHIPS

- IEEE TASK Force on Reservoir Computing (<https://bit.ly/2I2naU0>). Member since Sep. 2018.
- Neural Networks Society (<https://www.inns.org>). Regular member since Feb. 2017.
- TC on IEEE Systems, Man and Cybernetics Society, Soft Computing (<http://goo.gl/qU6tyg>). Member since Apr. 2016.

HONORY/ADJUNCT APPOINTMENTS

Visiting Professor

Oct. 2014 - Present

French-Vietnamese University of Science and Technology of Hanoi (USTH), Hanoi, Vietnam. Visited periods: Oct/2014, Nov/2015, Mar/2017, Mar/2018, Mar/2019. Teacher of the following courses: Artificial Intelligence, Machine Learning, and Graph Theory. USTH contact: Prof. Doan Nhat Quang (doan-nhat.quang@usth.edu.vn).

Volunteer in Academy Without Borders (AWB) ,

Jun. 2017 - Present

Collaborating in the Doctoral and Master Program in Computer Science between AWB and University of Cape Coast, Ghana. AWB contact: Corrie Young (cyoung@awb-usf.org)
Head of Computer Science Department, UCC: Prof. Henry Henry Amankwah (hamankwah@ucc.edu.gh).

Adjunct Professor (external member),

Jan. 2016 - Present

(Spanish denomination: *Profesor Adjunto Libre Grado 3*)
Faculty of Engineering, (<https://www.fing.edu.uy/inco>),
University of the Republic, Montevideo, Uruguay
Head of team: Prof. Hector Cancela (cancela@fing.edu.uy)

Adjunct Professor (external member),

Sep. 2016 - Present

Computer Science and Engineering, Amity School of Engineering and Technology

Amity University Rajasthan, Jaipur, India (<http://www.amity.edu>)

Head of team: Prof. Tarun K. Sharma (tksharma@jpr.amity.edu)

ACADEMIC SERVICES

Publons id: publons.com/a/1292618/ (it is possible to see the history of all journal reviews in my Publons profile).

Technical reviews for international journals:

- Neural Networks
- Neurocomputing
- Neural Computing and Applications
- Information Sciences
- Engineering Applications of Artificial Intelligence
- Applied Soft Computing
- Pattern Analysis and Applications
- Mobile Information Systems
- Leonardo, MIT Press Journal
- Rairo Operations Research
- Int. Journal of Geo-Information

External evaluations for research agencies

- Research National Agency of Uruguay (*Agencia Nacional de Investigación e Innovación (ANII) del Uruguay*): 2 evaluated projects during 2016 and 2017.
- Program for Developing Basic Research of Uruguay (*Programa de Desarrollo de las Ciencias Básicas (PEDECIBA), Universidad de la República, Ministerio de Educación, Uruguay*): 1 evaluated project during 2016.

Special Session Organization:

- World Congress on Computational Intelligence (WCCI) 2018, Special Session on Nature-inspired Design, Evolution, and Optimization of Intelligent Systems, July 8-13, 2018, Rio de Janeiro, Brazil. Organized by: P. Kromer, VSB-Technical University of Ostrava, Czech Republic, S. Basterrech, Czech Technical University, Prague, Czech Republic and R. Šenkeřík, Tomas Bata University in Zlin, Czech Republic. Websites: <http://www.ecomp.poli.br/~wcci2018/>, <http://dap.vsb.cz/naides2018/>.

International Conference Program Committee Participation

- I have been TPC member of 14 International conferences (indexed by Scopus, ISI Thomson Reuters (WoS)). Including GECCO'2018, WCCI'2018, International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises (WET-ICE'2018).
- Workshop Chair, Intelligent Systems Technologies and Applications (ISTA'2017), Manipal Institute of Technology, Manipal, India (goo.gl/p0Bh4Y).

INVITED SPEAKER

Conference - Plenary talks:

- The Fourth Euro-China Conference on Intelligent Data Analysis and Applications October 9-11 2017, Málaga (Spain). Talk title: "Randomized Neural Networks". Information available in: <http://ecc2017.lcc.uma.es/speech.html>.

Workshops - Plenary talks:

- International ACM workshop on “Neural Networks”, organized by ACM and Indian Institute of Information Technology and Management-Kerala (IIITM-K), Trivandrum, INDIA, August 27, 2016. Information available in: <http://www.iiitm.ac.in/acm-tvm/neural.html>.
- International Workshop on “Hybrid Computing”, organized by Rasoni College of Engineering Amity University, Nagpur, India, August 17-18, 2016. Organizer contact: Prof. Preeti Bajaj (principal.ghrce@raisoni.net).
- International Workshop on “Neural Networks: New trends and challenges”, organized by Amity University, Jaipur India, August 8-9, 2016. Organizer contact: Prof. Tarun Sharma (tksharma@jpr.amity.edu).

Summer School:

- 2019 Czech-Austrian Summer School on “Deep Learning and Data Science”, August 29, 2017, Znojmo, Czech Republic. Talk title 1: “Optimization methods for Deep Neural Networks”. Talk title 2: Reservoir Computing Paradigm. Information available in: <http://dap.vsb.cz/cass2019/>.
- 2017 Czech-Austrian Summer School on “Deep Learning and Visual Data Analysis”, September 3-8, 2017, Ostrava, Czech Republic. Talk title 1: “Reservoir Computing Models”. Talk title 2: Deep Neural Networks. Information available in: <http://dap.vsb.cz/cass2017/>.

Seminars:

- Seminars about “Recurrent Neural Networks” presentation for PhD students and researchers, Department of Computer Science, Faculty of Electrical Engineering, Czech Technical University, Prague, Czech Republic, November 2016. Contact: Prof. M. Pěchouček (pechoucek@fel.cvut.cz).
- Two seminars about “Neural Computation” for Master students and PhD students, Department of Computer Science and Electronics, Kyushu Institute of Technology, Iizuka, Japan, February, 2015. Organizer contact: Prof. Mario Koeppe (mkoepen@ieee.org).
- Seminar about “Metaheuristic techniques for improving Recurrent Neural Networks” presentation for PhD students and researchers, Institute of Computer Science, Academy of Sciences of the Czech Republic, Prague, Czech Republic, November 2014. Organizer contact: Prof. Dusan Husek (dusan@cs.cas.cz).

INTERNATIONAL RESEARCH EXPERIENCE

- Research stay in the Department of Computer Science and Electronics, Kyushu Institute of Technology, Iizuka, Japan. *Jan – Mar 2015*
Advisor: Prof. Mario Köeppen.
Subject: Pattern recognition on images taken by thermal imaging camera.
Production: an accepted article in IEEE SMC’15 that is the main conference of the IEEE Systems, Man, and Cybernetics Society.
- Research visit in the Institute of Computer Science *Sep – Dec 2014*
Academy of Sciences of the Czech Republic, Prague, Czech Republic
Advisor: Prof. Dušan Husek.
Subject: Feature Selection for Brain Computer Interface.
Production: An accepted article in International Conference on Artificial Intelligence and Soft Computing.

- Internship in the Department of Computing and Information Systems, University of the West of Scotland, Scotland. Jan. – Jun. 2011
 Advisor: Prof. Colin Fyfe.
 Subject: Reservoir Computing and Topographic Maps.
 Production: a paper available in the IEEE Computer Society Digital Library and an article in a proceedings collection.

- Internship in the Dyonisos Team, May – Dec. 2008
 INRIA-Rennes, Brittany. France. Advisor: Prof. Gerardo Rubino.
 Subject : Pattern recognition using Neural Networks.

TEACHING EXPERIENCE

Please find attached a document with a detailed teaching statement.

Summary:

- Supervision of successfully finished Master students: 2 students.
- Supervision of successfully finished Master 1 (French denomination for the first year of Master studies): 2 students.
- Supervision of successfully finished Bachelor students: 6 students.
- Taught courses: Graph Theory, Machine Learning, Probability and Statistics.

PARTICIPATION IN FUNDED RESEARCH PROJECTS

- **Czech Science Foundation (GA ČR),**
Robotic Lifelong Learning of Multi-legged Robot Locomotion Control in Autonomous Data Collection Missions, Czech Science Foundation (GAČR), project No. GA18-18858S. Participation in the project (0.2 working flow): March/2018-December/2018. Main investigator: Jan Faigl.

- **SGS - Complex System Analysis,**
 Principal investigator: The project was in the area of performance and dependability evaluation in networks. The goal was to build a large scale database of problems and to compute their exact solutions using the resources of the National Supercomputing Center, Czech Republic. End of the project: October, 2015. Duration:10 months. Funding: 387000 Kc (around 14500euros).

- **National Supercomputing Center, Czech Republic**
 Team member: the project *New creative teams in priorities of scientific research*, reg. no. CZ.1.07/2.3.00/30.0055, supported by Operational Programme Education for Competitiveness and co-financed by the European Social Fund and the state budget of the Czech Republic. Further information at: <http://www.it4i.cz/en/index.php>. I participated during June, 2013 until December, 2015. Part of my research during this time has been supported by this project.

- **ECOS project**
 Team member: *Mesh Wireless Networks and P2P multimedia applications: tools for guaranteeing Quality Of Experience*. Partners: INRIA and the University of the Republic, Uruguay. Funding: 15 000 euros. This is a 3-year project (2009-2011) between France and Uruguay. The project concerns the study of tools allowing to reach good levels in the Quality of Experience in P2P networks for multimedia purposes, when the transport infrastructure is a mesh wireless network.

– **STIC AmSud project**

Team member: “*Performance Evaluation and Design of Optical and Wireless Networks*”. Partners: Santa María University and Adolfo Ibáñez University in Chile, University of the Republic of Uruguay, Joseph Fourier University, University of Pau and Pays de l’Adour and INRIA in France. Funding: 11 000 euros. This is a 2-year project (2009-2010) between Chile, France and Uruguay. The goal is the development of models and analysis tools for the study of performance aspects in networks, mainly for optical and for wireless structures. This project had also the goal of contributing to prepare the future cooperation between INRIA-Rennes and Chilean universities through the common CIRIC center.

– **Euro-NF project**

Team member: “European Network of the Future”. Funding: 83 158 euros. Euro-NF is a Network of Excellence on many aspects of future networks, integrating 35 institutions (from academia and industry), coming from 16 countries. Its main target is to integrate the research effort of the partners to be a source of innovation and a think tank on possible scientific, technological and socio-economic trajectories towards the network of the future. It has started in January 2008 and is ending in June 2012 (see http://euronf.enst.fr/en_accueil.html) and is a follow-up of Euro-FGI.

PARTICIPATION IN NON-FUNDED RESEARCH PROJECTS

– **EEG feature selection for Brain Computer Interface**

Principal investigator: international collaboration between Institute of Higher Nervous Activity and Neurophysiology, RAS, Moscow, Russia and VŠB-Technical University of Ostrava, Czech Republic. End of the project: August, 2015. Duration: 6 months. We used the computational resources of the National Supercomputing Center, Czech Republic for developing this project (110,000 core/hours).

– **DPDM1-Database of Performance and Dependability Models 1**

Principal investigator: This project was an international collaboration between INRIA-Rennes, France and VSB-Technical University of Ostrava. End of the project: March, 2015. Duration: 6 months. Project in the area of networking evaluation. We used the computational resources of the National Supercomputing Center, Czech Republic for developing the project (55,000 core/hours).

Languages

- Spanish: native.
- English: fluent. I worked on my PhD thesis in an English-speaking environment for almost 4 years. Currently, I am working in an English environment.
- French: fluent. I lived in France for 5 years, completed two Masters in a French environment.
- Czech: basic. I have lived in Czech Republic for almost 4 years, but my Czech language is still basic.

List of publications

Sebastián Basterrech, Ph.D.

(Update: October 6, 2019)

Department of Computer Science
Faculty of Electrical Engineering and Computer Science
VŠB-Technical University of Ostrava
Ostrava, Czech Republic

Web: <https://bit.ly/2UwqjSN>
Scopus Id: 36719811900
ORCID Id: C – 9072 – 2014
Sebastian.Basterrech@vsb.cz

INTERNATIONAL JOURNALS¹

- [1] Sebastián Basterrech and Gerardo Rubino. Echo State Queueing Networks: A Combination of Reservoir Computing and Random Neural Networks. *Probability in the Engineering and Informational Sciences*, 31 (4), 457–476, 2017. Doi: 10.1017/S0269964817000110. (SJR: H-Index= 32, max quartile: Q1 (Industrial and Manufacturing Engineering))
- [2] Andrea Mesa, Sebastián Basterrech, Gustavo Guerberoff, and Fernando Alvarez-Valin. Hidden Markov models for gene sequence classification. *Pattern Analysis and Applications*, 19 (3), 793–805, 2016. ISSN 1433-7541. Doi: 10.1007/s10044-015-0508-9. (SJR: H-Index= 49, max quartile: Q2 (CV and PR))
- [3] Sebastián Basterrech, Jan Janoušek, and Václav Snášel. A Performance Study of Random Neural Network as Supervised Learning Tool Using CUDA. *Journal of Internet Technology*, 17 (4), 771–778, 2016. Doi: 10.6138/JIT.2016.17.4.20141014d. (SJR: H-Index= 16, max quartile: Q3 (Computer Networks and Communications))
- [4] Francois Despoux and Sebastián Basterrech. Multi-trip Vehicle Routing Problem with Time Windows and Heterogeneous Fleet. *International Journal of Computer Information Systems and Industrial Management Applications*, vol. 8, pages 355–363, 2016. ISSN 2150-7988. Available on: http://www.mirlabs.org/ijcisim/volume_8.html. (SJR: H-Index= 5, max quartile: Q3 (AI, CV and PR))
- [5] Sebastián Basterrech and Gerardo Rubino. Random Neural Network as Supervised Learning Tool. *Neural Network World*, 25(5), 457–499, 2015. Doi: 10.14311/NNW.2015.25.024. (SJR: H-Index= 23, max quartile: Q3 (AI))
- [6] Sebastián Basterrech. An Empirical Study of the L2-Boost Technique with Echo State Networks. *Journal of Network and Innovative Computing*, 2 (1), pages 120–127, 2014. ISSN 2160-2174. Available on: <http://www.mirlabs.net/jnic/secured/Volume2-Issue1/Volume2-Issue1.html>. (Journal without a SJR indicator.)
- [7] Sebastián Basterrech and Gerardo Rubino. Real-time Estimation of Speech Quality Through the Internet using Echo State Networks. *Journal of Advanced in Computer Networks*, 1(3): 183–188, September 2013. Doi: 10.7763/JACN.2013.V1.37. (Journal without a SJR indicator.)

¹The articles are presented in a descending chronological order.

- [8] Sebastián Basterrech, Samir Mohamed, Gerardo Rubino, and Mostafa Soliman. Levenberg-Marquardt Training Algorithms for Random Neural Networks. *Computer Journal*, 54 (1): 125–135, January 2011. ISSN 0010-4620. Doi: 10.1093/comjnl/bxp101. (SJR: H-Index= 57, max quartile: Q2 (Computer Science))

ARTICLE UNDER REVISION:

- [9] Sebastián Basterrech and Pavel Krömer. Biomarker for Mental Concentration using a Single-channel EEG. *Neural Computing and Applications*. (Minor revision - third round. Third submission date: September 07, 2019. Manuscript number NCAA-D-18-03064R2). (SJR: H-Index= 57, max quartile: Q2 (AI and Software))

ARTICLE IN PRESS:

- [10] Tomáš Buariánek and Sebastián Basterrech. Improving the Flexible Neural Tree model with Swarm Intelligence. *International Journal of Advanced Intelligence Paradigms*, ISSN 1755-0386. (Article in press to appear in Special Issue on: Intelligent Solutions to Industrial Problems through Swarm Intelligence Algorithms, <https://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijaip>). (SJR: H-Index= 8, max quartile: Q3 (Engineering))

INTERNATIONAL CONFERENCES

- [1] Valeriia Iegorova and Sebastián Basterrech. Binary Classification of Terrains Using Energy Consumption of Hexapod Robots. In *International Conference on Advanced Engineering Theory and Applications (AETA'2018), Ostrava, Czech Republic, September 11-13, 2018*, pages 939–948. Published as part of the Lecture Notes in Electrical Engineering book series (LNEE, volume 554). Available on: https://link.springer.com/chapter/10.1007/978-3-030-14907-9_91.
- [2] Charles Donkor, Emmanuel Sam, Sebastián Basterrech. Analysis of Tensor-Based Image Segmentation Using Echo State Networks. In *International Conference on Modelling and Simulation for Autonomous Systems (MESAS'2018), Prague, Czech Republic, October 17–19, 2018*, pages 490–499. Published as part of the Lecture Notes in Computer Science book series (LNCS, volume 11472). Available on: https://link.springer.com/chapter/10.1007/978-3-030-14984-0_36.
- [3] Sebastián Basterrech. Pattern Matching in Sequential Data Using Reservoir Projections. In *Advances in Neural Networks – International Symposium on Neural Networks (ISNN), Moscow, Russia, July 10–12, 2019*, pages 173–183. Published as part of the Lecture Notes in Computer Science book series (LNCS, volume 11554). Available on: https://link.springer.com/chapter/10.1007/978-3-030-22796-8_19.
- [4] Emmanuel Sam, Sebastián Basterrech and Pavel Krömer. In *International Conference on Intelligent Information Technologies for Industry (IITI'18), Sochi, Russia, September 17–21, 2018*, pages 353–361. Published as part of Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 874). Available on: https://link.springer.com/chapter/10.1007/978-3-030-01818-4_35.
- [5] Hikmat Dashdamirov, Sebastián Basterrech and Pavel Kromer. A Nature Inspired System for Mental State Recognition. In *2018 IEEE Congress of Evolutionary Computation (IEEE CEC 2018), Rio de Janeiro, Brazil, July 8-13 2018*. DOI: 10.1109/CEC.2018.8477828.

- [6] Rickard Hole Falck and Sebastián Basterrech. Recurrence Plot and Convolutional Neural Networks for Terrain Classification using Energy Consumption of Multi-legged Robots. In *International Conference on Soft Computing MENDEL, Brno, Czech Republic*, Jun 26-28, 2018. To be published in Springer AISC series. More information on: <http://www.mendel-conference.org/tmp/ScheduleMendel2018schedule.pdf>.
- [7] Hikmat Dashdamirov and Sebastián Basterrech. Estimation of Human Concentration using Echo State Networks. In *2018 European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN'2018), Bruges, Belgium, April 25 - 27 2018*, pages 437–442. Available on: <https://www.eleu.ucl.ac.be/Proceedings/esann/esannpdf/es2018-172.pdf>.
- [8] Tomáš Buariánek and Sebastián Basterrech. Quantifying the Reservoir Quality using Dimensionality Reduction Techniques. In *2018 European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN'2018), Bruges, Belgium, April 25 - 27 2018*, pages 443–448. Available on: <https://www.eleu.ucl.ac.be/Proceedings/esann/esannpdf/es2018-176.pdf>.
- [9] Sebastián Basterrech. Empirical Analysis of the Necessary and Sufficient Conditions of the Echo State Property. In *2017 IEEE International Joint Conference on Neural Networks (IJCNN 2017), Anchorage, AK, USA, May 14-19, 2017*, pages 888–896. Doi: 10.1109/IJCNN.2017.7965946.
- [10] Sebastián Basterrech. Estimating Human Activities from Smartwatches with Feedforward Neural Networks. In Jeng-Shyang Pan, Václav Snášel, Tien-Wen Sung, and Xiao Dong Wang, editors, *Intelligent Data Analysis and Applications: Proceedings of the Third Euro-China Conference on Intelligent Data Analysis and Applications, ECC 2016*, pages 51–57. Springer International Publishing, Cham, 2017. ISBN 978-3-319-48499-0. Doi: 10.1007/978-3-319-48499-0_7.
- [11] Sebastián Basterrech and Varun Kumar Ojha. Temporal Learning Using Echo State Network for Human Activity Recognition. In *IEEE European Network Intelligence Conference (ENIC'2016), Wrocław, Poland, September 5–7, 2016*, pages 217–223. DOI: 10.1109/ENIC.2016.039.
- [12] Sebastián Basterrech and Václav Snášel. Feature Selection Using a Genetic Algorithm for Solar Power Prediction. In Ajith Abraham, Sergey Kovalev, Valery Tarassov, and Václav Snášel, editors, *Proceedings of the First International Scientific Conference "Intelligent Information Technologies for Industry" (IITI'16): Volume 1*, pages 409–419, Springer International Publishing Cham, 2016. Doi: 10.1007/978-3-319-33609-1_37.
- [13] Sebastián Basterrech. Experimental Analysis of Forecasting Solar Irradiance with Echo State Networks and Simulating Annealing. In Leszek Rutkowski, Marcin Korytkowski, Rafa Scherer, Ryszard Tadeusiewicz, Lotfi A. Zadeh, and Jacek M. Zurada, editors, *Artificial Intelligence and Soft Computing: 15th International Conference, ICAISC 2016, Zakopane, Poland, June 12-16, 2016, Proceedings, Part I*, 15–24, Springer International Publishing, Charm, 2016. ISBN 978-3-319-39378-0. DOI: 10.1007/978-3-319-39378-0_2.
- [14] Sebastián Basterrech, Gerardo Rubino, and Václav Snášel. (2015). Sensitivity Analysis of Echo State Networks for Forecasting Pseudo-periodic Time Series. In *Proceedings of IEEE Soft Computing and Pattern Recognition (SocPar'15)*, 328–333. DOI: 10.1109/SOCPAR.2015.7492768.

- [15] Sebastián Basterrech, Gerardo Rubino, and Václav Snášel. (2016). Experimental Analysis of a Hybrid Reservoir Computing Technique. In *Chapter Hybrid Intelligent Systems, of the series Advances in Intelligent Systems and Computing*, Springer International Publishing, vol. 420, 237–247. DOI: 10.1007/978-3-319-27221-4_20.
- [16] Claudio Aracena, Sebastián Basterrech, Juan Velasquez, and Václav Snášel. Neural Networks for Emotion Recognition Based on Eye Tracking Data. In *2015 IEEE International Conference on Systems, Man, and Cybernetics*, pages 2632–2637, October 2015. DOI: 10.1109/SMC.2015.460.
- [17] Sebastián Basterrech, Kei Ohnishi, and Mario Koeppen. Neural Signature of Efficiency Relations. In *2015 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, pages 2090–2095, October 2015. DOI: 10.1007/978-3-319-27221-4_20.
- [18] Sebastián Basterrech, Pavel Bobrov, Alexander Frolov, and Dušan Husek. Nature-inspired Algorithms for Selecting EEG Sources for Motor Imagery Based BCI. In Leszek Rutkowski, Marcin Korytkowski, Rafal Scherer, Ryszard Tadeusiewicz, Lotfi A. Zadeh, and Jacek M. Zurada, editors, *Artificial Intelligence and Soft Computing, volume 9120 of Lecture Notes in Computer Science*, pages 79–90. Springer International Publishing, 2015. DOI: 10.1007/978-3-319-19369-4_8.
- [19] Sebastián Basterrech, Andrea Mesa, and Ngoc-Tu Dinh. Generalized Linear Models Applied for Skin Identification in Image Processing. In Ajith Abraham, Xin Hua Jiang, Václav Snášel, and Jeng-Shyang Pan, editors, *Intelligent Data Analysis and Applications, volume 370 of Advances in Intelligent Systems and Computing*, pages 97–107. Springer International Publishing, 2015. ISBN 978-3-319-21205-0. DOI: 10.1007/978-3-319-21206-7_9.
- [20] Francois Despaux and Sebastián Basterrech. A Study of the Multi-trip Vehicle Routing Problem with Time Windows and Heterogeneous Fleet. In *IEEE Intelligent Systems Design and Applications (ISDA'14)*, pages 7–12, November, 2014. DOI: 10.1109/ISDA.2014.7066280.
- [21] Sebastián Basterrech, Enrique Alba, and Václav Snášel. An Experimental Analysis of the Echo State Network Initialization Using the Particle Swarm Optimization. In *Sixth World IEEE Congress on Nature and Biologically Inspired Computing (NaBIC'14)*, pages, 214–219, July, 2014. DOI: 10.1109/NaBIC.2014.6921880.
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NATIONAL CONFERENCES, WORKSHOPS AND MEETINGS

- [1] Sebastián Basterrech. Meta-heuristic techniques for training Recurrent Neural Networks. In *Third Conference of the IT4Innovations National Supercomputing Center, Czech Republic, Ostrava-Poruba, Czech Republic, November 2014*.
- [2] Sebastián Basterrech and Václav Snášel. A study of the impact of the pseudospectra on the stability of the Recurrent Neural Networks. In *Conference on Mathematical Modelling and Computational Methods in Applied Sciences and Engineering, Roznov pod Radhostem, Czech Republic, June 2014*.
- [3] Sebastián Basterrech and Tomáš Burianek. Performance Analysis of the Activation Neuron Function in the Flexible Neural Tree Model. In *14th International Workshop on Databases, Texts, Specifications, and Objects (DATESO-2014)*, Roudnice nad Labem, Czech Republic, April 2014. Available on: <http://www.cs.vsb.cz/dateso/2014/>.
- [4] Sebastián Basterrech. Time-series forecasting using Reservoir Computing models. In *Second Conference of the IT4Innovations National Supercomputing Center, Czech Republic, Ostrava-Poruba, Czech Republic, October 2013*.
- [5] Sebastián Basterrech. Estimation de la qualité d'un flux de voix sur l'Internet en utilisant des machines de calcul avec de réservoir de neurones. In *Journées Jeunes Chercheurs en Audition, Acoustique musicale et Signal audio (JJCAAS'12)*, Marseille, France, December 2012.
- [6] Sebastián Basterrech. Unsupervised learning in reservoir computing. In *Journée Jeunes Chercheurs: Mesure, Modélisation et Simulation*, Rennes, France, June 2011.
- [7] Sebastián Basterrech. Estimation de la qualité de la VoIP en utilisant des outils d'apprentissage statistique. In *Journées Jeunes Chercheurs en Audition, Acoustique musicale et Signal audio (JJCAAS'10)*, Paris, France, November 2010.
- [8] Sebastián Basterrech. Nouvel algorithme d'apprentissage supervisé de type gradient pour les Réseaux de Neurones Aléatoires. In *Proc. of the National Conference "Manifestation des Jeunes Chercheurs en Sciences et Technologies de l'Information et de la Communication" (MajecSTIC'10)*, Bordeaux, France, October 2010.
- [9] Sebastián Basterrech and Gerardo Rubino. Training Algorithms for Random Neural Networks. In *ALIO-INFORMS Joint International Meeting*, Buenos Aires, Argentina, June 2010.
- [10] Sebastián Basterrech, Gerardo Rubino, and Martin Varela. Evaluating the Perceived Quality of the Internet Audio Systems using Statistical Learning Techniques. In *ALIO-INFORMS Joint International Meeting*, Buenos Aires, Argentina, June 2010.

Statement of teaching

Sebastián Basterrech, Ph.D. ¹

Student guidance - Master level

- **Dhanishkumar Loganadanejil**, VŠB-TUO, Ostrava. 2019-present
Thesis title: *Calibration of advanced material model for 3D printing materials using optimization and machine learning methods.*
Student is starting his thesis. Student contact: `dhanishkumar.loganadanejil.st@vsb.cz`.
- **Miroslav Kovar**, Faculty of Nuclear Sciences, CTU, Prague. 2017-2019
Thesis title: *Biomarker Analysis of Psychiatric Patients using EEG Signal Analysis and Machine Learning.*
Thesis mark: A with honors. Student contact: `miroslavkovar@protonmail.com`.
- **Hikmat Dashdamirov**, VŠB-TUO, Ostrava. 2016-2018
Thesis title: *A Nature Inspired System for Mental State Recognition.*
Remark: thesis contributions have been accepted in two major international conferences (WCCI and ESSAN).
Thesis mark: B. Student contact: `mr.dashdemirov@gmail.com`.
- **Rickard Hole Falck**, NTNU, Trondheim, Norway. 2017-2018
Thesis title: *Convolutional Neural Networks for terrain classification using energy consumption.*
Remark: Rickard recently finished his Master thesis in NTNU, I supervised his first year of Master when he visited FEL, CTU as one-year Erasmus student.
Mark: B. Student contact: `rickardhole.falck@gmail.com`.
- **Roger Noel Nengwe**, École d'Ingenieurs , UPSSITECH, Toulouse, France. 2017-2018
Title: *Evaluation of Drift techniques for detecting various types of terrains.*
Remark: I supervised the Master 1 thesis of Roger (given diploma in the French education for the first year of Master studies). He visited FEL, CTU as one-year Erasmus student.
Mark: 14/20 (French scale). Student contact: `r.nengwe@yahoo.fr`.
- **Petr Prokop**, VŠB-TUO, Ostrava. 2016-2017
Title: *Analysis of Financial Time Series using Reservoir Computing techniques.*
Remark: I supervised the software project of Petr during his first year of Master. Petr is starting his PhD in VŠB with the supervision of Prof. J. Platoš.
Student contact: `petr.prokop.st1@vsb.cz`.

Student guidance - Bachelor level

- **Hynek Noll**, FEL, CTU, Prague. 2018-present
Thesis title: *Reservoir Computing Framework in Apache Flink.*
Student contact: `hynekn@gmail.com`.

¹Department of Computer Science, Faculty of Electrical Engineering and Computer Science, VŠB-Technical University of Ostrava, Czech Republic. Email: `Sebastian.Basterrech@vsb.cz`, Scopus author id: 36719811900.

- **Lai Khang Duy**, USTH, Hanoi, Vietnam *2018-present*
 Thesis title: *Characterization of EEG signals according to brain regions using machine learning techniques.*
 Remark: Duy is a student of the French-Vietnamese University of Science and Technology of Hanoi (USTH), Vietnam, he completed an internship in VŠB during 4 months. Now he is writing his Bc. thesis under my supervision.
 Student contact: laiduy98@gmail.com.
- **Valeria Iegorova**, FEL, CTU, Prague. *2017-2019*
 Thesis title: *Recurrent Neural Networks for Analyzing Sequential Data on Robotics.*
 Thesis mark: B. Student contact: iegorval@gmail.com.
- **Nikita Tishin**, FEL, CTU, Prague. *2017-2018*
 Thesis title: *Deep Learning for Pattern Recognition of Brain Image Data.*
 Thesis mark: B. Student contact: tishinik@fel.cvut.cz, +420608544429.
- **Matuš Hromulak**, VŠB-TUO, Ostrava. *2016-2017*
 Thesis title: *Biomedical image analysis using Deep Neural Networks.*
 Thesis mark: B. Student contact: Matus.hromulak.st@vsb.cz.
- **Quang Doan Nhat**, USTH, Hanoi, Vietnam *2017-2018*
 Thesis title: *Analysis of dimensionality reduction of EEG signals using PCA and t-SNE.*
 Thesis mark: 9/10. Student contact: nhatlinh17@gmail.com.
- **Vu Hoang Linh**, USTH, Hanoi, Vietnam *2017-2018*
 Thesis title: *Developing games for mental concentration evaluation.*
 Thesis mark: 9/10. Student contact: vuhoanglinh1997@gmail.com.
- **Vu Lam Dang**, USTH, Hanoi, Vietnam *2016-2017*
 Thesis title: *Extreme Learning Machines and Swarm Intelligence.*
 Thesis mark: 8/10. Student contact: lam.dv@live.com.

Teaching activities

- **University of Science and Technology of Hanoi**, Vietnam *March, 2017-2018-2019*
 Course of **Graph Theory** (40 hours).
 Addressed to students of the last year of bachelor in C.S. and Electrical Engineering.
 Only lecturer of this course, responsible of theoretical lectures and practical activities.
 Number of students: 20 (Mar/2017), 29 (Mar/2018) and 58 (Mar/2019).
 USTH contact: Prof. Doan Nhat Quang (doan-nhat.quang@usth.edu.vn).
- **University of Cape Coast**, Cape Coast, Ghana *Jun-Jul/2017*
 Course of **Intelligent Systems** (40 hours).
 Addressed to Master and PhD students in Computer Science and Electrical Engineering.
 Responsible of theoretical lectures and practical activities, there were 15 students.
 The course was in the framework of a collaboration between INRIA, France, Academy Without Borders (AWB) and University of Cape Coast, Ghana.
 INRIA contact: Prof. Joachim Niehren (joachim.niehren@inria.fr), AWB contact: Corrie Young (cyoung@awb-usf.org), UCC contact: Prof. Henry Amankwah (hamankwah@ucc.edu.gh).

- **Faculty of Engineering, University of the Republic**, Montevideo, Uruguay *Dec/2016*
 Course of **Neural Networks** (15 hours).
 Addressed to Master and PhD students, responsible of theoretical lectures and practical activities. FING contact: Prof. Héctor Cancela (cancela@fing.edu.uy).

- **University of Science and Technology of Hanoi**, Vietnam *Oct/2014 and Nov/2015*
 Course of **Artificial Intelligence and Machine Learning** (40 hours)
 Addressed to students of the last year of B.S. in Computer Science and Electrical Engineering.
 Responsible of theoretical lectures and practical activities.
 Number of students: 17 (Oct/2014) and 19 (Nov/2015)
 USTH contact: Prof. Doan Nhat Quang (doan-nhat.quang@usth.edu.vn).

- **VŠB-Technical University of Ostrava**, Czech Republic. *First semester 2014*
 Courses of **Data Compression** (1 semester)
 Addressed to students of third year of B.S. in Computer and Electronic Engineering.
 Responsible of theoretical lectures and practical activities.
 VŠB contact: Prof. Jan Platos (Jan.Platos@vsb.cz).

- **VŠB-Technical University of Ostrava**, Czech Republic. *Second semester 2013*
 Courses of **Information Knowledge Processing** (1 semester)
 Addressed to students of third year of B.S. in Computer and Electronic Engineering.
 Responsible of theoretical lectures and practical activities.
 VŠB contact: Prof. Jan Platos (Jan.Platos@vsb.cz).

- **Faculty of Engineering, University of the Republic**, Montevideo, Uruguay *2005-2007*
 Courses of **Discrete Mathematics, Algebra, Probability and Statistics**
 Addressed to undergraduate students of first and second year of B.S. in Computer and Engineering. I was lecturer of the practical activities and laboratories.
 FING contact: Prof. Gustavo Guerberoff (gguerber@fing.edu.uy)