



InnEO Space PhD

InnEO Summer School

Call for participation

19-24 July 2021

Brasov, Romania



**Universitatea
Transilvania
din Braşov**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n° 101006275.

Application guidelines and criteria

In order to apply for the participation to the summer school, please prepare the following documents, which should be sent to prof. Mihai Ivanovici (e-mail: mihai.ivanovici@unitbv.ro) from Transilvania University of Brasov (UNITBV), Romania, by May 15th, 2021.

Identity of the candidate:

1. Name
2. Gender (optional)
3. Date of birth
4. Country of origin / country of study
5. Address
6. Field of study

One page presentation outlining your interest and how the summer school meets your goals:

- Why are you interested in attending the summer school?
- How the summer school is related to your main area of expertise?
- What are the topics you are mostly interested in through this course?
- (If applicable) how might your project lead to a change in gender representations?
- If any, please detail your previous experience of similar summer schools

A short (2 min.) application video:

Applicants are invited to prepare a short video (2 minutes) that focuses on their research project and their understanding of the InnEO Summer School 2021 training program they apply to. Applicants are suggested to respect the following scheme:

- Presentation of yourself
- Presentation of the work performed during your PhD and of your research project
- How will the summer school help address your needs and achieve your goals?

This video will be made available strictly only to the jury for application selection.

Annexes:

Please attach the following documents to your application file

- a curriculum vitae
- a photocopy of the student card
- a letter of recommendation signed by your PhD supervisor

Selection criteria

Successful applicants will:

- be in the process of completing a PhD in a field relevant to the summer school, or be young researchers;
- have a project related to the field of -using- Earth Observation and machine learning, or related fields;
- meet the requirement for successful completion of the application;
- have an adequate background (types and contents of courses attended and results obtained by the applicant) with respect to the Earth Observation, Machine Learning;
- show capacity for openness and curiosity contributing to the school program;
- be able to put the summer school training in perspective with their future career;

The following criteria will be evaluated by the selection committee:

- age
- domain of study
- year of study
- country of study
- country of origin,
- data user knowledge
- motivation to follow the course

The Selection Committee will use the following grid to perform the selection:

Criteria	Relative weight for ranking
Applicant's profile	30%
Motivation and professional project	40%
Video on the research project	30%

Participation

Participation to the InnEO Summer School is for free.

ECTS

A certificate of attendance will be provided, stating the total number of hours (i.e. 32.5 hours) in case you wish to transfer into ECTS.

Venue

The InnEO summer school is planned to take place between 19-24 July 2021 in Brasov, Romania, being hosted by the R&D Institute of UNITBV.

Accommodation

Upon request, participants can be accommodated in the hostels of UNITBV, at low cost (approx. 20 euros per day). The participants can make their own arrangements for the accommodation within the hotels in Brasov City.

Scholarships

20 PhD students will receive a grant of approximately 300 euros for the travel expenses.

Logistics

PCs will be available during the summer school in the lecture room; however, the participants are free to bring their own laptops if they wish.

COVID-19

The InnEO Summer School will be organized face-to-face, if the pandemic situation will allow. In case that the travel is not allowed because of COVID-19, the summer school will be organized in a hybrid format – face-to-face for the Romanian participants and online (remote) for the participants outside Romania, using the e-learning platform of UNITBV.

School programme overview

<i>Day 1</i>	Earth Observation and Machine Learning – part I
<i>Day 2</i>	Earth Observation and Machine Learning – part II
<i>Day 3</i>	Open Science
<i>Day 4</i>	Soft Skills – part I
<i>Day 5</i>	Soft Skills – part II
<i>Day 6</i>	Career Development

Day-by-day school programme

Day 1 - Earth Observation and Machine Learning – part I	
M. Ivanovici – Welcome speech and program presentation	8:15 – 8:30
F. Del Frate – Introduction to EO data J. Mothe – Introduction to ML	8:30 – 10:30
Coffee break	10:30 – 11:00
R. Coliban – Visualization of hyperspectral images	11:00 – 12:30
Lunch	12:30 – 13:30
J. Mothe, N. Neptune, M. Z. Ullah – Introduction to Deep Learning for EO – multispectral images (2h30 including a short break)	13:30 – 16:00
Coffee break	16:00 – 16:15
M. Datcu – Explainable AI for Earth Observation	16:15 – 17:00
M. Ivanovici – A fractal texture model for remotely-sensed hyperspectral images	17:00 – 17:45
Social event (dinner)	18:00 – 20:00

Day 2 - Earth Observation and Machine Learning – part II	
L. De Laurentiis, F. Del Frate – SAR images – Classification, object detection and other applications (2h30 including a short break)	8:30 – 11:00
Coffee break	11:00 – 11:30
A. Smeaton – Data augmentation and artificial training data	11:30 – 12:30
Lunch	12:30 – 13:30
D. De Santis, F. Del Frate – Bio-geophysical parameter estimation with optical remote sensing (2h30 including a short break)	13:30 – 16:00
Coffee break	15:30 – 16:00
F. Del Frate – Open EO Education Resources and Initiatives	16:00 – 17:00

Day 3 - Open Science	
M. Ivanovici – Open Data. Open Science	8:30 – 9:30
Coffee break	9:30 – 10:00
L. F. Pau – Intellectual Property Rights	10:00 – 12:00
Lunch	12:00 – 13:00
Social even - Brasov City Tour	13:00 – 16:00

Coffee break	16:00 – 16:30
My PhD research work presented in 180 seconds	16:30 – 17:30
Career Aspirations (open discussion during social event; all)	17:30 – 18:30

Day 4 - Soft Skills – part I	
D. Necşoi – Building successful teams (<i>Part I: Foundations of team and teamwork: what are teams and why (and when) are they important?</i>)	8:00 – 9:30
Coffee break	9:30 – 10:00
D. Necşoi – Building successful teams (<i>Part II: How to build a team. The developmental stages of a team</i>)	10:00 – 12:00
Lunch	12:00 – 13:00
D. Necşoi – Building successful teams (<i>Part III: Team effectiveness - principles for building an effective team/ team working skills</i>)	13:00 – 15:00
Coffee break	15:00 – 15:30
D. Necşoi – Building successful teams (<i>Part IV: Team processes: team decision making</i>)	15:30 – 17:30

Day 5 - Soft Skills – part II	
M. Voinea – Citizen in XXI-st century. How we develop the new social competences (debate)	8:00 – 9:30
Coffee break	9:30 – 10:00
M. Voinea – Citizen in XXI-st century. How we develop the new social competences (debriefing)	10:00 – 12:00
Lunch	12:00 – 13:00
M. Voinea – Effective communication	13:00 – 15:00
Coffee break	15:00 – 15:30
M. Ivanovici – Research Project Management. Theory and practical aspects	15:30 – 17:30

Day 6 - Career Development	
Coffee	9:30 – 10:00
Meetings with stakeholders, teachers and coaches from industry	10:00 – 11:00
Visit to Bran (Dracula's) Castle – incl. lunch	11:00 – 17:00

Modules description

F. Del Frate – Introduction to EO data

Presentation of the types of remotely-sensed data for Earth Observation.

J. Mothe – Introduction to ML

The module is a brief introduction to machine learning (ML). We will first distinguish supervised from non-supervised ML, and present some well-established examples of methods from each category (K-means and agglomerative clustering, linear regression, decision tree and SVM). We will present the principles of Neural Network ML: perceptron, retro-propagation, with examples of some multi-layer NN deep architectures.

R. Coliban – Visualization of hyperspectral images

The unit will consist of a lecture in which the problem of hyperspectral image visualization will be introduced and a series of visualization techniques will be presented and discussed, followed by a lab session in which the participants will implement some of these techniques using MATLAB.

M. Ivanovici – A fractal texture model for remotely-sensed hyperspectral images

In this lecture the link between two domains is made: fractal geometry and analysis on one hand, and the digital image analysis on the other hand, with particular application to texture characterization for remotely-sensed hyperspectral images. A particular probabilistic fractal model is presented and the ways it can be extended to the multivariate case of hyperspectral images.

J. Mothe, N. Neptune, M. Z. Ullah – Introduction to Deep Learning for EO – multispectral images

In this module, you will learn through practical work on Pytorch, how to classify hyperspectral EO images using a deep learning architecture. You will prepare the initial data and classify them using a CNN architecture. You will evaluate the results of the classification compared to a ground truth. You will also learn how to apply data transformation and data augmentation and how this affects the results. Finally, you will practice transfer learning.

L. De Laurentiis, F. Del Frate – SAR images – Classification, object detection and other applications

Introduction to satellite data. Introduction to image processing, to visual interpretation and automatic processing techniques. Illustration of open-source software packages, application case in the land domain, application case in the ocean domain.

D. De Santis, F. Del Frate – Bio-geophysical parameter estimation with optical remote sensing

Introduction of the physics behind the satellite data generation. The forward and the inverse problems. Explanation of the methodology to retrieve bio-geophysical parameters, application case in the atmospheric domain.

M. Ivanovici – Open Data. Open Science

Open Data and Open Science concepts are presented in the light of the European Commission's Responsible Research and Innovation. Open Science aims at transforming science by making research more open, global, collaborative, creative and closer to Society. The European Cloud Initiative example – Europe's strategy for Open Science.

L.F. Pau – Intellectual Property Rights

Getting the audience familiar with the various forms of Intellectual Property protection and rights, from copyright to patents. A brief history of patenting. Few examples of patents will be discussed. National and international patent offices. How to search for a patent and how to apply for one.

F. Del Frate – *Open EO Education Resources and Initiatives*

The wide variety of Earth Observation satellites, data sets and application areas is reflected in the diversity of open existing training initiatives and resources regarding education in EO. The lecture will give an overview of the available material considering different categories such as: web-resources and e-learning, capacity building, software and tools.

A. Smeaton – *Data augmentation and artificial training data*

There are several problems with deep learning at present, and these include the computation time for training, the absence of any explanation for an output, the lack of an overarching theoretical basis for neural networks, and the issues of insufficient training data and the biases which may exist in such training data. To overcome this, data augmentation may be used, which is the creation of synthetic or “fake” training data, using a form of machine learning known as generative adversarial networks (GANs). This talk would present the need for and the use case for, using GANs to supplement existing training data and thus make the output of deep learning more accurate, reliable, and explainable. I shall focus on data augmentation for computer vision applications, showing the usual or regular approaches and the generation of GAN-based training data.

M. Datcu – *Explainable AI for Earth Observation*

This lecture presents the new approaches of EO imaging, leveraging the recent advances in physical process-based AI methods and signal processing, and leading to explainable paradigms where intelligence is the analytical component of the end-to-end sensor and Data Science chain design. A particular focus is on the semantic aspects as a key component in the explainable learning paradigms.

D. Necşoi – *Building successful teams*

Foundations of team and teamwork: what are teams and why (and when) are they important? How to build a team. The developmental stages of a team. Team effectiveness (principles for building an effective team/ team processes and dynamics/ team working skills and attributes in order to be effective as a team and as a team member: sharing ideas, assertiveness, leadership, cooperation, solving conflicts, etc.

M. Voinea – *Citizen in XXI-st century. How we develop the new social competences*

The workshop will develop a deep and nuanced understanding of social competences in digitized world, in terms of competences, knowledge, skills (to analyse, to evaluate, to decide) and values (respect for difference, curiosity, social creativity, responsibility). It will help participants to understand the crucial importance of new social competences for a sustainable society. Debate: Why a new social ethic for 21st century? Participants will work in groups (4-6 persons) and will argue why is necessary a new social ethic, new competences as critical thinking, creativity, social responsibility.

M. Voinea – *Effective communication*

Workshop on efficient communication in the 21st century, addressing topics like nonverbal communication, ways of asking questions, emotional control etc. The workshop will be interactive, based on sharing opinions, reflection on experience, cooperation–learning, debate, role-playing.

M. Ivanovici – *Research Project Management. Theory and practical aspects*

Baby steps to addressing research project management, in terms of basic elements of a research project proposal. Practical aspects like the aim, objectives, project team and resources, GANTT chart, PERT, project budget, deliverables, as well as Technology Readiness Levels (TRL) identification and analysis and Intellectual Property protection.

Lecturers biographies



Prof. Josiane Mothe is full professor in computer science since 2002 at the CNRS IRIT lab. She is a specialist in information retrieval, data mining, big data and applied machine learning. She teaches these topics mainly at the master level at Université de Toulouse where she is part of the INSPE. She obtained accreditation to direct research in 2000 and 20 PhD students were or still are under her supervision. From 2012 to 2015, she led the Information Retrieval – Exploration and visualization team of the IRIT lab (25 permanent and 55 non-permanent members, mostly PhD students). She was responsible for the ANR CAAS (Contextual Analysis and Adaptive Search) project which ended in 2014, and participated to 3 FP7 projects. She was the scientific manager for UPS-IRIT in the FREMIT federation (a collaboration between UPS-IRIT and IMT, the Toulouse research lab in mathematics) until 2013. Since 2020, she has been the co-publisher of the ACM SIGIR-Forum journal, after holding the editor-in-chief position for Europe and Africa at the Information Retrieval Journal, Springer (2004-2014). She acted as co-chair for CLEF 2015 and as program committee chair for CORIA 2018, CLEF 2018, ECIR 2020 (short papers). She is a program committee member of the leading national and international conference on that field (SIGIR, CIKM, ECIR, CORIA). She has been taking part in various international evaluation challenges which aim at answering tasks given data and task guidelines in the field of information retrieval, and she was the co-organiser of two tasks, specifically ImageCLEF remote sensing data for population estimate. She led the FabSpace 2.0 (2016-19) H2020 European project which gathered 15 partners. She currently leads the InnEO Space PhD project (dec 2020-23) H2020 which gathers together 5 European partners, and she also participates in the UNIVERSEH, Erasmus+ project (2020-2023).



Prof. Fabio Del Frate received the Laurea degree in Electronic Engineering in 1992 and the Ph.D. degree in Computer Science in 1997, both from the University of Rome “Tor Vergata”, Italy. From September 1995 to June 1996 he was Visiting Scientist with the Research Laboratory of Electronics of Massachusetts Institute of Technology, Cambridge, USA. In 1998 and 1999 he was with the ESRIN centre, European Space Agency, Frascati. Since 1999 he is with the University of Rome “Tor Vergata” where he is currently an Associate Professor and where he teaches courses on Remote Sensing and Applied Electromagnetism in various Master and PhD Programs. In the same University he is also the Coordinator of the “Design, Application, Regulation of UAVs” Master program and Erasmus coordinator for the Engineering Macroarea. In the framework of remote sensing educational international activities he has been lecturer in different European Universities (Prague, Trier, Cracow). He is, or has been, principal investigator/project manager in several European Space Agency (ESA) and Italian Space Agency (ASI) funded research projects, author of more than 200 international scientific publications with a special focus on feature extraction algorithms from EO data using neural networks. He has been session organizer and in technical boards of International Conferences and Workshops focused on Geoscience and Remote Sensing. He has been Associate Editor for the journal “Geoscience and Remote Sensing Letters”, Guest Editor for the journals “EURASIP Journal on Advances in Signal Processing” and “Remote Sensing”. Currently he is a Member of the scientific section board of the journal “Remote Sensing” for the topic “Remote Sensing Image Processing” and Associate Editor for “Frontiers of Remote Sensing”. He has been a member of the ESA GOME ozone profile retrieval working group. In 2006 and 2007 he was a member of the group winning the IEEE data fusion contest. In 2015 he was appointed EUMETSAT Associate Scientist for activities regarding the estimation of precipitation rate from satellite data. In 2019 he received an appointment by ESA, which is still ongoing, as Visiting Professor at the ESA ESRIN centre to provide support in the use of Artificial Intelligence for Earth Observation data processing. In 2006 Fabio Del Frate co-founded GEO-K srl, the first spin-off company of the University of “Tor Vergata” of which he is now President.



Prof. Mihai Datcu (Fellow, IEEE) received the M.S. and Ph.D. degrees in electronics and telecommunications from the University Politehnica Bucharest (UPB), Bucharest, Romania, in 1978 and 1986, respectively, and the habilitation a Diriger Des Recherches degree in computer science from the University Louis Pasteur, Strasbourg, France, in 1999. From 1992 to 2002, he had a longer Invited Professor Assignment with the Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland. He was a Visiting Professor with the University of Oviedo, Oviedo, Spain; University Louis Pasteur; International Space University, Strasbourg, France; the University of Siegen, Siegen, Germany; University of Innsbruck, Innsbruck, Austria; University of Alcalá, Alcalá de Henares, Spain; University Tor Vergata, Rome, Italy; the Universidad Pontificia de Salamanca, Madrid, Spain; University of Camerino, Camerino, Italy; and the Swiss Center for Scientific Computing, Manno, Switzerland. Since 1981, he has been a Professor with the Department of Applied Electronics and Information Engineering, Faculty of Electronics, Telecommunications and Information Technology, UPB. Since 1993, he has been a Scientist with the German Aerospace Center (DLR), Wessling, Germany. He is developing algorithms for model-based information retrieval from high-complexity signals and methods for scene understanding from very-high-resolution synthetic aperture radar (SAR) and interferometric SAR data. Since 2011, he has been leading the Immersive Visual Information Mining Research Laboratory, Munich Aerospace Faculty, and he is the Director of the Research Center for Spatial Information, UPB. Since 2001, he had been initiating and leading the Competence Center on Information Extraction and Image Understanding for Earth Observation, ParisTech, Paris Institute of Technology, Telecom Paris, Paris, France, a collaboration of DLR with the French Space Agency (CNES). He has been a Professor with the DLR-CNES Chair, ParisTech, Paris Institute of Technology, Telecom Paris. He has initiated the European frame of projects for image information mining (IIM) and is involved in research programs for information extraction, data mining and knowledge discovery, and data understanding with the European Space Agency (ESA), NASA, and in a variety of national and European projects. He and his team have developed and are developing the operational IIM processor in the Payload Ground Segment systems for the German missions, TerraSAR-X, TanDEM-X, and the ESA Sentinel-1 and Sentinel-2. He is a Senior Scientist and the Data Intelligence and Knowledge Discovery Research Group Leader with the Remote Sensing Technology Institute, DLR and involved in the DLR-ONERA Joint Virtual Center for AI in Aerospace. His research interests include explainable and physics aware Artificial Intelligence, smart sensors design, and quantum machine learning with applications in Earth Observation. Dr. Datcu is a member of the ESA Working Group Big Data from Space and Visiting Professor with the ESA's Φ -Lab. He was the recipient of the Best Paper Award and the IEEE Geoscience and Remote Sensing Society Prize, in 2006, the National Order of Merit with the rank of Knight, for outstanding international research results, awarded by the President of Romania, in 2008, and the Romanian Academy Prize Traian Vuia for the development of the SAADI image analysis system and his activity in image processing, in 1987. He was also the recipient of the Chaire d'excellence internationale Blaise Pascal 2017 for international recognition in the field of data science in earth observation. He has served as a Co-organizer for international conferences and workshops and as Guest Editor for a special issue on AI and Big Data of the IEEE and other journals. He is IEEE Fellow.



Prof. Alan F. Smeaton (Fellow, IEEE) was born in Dublin, Ireland. He received the B.Sc., M.Sc., and Ph.D. degrees in computer science from University College Dublin, in 1980, 1982, and 1987, respectively. Since 1987, he has been on the Faculty at Dublin City University, where he has previously served as the Head of the School of Computing and the Dean of Faculty. He is a Founding Director of the Insight Centre for Data Analytics, one of the largest publicly-funded research centers in Europe, and was appointed as the Professor of Computing in 1997. He is the author of more than 600 research papers and book chapters with more than 17 700 citations, and has an h-index of

67. His major research interest is in helping finding people to find information, and trying to discover why they need that information and if it is information they previously had, why they have forgotten it. Prof. Smeaton is an elected member of the Royal Irish Academy and the Winner of the Academy's Gold Medal in Engineering Sciences, in 2016. He is a member of the ACM and the Current Chair of the ACM SIGMM (Special Interest Group in Multimedia).



Dr. Radu-Mihai Coliban is a lecturer and post-doctoral researcher, holds a PhD degree from Transilvania University of Brasov, Romania in electronics (2017). His PhD thesis was entitled „Data acquisition and nonlinear processing – applications in imaging and complex experiments in physics”. He is a regular member of IEEE. His research interests include multivariate image processing and analysis (including color, multi-spectral and hyper-spectral), remotely-sensed satellite image analysis, data acquisition and processing, data fusion, digital hardware design, FPGA programming and ASIC design.



Prof. Mihai Ivanovici holds a PhD in electronics from Politehnica University of Bucharest, Romania. He is a full professor and has 15 years of experience in managing various research projects (funded by EU structural funds and the Romanian government, the Ministry of Education and Research or by Romanian private companies) and participating as researcher in national and international research projects (e.g. The ATLAS Experiment at LHC); he is the author of more than 50 scientific papers published in international conferences and journals. He is head of MIV Laboratory, within Department of Electronics and Computers, Transilvania University of Braşov, România and member of the IEEE Signal Processing and IEEE Geoscience and Remote Sensing societies. He is a member of the Reviewers Board for MDPI Remote Sensing journal. His research interest and expertise are in the field of colour, multispectral and hyperspectral image processing and analysis. Currently he is supervising PhD in the field of electronics, telecommunications and information technologies.



Md Zia Ullah is a Post-doctoral researcher in computer science at CNRS IRIT, France. He is currently working in EU H2020 Project PREVISION on machine learning applications and lectures data analytics at the Université Toulouse Capitole. He has received his PhD degree from the Toyohashi University of Technology (TUT), Japan in 2016. His research areas are IR, NLP, and applied ML. His research has focused on query performance prediction, adaptive information retrieval, statistical analysis of IR system components, social media analysis, search intent mining, deep learning-based histopathological image recognition, and developing the related tools. He has co-patented an adaptive IR technique and published his research outcomes in the International journals and conferences of his domain, including ACM Transactions on Information Systems (TOIS), ACM Transactions on Intelligent Systems and Technology (TIST), ACM SIGIR Conference on Research and Development in Information Retrieval, and IEEE Engineering in Medicine and Biology Society (EMBS). Moreover, he has actively participated in evaluation forums, including NTCIR Intent mining, TREC Microblog, CLEF ImageCLEF, and CLEF eHealth.



Nathalie Neptune is currently pursuing a Ph.D. degree in Computer Science with the Université Toulouse III, Paul Sabatier, in Toulouse, France. Her PhD thesis topic is on big data and geo data for sustainable development, spatial thinking and visualization. She received her MSc degree from the University Paul Sabatier. She was a Schlumberger Foundation Faculty for the Future fellow from 2017 to 2020. She has supervised master's student theses on satellite image processing and scientific text mining. During her PhD, she proposed a novel method to annotate satellite images showing changes in forests with words extracted from scientific publications

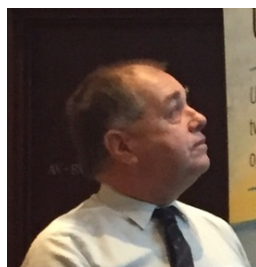
with the proof of concept developed using Python and Pytorch. Her research interests include multimodal data mining using deep learning approaches for environmental phenomena detection and monitoring.



Leonardo De Laurentiis (Graduate Student Member, IEEE) received the M.Sc. degree in computer science engineering (cum laude) from the Tor Vergata University of Rome, Rome, Italy, in 2017, where he is pursuing the Ph.D. degree (expected May 2021). In 2017 and 2019, he was with Jet Propulsion Laboratory, Pasadena, CA, USA, as a visiting researcher. He is an active reviewer for IEEE Transactions on Geoscience and Remote Sensing (TGRS) and Frontiers in Remote Sensing. His research interests involve machine learning and Synthetic Aperture Radar remote sensing.



Davide De Santis received the M.Sc. degree in Environmental Engineering (cum laude) from the Tor Vergata University of Rome (TVU) in 2017, where he is currently enrolled in the last year of the PhD program in Computer Science, Control and Geoinformation. In 2018 he won a scholarship at TVU and his activities were focused on environmental monitoring using satellite data. He attended the Earth Observation Summer School 2018 - Earth System Monitoring & Modelling - held in ESA-ESRIN, Frascati (Rome). He worked as “FabSpace Manager” of the first Italian FabSpace, located in TVU. He is co-lecturer at TVU for the lectures of “Image Processing Laboratory” within the “Remote Sensing and Cartography” course. His research interests mainly include optical remote sensing and machine learning. His current research activities are focused on atmosphere pollutants (e.g. Particulate Matter, Sulphur Dioxide) monitoring with EO data and Neural Networks.



Louis-Francois Pau is Professor at CBS, besides being Professor at Erasmus University (NL) (part-time), and CEO of Upgötva AB (SE). From 1995 till 2013 he was C.T.O of L.M.Ericsson’s worldwide Network systems division (all communications and Internet infrastructure) ,with about 16000 reports. Previously he was from 1990-1995, Technical Director Europe for Hewlett Packard with 2500 reports. He has also been tenured faculty at Danish Technical University (DK), E.N.S. Télécommunications (Paris), M.I.T. (Cambridge, Mass), and University of Tokyo. He is a Fellow of IEEE (USA), BCS (UK), JSPS (Japan). He is or has been on several standardization boards, incl. IEEE Standards Board, ETSI, OMG, Rapid IO and Java Consortium. He is associate editor of 5 academic journals, and has published over 450 articles, 9 books, 12 patents, and edited 12 volumes, spanning information and communication, physics, technology, aerospace, social aspects, regulations and standards.



Dr. Mihaela Voinea holds a PhD in Education Sciences from the University of Bucharest, Romania. She is an assistant professor at UTBv, in the Psychology, Education and Teacher Training Department and has more than 15 years of experience in the educational field. Her research interests focus on the field of teacher education, intercultural education and critical thinking. She was involved in various educational projects, funded by the Ministry of Education and Research as a researcher or a trainer (e.g. “Professionalization of the teaching career – new competences for the educational actors” “Reconstruction of the national curriculum in secondary education”; “The counselled student – an excellent future employee”) and in international projects (e.g., Evolution of reading in the age of digitisation -E-READ). She is the author of more than 50 scientific papers published in volumes of international conferences, journals and books (e.g. Critical Thinking and Postmodern School, 2007; Intercultural Education as “Meeting”

with Other People, 2014). She is involved as an educational specialist in the development of the new curricula for social education for second level and supervises methodical-scientific thesis for obtaining the first teaching degree. She has good teaching and training skills gained through professional experience, participating as a trainer and assessor in workshops or in Romanian private companies. She organized the international conference Contemporary Perspectives in Psychology, Education and Teacher Training (October, 2017) and held workshops on various topics of interest to teachers (Exercises for the Development of Excellence Skills in Teachers; Assessment Culture in the Romanian Educational System; Social Education - towards a New Ethics of the XXI Century). She was coordinator of Career counselling, information and guidance centre for students and head of Teacher Training Department. Currently she is head of the Department of Psychology, Education and Teacher Training at UTBv and member of national educational organizations.



Dr. Daniela V. Necșoi is assistant professor at Faculty of Psychology and Educational Sciences at UTBv. She holds a PhD in educational sciences from University of Bucharest, Romania. With an education in psychology and pedagogy, former teacher for primary school, expert evaluator of the quality in early and primary school education for European Centre of Education, Italy (CEIF Norm), she develops educational activities for in-service and prospective teachers from early and primary school, middle, and secondary school. She cooperates with many educational institutions, among others, Teaching-Staff Resource Centre of Brașov in creating and delivering professional continuous training programs for teachers. Her research interests gravitate around issues of educational management and methodology of teaching. She is the author and coauthor of 6 books and book chapters, over 25 articles published in scientific journals or international conferences proceedings and she was member in 4 research grants.