

PERSONAL INFORMATION

Nicolae CLEJU



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WORK EXPERIENCE

2012 – current **Associate Professor – “Gheorghe Asachi” Technical University of Iasi, Romania**
 Technical University „Gheorghe Asachi” of Iași, Romania
 Faculty of Electronics, Telecommunications and Information Technology
 Associate professor (2020 – current), lecturer (2017 – 2020), assistant professor (2012 – 2017)

- Research interests: signal processing, machine learning, optimization problems
- Lectures and application classes on Digital Signal Processing, Information Theory, C, Programming and others

2014 – 2022 **Deep Learning System Engineer | System Engineer | Software Engineer**
 Continental Automotive Romania (2019 – 2022, 2014-2018), OSRAM – Continental Romania (2018-2019)

- Machine learning for smart automotive applications
- Design and development of advanced algorithms for software components

EDUCATION AND TRAINING

2009 – 2012 **PhD degree, *summa cum laude***
 “Gheorghe Asachi” Technical University of Iasi, Romania

- Work on sparse signal models, compressed sensing of sparse signals, and efficient classification and signal processing of sparse data
- Thesis: “Contributions to signal processing using compressed sensing techniques” ([link](#))
- Awarded *Summa cum laude* honors

2007 – 2009 **MSc degree, Electronic Engineering**
 Swiss Federal Polytechnic Institute (EPFL), Lausanne Switzerland

2002 – 2007 **Diploma degree, Electronics and Telecommunications**
 “Gheorghe Asachi” Technical University of Iasi, Romania

- Valedictorian (ranked 1st)

PERSONAL SKILLS

Mother tongue(s) Romanian

| Other language(s) | UNDERSTANDING | | SPEAKING | | WRITING |
|-------------------|---------------|---------|--------------------|-------------------|---------|
| | Listening | Reading | Spoken interaction | Spoken production | |
| English | C2 | C2 | C2 | C2 | C2 |

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|--------|---|----|----|----|----|
| | TOEFL iBT March 2007: 114 points out of 120 | | | | |
| German | B1 | B2 | B2 | B1 | B1 |
| | "Zertifikat Deutsch" certificate, July 2006, Level B1 | | | | |
| French | B1 | B2 | B2 | B2 | B1 |

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

ADDITIONAL INFORMATION

Research projects (principal investigator)

- „Sparse Coding for Efficient Biomedical Signal Processing”
Postdoctoral CNCS – UEFISCDI project, project no. PN-III-P1-1.1-PD-2016-0127
Duration: 2018-2020.
- „Artificial Intelligence Tools in Biomedical Signal Processing”
Internal university grant, project no. TUIASI-GI-2018-0127
Duration: 2018-2019 (1 year).

Relevant articles

- I. B. Ciocoiu and N. Cleju, "Off-Person ECG Biometrics Using Spatial Representations and Convolutional Neural Networks," in *IEEE Access*, vol. 8, pp. 218966-218981, 2020, Q1
- N. Cleju, "Optimized projections for compressed sensing via rank-constrained nearest correlation matrix", *Applied and Computational Harmonic Analysis*, vol. 36, no. 3, pp. 495-507, 2014, Q1
- N. Cleju, N. Thomos, P. Frossard, "Selection of network coding nodes for minimal playback delay in streaming overlays", *IEEE Transactions on Multimedia*, vol. 13, no. 5, pp. 1103-1115, 2011, Q1
- N. Cleju, I. Ciocoiu, "Spectrum Insensitive Sparse Recovery with Iterative Affine Projections", *Proc. 27th European Signal Processing Conference EUSIPCO 2019*, 2019, A Coruna, Spain, pp.1-4, ISBN 978-9-0827-9702-2
- N. Cleju, M. Jafari, and M. D. Plumbley, "Analysis-based sparse reconstruction with synthesis-based solvers", *Proc. International Conference on Acoustics, Speech and Signal Processing ICASSP 2012*, Kyoto, Japan, pp. 5401-5404, 2012

Books

- „Advanced signal processing : sparse coding and applications“, Nicolae Cleju, ed. Tehnopress, 2019 (in English). ISBN 978-606-687-390-1
- „Tehnici de compresie a semnalelor multimedia (Îndrumar de laborator)“, (in Romanian), Nicolae Cleju, ed. Politehniun, Iasi, 2016, ISBN 978-973-621-456-1

Publications

Journal articles

- [1] I. B. Ciocoiu and N. Cleju, "Off-Person ECG Biometrics Using Spatial Representations and Convolutional Neural Networks," in *IEEE Access*, vol. 8, pp. 218966-218981, 2020, Q1
- [2] N. Cleju, "Optimized projections for compressed sensing via rank-constrained nearest correlation matrix," *Applied and Computational Harmonic Analysis*, vol. 36, pp. 495-507, 2014, Q1
- [3] M. Fira, G. Liviu, N. Cleju and C. Barabasa, "On the Projection Matrices Influence in the Classification of Compressed Sensed ECG Signals," *International Journal of Advanced Computer Science and Applications*, vol. 3, 8 2012.
- [4] N. Cleju, N. Thomos and P. Frossard, "Selection of network coding nodes for minimal playback delay in streaming overlays," *IEEE Transactions on Multimedia*, vol. 13, pp. 1103-1115, 2011, Q1
- [5] M. Fira, L. Goraş, C. Barabasa and N. Cleju, "On ECG compressed sensing using specific overcomplete dictionaries," *Advances in Electrical and Computer Engineering*, vol. 10, pp. 23-28, 2010.
- [6] D. M. Dobrea, N. Cleju, A. T. Sechelea and A. Banar, "Mobile accident warning system - the LoRD," *Scientific Bulletin of The "POLITEHNICA" University of Timisoara*, Vols. 49, fasc.2, pp. 354-359, 2004.

Conference proceedings

- [1] N. Cleju, "Variational Convolutional Sparse Coding with Learned Thresholding," in *ISSCS 2023 - International Symposium on Signals, Circuits and Systems*, 2023.
- [2] N. Cleju, "Unrolled Null Space Tuning dictionary learning for denoising," in *ISSCS 2021 - International Symposium on Signals, Circuits and Systems*, 2021.
- [3] N. Cleju and I. B. Ciocoiu, "Spectrum insensitive sparse recovery with iterative affine projections," in *European Signal Processing Conference EUSIPCO*, 2019.
- [4] I. B. Ciocoiu and N. Cleju, "Off-the-person ECG biometrics using convolutional neural networks," in *ISSCS 2019 - International Symposium on Signals, Circuits and Systems*, 2019.
- [5] N. Cleju and I. Ciocoiu, "Fusion of orthogonal matching pursuit and least squares pursuit for robust sparse recovery," in *ISSCS 2019 - International Symposium on Signals, Circuits and Systems*, 2019.
- [6] C. F. Caruntu, L. Ferariu, C. Pascal, N. Cleju and C. R. Comsa, "Connected cooperative control for multiple-lane automated vehicle flocking on highway scenarios," in *2019 23rd International Conference on System Theory, Control and Computing, ICSTCC 2019 - Proceedings*, 2019.
- [7] C. F. Caruntu, L. Ferariu, C. M. Pascal, N. Cleju and C. R. Comsa, "A Concept of Multiple-lane Vehicle Grouping by Swarm Intelligence * ," in *IEEE International Conference on Emerging Technologies and Factory Automation, ETFA*, 2019.
- [8] N. Cleju, "Least Squares Pursuit for sparse signal recovery," in *ISSCS 2017 - International Symposium on Signals, Circuits and Systems*, 2017.
- [9] N. Cleju, "Sparse signal recovery with additional ℓ_2 null space constraint," in *ISSCS 2015 - International Symposium on Signals, Circuits and Systems*, 2015.
- [10] N. D. Alexandru and N. Cleju, "Implementation considerations regarding improved Nyquist filters," in *International Conference on Electronics, Computers and Artificial Intelligence (ECAI) 2013*, 2013.
- [11] N. Cleju, "A generalization of analysis and synthesis sparsity," in *Proc. International Symposium on Signals, Circuits and Systems (ISSCS) 2013*, 2013.

- [12] M. Fira, L. Goras, N. Cleju and C. Barabasa, "Results on ECG Compressed Sensing using Specific Dictionaries and its Validation," in *Proc. 34th International Conference on Information Technology Interfaces (ITI) 2012*, 2012.
- [13] N. Cleju, M. Jafari and M. D. Plumbley, "Choosing Synthesis or Analysis Recovery for Sparse Reconstruction," in *Proc. 20th European Signal Processing Conference EUSIPCO 2012*, 2012.
- [14] N. Cleju, M. G. Jafari and M. D. Plumbley, "Analysis-based sparse reconstruction with synthesis-based solvers," in *Proc. IEEE International Conference on Acoustics, Speech and Signal Processing ICASSP 2012*, 2012.
- [15] N. Cleju, C. M. Fira, C. Barabasa and L. Goras, "Robust reconstruction of compressively sensed ECG signals," in *Proc. International Symposium on Signals, Circuits and Systems ISSCS 2011*, 2011.
- [16] M. Fira, L. Goras, N. Cleju and C. Barabasa, "On the classification of compressed sensed signals," in *Proc. International Symposium on Signals, Circuits and Systems ISSCS 2011*, 2011.
- [17] C. M. Fira, L. Goras, C. Barabasa and N. Cleju, "ECG compressed sensing based on classification in compressed space and specified dictionaries," in *Proc. 20th European Signal Processing Conference EUSIPCO 2011*, 2011.
- [18] M. Fira, L. Goras, N. Cleju and C. Barabasa, "On the Possibilities of ECG Signals Compressed Sensing," in *Proc. 6th European Conference on Intelligent Systems and Technologies ECIT 2010*, 2010.
- [19] N. Cleju, N. Thomos and P. Frossard, "Network Coding Node Placement for Delay Minimization in Streaming Overlays," in *Proc. IEEE International Conference on Communications ICC 2010*, 2010.

Iași, 22 august 2023

dr.ing. Nicolae Cleju