Anexa nr. 1 – Cerere de premiere*

1. Candidat
   Nume: Onchis M.
   Nume anterioară (dacă este cazul): Nu e cazul
   Prenume: Darian
   Doctor din anul (se prezintă copie a diplomei de doctor sau echivalent): 2006
   Pozițiaocupată: Profesor Universitar Doctor Dublu Habilitat (Matematică în 2014 la Marseille, Informatică în 2022 la Timișoara)
   Instituția: Universitatea de Vest din Timișoara
   Telefon mobi'
   Adresa de e-mail: 

2. Ediția “Gala Cercetări Românești”: 2024
4. Lider de echipă, dacă este cazul: Nu e cazul
5. Componența echipii de cercetare, dacă este cazul (numele membrilor echipii, poziția ocupată, anul ultimei diplome acordate): Nu e cazul
6. O descriere a celor mai importante realizări științifice din ultimii 5 ani (max. 4 pag., format A4, caractere Times New Roman, 12 puncte, spațiere între linii de 1,5 și margini de 2 cm)**.

6.1. Development and evaluation of approaches to explain decisions of machine learning models:

Stable and explainable deep learning damage prediction for prismatic cantilever steel beam

[Paper Reference]

For obtaining the interpretable model, we correlate model agnostic global and local explanations with the use of the LIME and respectively the SHAP algorithm. Since the local explanations might be unstable, we introduce a compound stability-fit compensation index as a quality indicator in order to accept an explanation. This index is computed using both the condition number and the R2 fit indicator. The results were transferred to industry for improving the damage detection. Journal Impact Factor 11.245. Dataset: https://data.mendeley.com/datasets/rpvh2y2dhv/

We propose a double distillation incremental learning recipe for the class incremental learning scenario, starting from a proof of the classification limits of the relaxed SoftMax function and coupling it with a modified version of the iCaRL algorithm in which we have remodeled the last classification layer by varying the temperature parameter.

**XAIBOT, Explainable AI Trilingual Chatbot**

![Chatbot conversation]

Development of from scratch of XAIBOT, a trilingual explainable AI Chatbot (Romanian, English and Serbian, an German version is currently in development).
6.2. Explainable AI systems by design:

In this paper, we propose a neuro-symbolic model for the detection of damages in cantilever beams based on a novel cognitive architecture in which we join the processing power of convolutional networks with the interactive control offered by queries realized through the inclusion of real logic directly into the model. The hybrid discriminative model is introduced under the name Logic Convolutional Neural Regressor and it is tested on a dataset of values of the relative natural frequency shifts of cantilever beams derived from an original mathematical relation. While the obtained results preserve all the predictive capabilities of deep learning models, the usage of three distances as predicates for satisfiability, makes the system more trustworthy and scalable for practical applications. Extensive numerical and laboratory experiments were performed, and they all demonstrated the superiority of the hybrid approach, which can open a new path for solving the damage detection problem.

6.3. Algorithmic bias and algorithmic discrimination
Invited panelist at the Breakout session: Explainability aspects in AI for disinformation, organized during the EU-workshop AI: Mitigating Bias & Disinformation

Dataset Knowledge Transfer for Class-Incremental Learning without Memory

HabibSlim1, Eden Belouadah1,2, Adrian Popescu1, Darian Onchis3
1 Université Paris-Saclay, CEA, L iris, F-91120, Palaiseau, France
2 IMT Atlantique, Lab-STICC, team RAMBO, UMR CNRS 6285, F-29328, Brest, France
3 West University of Timisoara, Timisoara, Romania

habib.slim@pemble.org, eden.belouadah, adrian.popescu@cea.fr, darian.onchis@cnrs.fr

Article accepted at IEEE/CVF Winter Conference on Applications of Computer Vision (WACV22), the premier international computer vision event. We introduce a two-step learning process which allows the transfer of bias correction parameters between reference and target datasets. Bias correction is first optimized offline on reference datasets which have an associated validation memory. The obtained correction parameters are then transferred to target datasets, for which no memory is available. The second contribution is to introduce a finer modeling of bias correction by learning its parameters per incremental state instead of the usual past vs. new class modeling. The proposed dataset knowledge transfer is applicable to any incremental method.

6.4. Effects of the interpretability of AI systems on their acceptance, use, and adoption

In this paper, we introduce an AI-based procedure to estimate and assist in choosing the optimal surgery timing, in the case of a thoracic cancer diagnostic, based on an explainable machine learning model trained on a knowledge base. The explainable AI-system is implemented in practice at the Thoracic Surgery Clinic from the Emergency Municipal Clinical Hospital Timisoara, the only such specialized clinic in the Banat region of Romania, serving a population of about 1.5 million people,
see https://www.spitalul-municipal-timisoara.ro/. For reference on how the system works please contact the Head of the Clinic, Dr. Gabriel Cozma (cozma.gabriel@umft.ro, drgabrielcozma@gmail.com)

6.5. Application-oriented issues with a focus on value creation in and between companies and organizations:

Head of engineering and software architect for the UNITA Virtual Campus, based at the University of Pau and Pays d’Adour in France (www.uppa.fr). UNITA is an alliance of six comprehensive research universities from five countries with different sizes and trajectories gathering together more than 160 000 students and 13 000 staff members. From West to East: Universidade de Beira Interior, Universidad de Zaragoza, Université de Pau et des Pays de l’Adour, Université Savoie Mont Blanc, Università di Torino, and Universitatea de Vest din Timisoara. According to European Commission website, the main goal of the UNITA alliance is to “to build a fully-fledged European inter-university campus based on excellence in teaching and learning, research and innovation, and on civic engagement”, see https://education.ec.europa.eu/european-universities-factsheets.

Coordinator of TRAIN, Timisoara Research in Artificial Intelligence Network. The network has been publicly launched in 2021, in the presence of Professor Bernhard Schölkopf, director at the Max Planck Institute for Intelligent Systems in Tübingen, Germany. Another special guest was Professor Pedro Real, from the University of Seville, Spain. The conference was attended also by the representatives of major local IT companies: Mr. Valentin Mureşan (personal advisor to the mayor of Timişoara, SmartCity and Digitalization, manager of Intel Romania), Mr. Sabin Totorean (Global Enterprise & Public Sector Sales Director, Nokia), Mr. Sorin Maxim (General Manager of ADR West), Ms. Cătălina Dodu (Global CyberSecurity Services PreSales Director, Atos IT Solutions and Services), Mr. Raul Horhat (General Manager, Cmed) and Mr. Ștefan Iarca (co-founder of XVision). They all addressed supportive messages regarding the future of the AI Hub.
7. Curriculum Vitae naratív al candidatului “individual” sau al fiecărui membru al echipiei de cercetare, în cazul candidatului “echipă de cercetare”, din care să reiasă rezultatele activității de cercetare din ultimii 5 ani, conform indicilor cantitativi din Anexa nr. 2 la regulament și criteriilor de evaluare calitativă prevăzute în Anexa nr. 3 la regulament.

PERSONAL INFORMATION
Family name, First name: ONCHIS – MOACA, Darian
Researcher unique identifiers: M-2821-2013, orcid.org/0000-0003-4846-3752
Date of birth: 14.08.1979
URL for web site: https://staff.fmi.uvt.ro/~darian.onchis/index.html
Member of ELLIS Society (ELLIS - the European Laboratory for Learning and Intelligent Systems, ellis.eu)

• EDUCATION
2022 Habilitation in Computer Science (Priv.-Doz.,Dr. habil.)
West University of Timisoara, Romania
2014 Habilitation in Mathematics (Priv.-Doz.,Dr. habil.)
Aix-Marseille University, France
2006 PhD
Computational and functional methods in signals theory
Faculty of Mathematics and Computer Science/ West University of Timisoara/ Romania
Higher Technical School of Informatics Engineering / University of Seville/Spain
2004 Master
Master of Science in Informatics (Valedictorian). Department of Computer Science/
West University of Timisoara, Romania.
2002 Bachelor
Bachelor degree in Mathematics and Informatics (National Merit Scholarship).
Faculty of Mathematics and Computer Science/ West University of Timisoara/ Romania

• RECENT POSITIONS
2015 - 2018 Senior researcher and FWF Project Leader
University of Vienna, Austria
Ongoing Full Professor of Computer Science and Machine Learning (faculty position)
Department of Computer Science, West University of Timisoara, Romania
Ongoing Head of IT Engineering for UNITA, University of Pau, France
• PREVIOUS POSITIONS
2014 – 2015  Full Professor of Industrial Informatics (faculty position)
Department of Industrial Informatics, Eftimie Murgu University, Romania.
2014        Senior researcher in the EU Project HOST (High Performance Computing Centre)
West University of Timisoara, Romania.
2007 - 2014  University Lecturer (faculty position)
Department of Industrial Informatics, Eftimie Murgu University, Romania
2007 - 2013  Post-Doc Researcher
NuHAG, Computational Science Platform, University of Vienna, Austria
2003 - 2007  University Assistant
Department of Economics, Eftimie Murgu University, Romania.
2001 - 2003  Software Engineering position
SiemensVDO, Algorithms group, Timisoara, Romania.

• FELLOWSHIPS
2013, 2014   Postdoctoral fellowships (3 months each year)
Centre de Mathematiques et Informatique, Aix-Marseille University, France.
2005 – 2012  5 Mobility fellowships awarded by EU competition (1 and up to 3 months for 1 stage)
HPC-Europa Project (High Performance Computing in EUROPE)
1998 – 2004  Merit scholarship, Faculty of Mathematics and Computer science, West University of
Timisoara, Romania

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL
2017 - 2018  1 postdoc student at Faculty of Mathematics, University of Vienna, Austria
2015 - 2018  1 PhD student at Faculty of Mathematics, University of Vienna, Austria
2017 - 2018  4 Master students in Computer Science, West University of Timisoara, Romania
2018 - 2023  15 Master students in Computer Science, West University of Timisoara, Romania
2022 - 2026  3 PhD students at Department of Computer Science, West University of Timisoara

• TEACHING ACTIVITIES
2014 - 2016  Graphs theory and combinatorics, Algorithmic Design, Visual programming,
Databases,


• ORGANISATION OF SCIENTIFIC MEETINGS
2017 Chair of DRILLS (Data Representation in Learning, Living Systems and Signals), international IEEE indexed workshop, 25 participants, Timisoara, Romania
2017 Organiser and Main Speaker at the Training and Research week on Topological and Harmonic Algorithms for Bio-Images and Sequences, University of Seville, Spain, 15 participants
2014 Chair of the 5th CTIC (Computational Topology in Image Context), international workshop series, 50 participants, Timisoara, Romania,
2013 Organizer of the special session M-FRAME CONSTRUCTIONS at the 9th ISAAC congress, Cracow, Poland, 35 participants
2011 Organisation of the first international summer school: A MATLAB approach to Computational Harmonic Analysis, Marburg, Germany, 25 participants.

• COMMISSIONS OF TRUST


• MEMBERSHIPS OF SCIENTIFIC SOCIETIES
2017 - ongoing FOCM – Foundations of Computational Mathematics
2011 - ongoing TOPREC – Topological pattern analysis and recognition
2010 - ongoing EURASIP – European Association of Signal Processing

• MAJOR COLLABORATIONS
Dr. Adrian Popescu, CEA LIST Laboratory, Paris, France
Prof. Bruno Torresani, Centre de Matematiques et Informatiques, Aix-Marseille University, France
Prof. Fernando Diaz del Rio, Higher Technical School of Informatics Engineering, University of Seville, Spain
Prof. Pedro Real, Higher Technical School of Informatics Engineering, University of Seville, Spain

- RECENT SCIENTIFIC ACTIVITIES


2018  Guest editor of the special issue on Deep Learning for Diagnosis and Prognosis in Manufacturing in the Elsevier journal Computers in Industry, Impact Factor 2.850

2017  CREAM Toolbox v1.0 was released. It includes MATLAB code in support of the research

2017  COST Action Proposal OC-2016-2-21631 "Tomography Across Modalities and Scales", about the emerging field of multi-scale, multi-modal techniques for tomographic imaging, was submitted to the COST Open Call OC-2016-2.

2016  Guest editor of the special issue Geometric, Topological and Harmonic Trends to Image Processing in the Elsevier journal Pattern Recognition Letters, Impact Factor 1.952

2014  Managing guest editor of the special issue Localization, diversity and uncertainty in signal representations in the Springer journal Advances in Computational Mathematics, Impact Factor 1.31

2014  Managing guest editor of the special issue Time-frequency methods for condition based maintenance and modal analysis" in the Elsevier journal Signal Processing, Impact Factor 3.110

ANIS prize for MACHINE LEARNING teaching in 2018 (ANIS is the IT-Industry Association)

Research Award, Red prize (highest category) for the article with sole author Darian M. Onchis, entitled 'Increasing the image resolution using multi-windows spline-type spaces', published in Signal Processing Vol.103 (2014) p.195--200. Awarded by UEFISCDI, Romanian National Institution for financing higher education, research, development and innovation.

Research Award, yellow prize (second category) for the paper 'A parallel Homological Spanning Forest framework for 2D topological image analysis' co-authors Fernando Diaz-del-Rio, Pedro Real, Darian M. Onchis. Awarded by the UEFISCDI, Romanian National Institution for financing higher education, research, development and innovation.


I state that I meet at least 3 of the 6 mentioned indicators, namely:

1. Works as main author or co-author classified with the article document type, published in Web of Science JCR quartile Q1 indexed journals - minimum 7: Attached is the list of 9 papers indexed Web of Science JCR quartile Q1.
2. national and international research projects, won through competition, with a value of at least 100,000 euros each and a team of at least 3 members, as director/project leader – at least 1: Project Director at the University of Vienna, Austria, worth €332,084, with 3 international project participations. Project selected through competition by FWF, Austrian Science Fund.

3. the quality of researcher/invited teaching staff at prestigious universities abroad – minimum 1; Associate teaching staff at the University of Seville (rank 174 in Mathematics), Spain, Master’s program in Ingeniería Biomédica y Salud Digital, for the years 2019/2020, 2020-2021, according to the attached document.

8. Lista publicațiilor candidatului ”individual” sau a fiecărui membru al echipei de cercetare, în cazul candidatului ”echipă de cercetare”, cu evidențierea publicațiilor relevante ale candidatului în ultimii 5 ani și a publicațiilor comune ale membrilor unei echipe de cercetare în cazul candidatului ”echipă de cercetare”. Se menționează și un link al paginii web unde se regăsesc publicațiile candidatului.

Scopus EXPORT DATE:29 Dec 2023

Onchis, D.M., Gillich, G.-R., Hogea, E., Tufisi, C.

Neuro-symbolic model for cantilever beams damage detection
(2023) 151, art. no. 103991, .


Costi, F., Onchis, D.M., Istin, C., Cozma, G.V.

Explainability-Enhanced Neural Network for Thoracic Diagnosis Improvement
(2023) 14184 LNCS, pp. 35-44.
Onchis, D., Istin, C., Hoga, E.

A Neuro-Symbolic Classifier with Optimized Satisfiability for Monitoring Security Alerts in Network Traffic

(2022) 12 (22), art. no. 11502, .

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85142537595&doi=10.3390%2fapp122211502&partnerID=40&md5=373374806b7169cb697cf7c309886920

Cozma, G.V., Onchis, D., Istin, C., Petache, I.A.

Explainable Machine Learning Solution for Observing Optimal Surgery Timings in Thoracic Cancer Diagnosis

(2022) 12 (13), art. no. 6506, .

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85133495630&doi=10.3390%2fapp12136506&partnerID=40&md5=6f7b4e63533ce0b7968fe2728c75a2ba


Artificial Intelligence System for Predicting Prostate Cancer Lesions from Shear Wave Elastography Measurements

(2022) 29 (6), pp. 4212-4223.

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85132158363&doi=10.3390%2fcurrencol29060336&partnerID=40&md5=572dd0c3f6b5fe8efb4c0e52ea162e94

Onchis, D.M., Istin, C., Eduard-Florin, H.

Advantages of a neuro-symbolic solution for monitoring IT infrastructures alerts


https://www.scopus.com/inward/record.uri?eid=2-s2.0-85163084021&doi=10.1109%2fSYNASC57785.2022.00036&partnerID=40&md5=400192281a2b542d7092bfffad9548de
Slim, H., Belouadah, E., Popescu, A., Onchis, D.
Dataset Knowledge Transfer for Class-Incremental Learning without Memory
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85126138133&doi=10.1109%2fWACV51458.2022.00337&partnerID=40&md5=405ac2de57e1020e2c2d7b6533e3a5cb

Morphological aspects in remineralizing potential of Silver Diamine Fluoride
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85122961187&doi=10.47162%2fRJME.62.2.20&partnerID=40&md5=ee3b385cd161be21b32560114a2167e

Onchis, D.M., Gillich, G.-R.
Stable and explainable deep learning damage prediction for prismatic cantilever steel beam
(2021) 125, art. no. 103359, .

Onchis, D.M., Samuila, I.-V.
Double distillation for class incremental learning
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85127047853&doi=10.1109%2fSYNASC54541.2021.00039&partnerID=40&md5=1a2d795653be18ac0719b3bcedec12283

Onchis, D.M.
Should i trust a deep learning condition monitoring prediction?
(2020) art. no. 9357073, pp. 182-186.
Onchis, D.M., Istin, C., Tudoran, C., Tudoran, M., Real, P.
Timely-automatic procedure for estimating the endocardial limits of the left ventricle assessed echocardiographically in clinical practice
(2020) 10 (1), art. no. 40, .

Yan, R., Chen, X., Wang, P., Onchis, D.M.
Deep learning for fault diagnosis and prognosis in manufacturing systems
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065566237&doi=10.1016%2fcompind.2019.05.002&partnerID=40&md5=643835d8f675c7bf6267e474d5645b91

Onchis, H.D.M.
A deep learning approach to condition monitoring of cantilever beams via time-frequency extended signatures

Onchis, D.M., Istin, C., Real, P.
Refined Deep Learning for Digital Objects Recognition via Betti Invariants
(2019) 11678 LNCS, pp. 613-621.
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85072871519&doi=10.1007%2f978-3-030-29888-3_50&partnerID=40&md5=50509bc3ad5573bca8ba9ed9b7b678d2

Real, P., Molina-Abril, H., Díaz-del-Río, F., Blanco-Trejo, S., Onchis, D.
Enhanced Parallel Generation of Tree Structures for the Recognition of 3D Images
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068344479&doi=10.1007%2f978-3-030-21077-9_27&partnerID=40&md5=94c7afa6cafd5e8f766b9e3501c0bd3

Real, P., Molina-Abril, H., Díaz del Río, F., Onchis, D.
Generating second order (co)homological information within at-model context
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061101691&doi=10.1007%2f978-3-030-10828-1_6&partnerID=40&md5=f4a6d80092795e468aa841545e29c549

Onchis, D.M., Zappalà, S., Real, P., Istin, C.
Numerical stability of spline-based Gabor-like systems
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059805976&doi=10.23919%2fEUSIPCO.2018.8552927&partnerID=40&md5=df63e33a49b8e951dc2f3a4ccd4ff31e

Onchis, D.M.
Detecting proteine coding regions using a customized multi-scales splines construction
(2018) art. no. 8531318, pp. 397-400.
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058304256&doi=10.1109%2fSYNASC.2017.00072&partnerID=40&md5=b5b41a3633d774dda517639a05c17ab6

Onchis, D.M., Zappala, S.
Constructive realizable multi-resolution wavelet-like systems based on multi-windows spline-type spaces
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058284838&doi=10.1109%2fSYNASC.2017.00027&partnerID=40&md5=c1049f90f9eba30cf6facabdb1e460f53
Onchis, D.M., Zappala, S.

Lax-like stability for the discretization of pseudodifferential operators through gabor multipliers and spline-type spaces
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069539118&doi=10.1109%2fsYNASC.2018.00026&partnerID=40&md5=d940d4c6e6052b70debd2ee9fd93d9dc

Onchis, D.M., Zappala, S.

Realizable algorithm for approximating Hilbert–Schmidt operators via Gabor multipliers

Onchis, D., Zappalà, S.

Stability of spline-type systems in the Abelian case
(2018) 10 (1), art. no. 7.
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040863381&doi=10.3390%2fsym10010007&partnerID=40&md5=e8d69fbb5a36c5d2457e3b00e045319c

Onchis, D.M., Zappala, S.

Approximate duals of gabor-like frames based on realizable multi-window spline-type constructions
(2017) art. no. 7829599, pp. 99-104.

Onchis, D., Istin, C., Real, P.

Space-variant gabor decomposition for filtering 3D medical images
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028457615&doi=10.1007%2f978-3-319-64698-5_38&partnerID=40&md5=bf5ec33bb05fb9098d27047af4fd2aa3
Diaz-del-Rio, F., Real, P., Onchis, D.
Labeling color 2D digital images in theoretical near logarithmic time
(2017) 10425 LNCS, pp. 391-402.
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028455222&doi=10.1007%2fl978-3-319-64698-5_33&partnerID=40&md5=1977e9c5993ea2c1f8113a3e4ab77db8

Onchis-Moaca, D., Zappalá, S., Goţia, S.L., Real, P.
Double hough transform for estimating the position of the mandibular canal in dental radiographs
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028343949&doi=10.1007%2fl978-3-319-56932-1_22&partnerID=40&md5=f9a1cc29eeb9ab486219157cb4812afb

Real, P., Diaz-del-Rio, F., Onchis, D.
Toward parallel computation of dense homotopy skeletons for nD digital objects
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020437181&doi=10.1007%2fl978-3-319-59108-7_12&partnerID=40&md5=c15e0dd71d51a8ee5a4590dc0c090761

Diaz-del-Rio, F., Real, P., Onchis, D.M.
A parallel Homological Spanning Forest framework for 2D topological image analysis
https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027922606&doi=10.1016%2flfj.patrec.2016.07.023&partnerID=40&md5=aace88b0f8a3dbea7000ba26b7f304d4

Real, P., Onchis, D., Molina-Abril, H., Gaianu, M.
Special issue on GeToHa
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994060654&doi=10.1016%2flfj.patrec.2016.08.001&partnerID=40&md5=9ba76b8a3236beb9ad99dcc9e523ac3
Onchis-Moaca, D., Zappalá, S., Goția, S.L., Real, P., Pricop, M.
Detection of the mandibular canal in orthopantomography using a Gabor-filtered anisotropic generalized Hough transform
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84955509550&doi=10.1016%2fj.patrenc.2015.12.001&partnerID=40&md5=8211fce5d11c804689775b9a3f4e1d33

Onchis, D.M., Real, P.
On homotopy continuation for speech restoration
https://www.scopus.com/inward/record.uri?eid=2-s2.0-849777593887&doi=10.1007%2f978-3-319-39441-1_14&partnerID=40&md5=25d93c5257e3ed51fbe9b671663a26d0

Time-frequency diagnosis, condition monitoring, and fault detection

Diaz-del-Rio, F., Real, P., Onchis, D.
A parallel implementation for computing the region-adjacency-tree of a segmentation of a 2D digital image
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84960376746&doi=10.1007%2f978-3-319-30285-0_9&partnerID=40&md5=77c72df02d0d0472d4639d3f5ec9a104

Onchis, D.M., Gotia, S.L.
Enhancing dental radiographic images in spline-type spaces
(2015) art. no. 7034730, pp. 559-564.
Onchis, D.M., Frunzaverde, D., Gaianu, M., Ciubotariu, R.
Multi-phase identification in microstructures images using a GPU accelerated fuzzy C-Means segmentation
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84924260029&doi=10.1109%2fSYNASC.2014.80&partnerID=40&md5=eea3fcf4227178da44fba64b4f77275c

Lachambre, H., Ricaud, B., Stempfel, G., Torresani, B., Wiesmeyr, C., Onchis-Moaca, D.
Optimal Window and Lattice in Gabor Transform. Application to Audio Analysis
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84964908359&doi=10.1109%2fSYNASC.2015.25&partnerID=40&md5=93ffaf18bae2e27b14ea98335e51a7b2

Onchis, D.M., Grybos, A.
Approximate dual M-frames constructions: The Gabor case
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84959106189&doi=10.1007%2f978-3-319-12577-0_74&partnerID=40&md5=3f3ae12e9369f4b638f88a683bca476a

Ricaud, B., Stempfel, G., Torrésani, B., Wiesmeyr, C., Lachambre, H., Onchis, D.
An optimally concentrated gabor transform for localized time-frequency components
https://www.scopus.com/inward/record.uri?eid=2-s2.0-84924366841&doi=10.1007%2fs10444-013-9337-9&partnerID=40&md5=12414d9aa81e0a612c2120cc1f170997

Feichtinger, H.G., Grybos, A., Onchis, D.M.
Approximate dual gabor atoms via the adjoint lattice method

Onchis, D.M.
Optimized frames and multi-dimensional challenges in time-frequency analysis

Feichtinger, H.G., Onchis, D.M., Wiesmeyr, C.
Construction of approximate dual wavelet frames

Onchis, D.M.
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Onchiş, D.M., Súaarez Sánchez, E.M.

The flexible Gabor-wavelet transform for car crash signal analysis
Onchiș, D., Marta, C.

Multiple ID data parallel wavelet transform


9. Lista proiectelor de cercetare câștigate de candidat și valoarea acestora.

**Principal investigator in 5 international** research projects selected by competition and after peer-review.

Major research project as Principal Investigator

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Funding source</th>
<th>Amount (Euros)</th>
<th>Period</th>
<th>Role of the applicant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructive frames - based realizations in time-frequency analysis</td>
<td>FWF Austrian Science Fund @ University of Vienna</td>
<td>332.000</td>
<td>06/2015-09/2018</td>
<td>Principal Investigator</td>
</tr>
</tbody>
</table>

(01/2005 - 03/2005) Research director for the project ”Parallel Wavelet Transform”, research project selected by the HPC-Europa selection panel (Pan European research infrastructure on high performance computing funded by the European Community under contract No RII3-CT-2003-506079) at CINECA supercomputing laboratories, Bologna, Italy, Amount: 2.000 euros.

(07/2005 - 09/2005) Research director for the project ”Nonlinear data analysis and compression with the parallel wavelet transform”, same call for projects as above, CINECA supercomputing laboratories, Amount: 2.000 euros.

(07/2006 - 09/2006) Member of the research team in the frame of the EU research program HASSIP (Harmonic Analysis for Statistical Signal and Image Processing) coordinated by the Aix-Marseille University, France.


(10/2009 - 10/2010) Member of the ESO (European Southern Observatory) Data Reduction Project (Austrian in-kind). Project funded by the Austrian Federal Ministry of Science and Research, Amount: 100.000 euros.

(01/2010 - 03/2010) Research director for the project "Modern mathematical methods to reconstruct large scale dithered/jittered images", research project selected by the HPC-Europa2 selection panel (Pan European research infrastructure on high performance computing funded by the European Community under contract No 228398 ) at Barcelona Supercomputing Center, Barcelona, Spain, Amount: 2000 euros.

(10/2010 - 08/2013) Researcher in the EU-funded project UNLOCX (Uncertainty principles versus localization properties, function systems for efficient coding schemes), Amount 1.958.971 euros.

(07/2012 - 08/2012) Research director for the project "Multi-variate optimized Gabor frames for processing nD-data cubes", research project selected by the HPC-Europa2 selection panel (Pan European research infrastructure on high performance computing funded by the European Community under contract No 228398 ) at Aix-Marseille University and GENCI supercomputer center, Montpellier, France, Amount: 2000 euros.

(01/2014 - 12/2014) Senior researcher in the project HOST (High Performance Computing Service Centre), at the West University of Timisoara, Project no: FP7-REGPOT-CT-2011-284595-HOST, Amount 2.226.272 euros.

10. Lista brevetelor depuse și a celor acceptate, dacă este cazul. Nu e cazul.