



## Gergő Bognár

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### WORK EXPERIENCE

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#### assistant professor

*Department of Numerical Analysis, Faculty of Informatics, ELTE Eötvös Loránd University* [ 2020 – Current ]

City: Budapest

Country: Hungary

#### postdoctoral researcher

*JKU LIT SAL eSPML Lab, Institute of Signal Processing, Johannes Kepler University* [ 2020 – 2021 ]

City: Linz

Country: Austria

#### assistant lecturer

*Department of Numerical Analysis, Faculty of Informatics, ELTE Eötvös Loránd University* [ 2017 – 2020 ]

City: Budapest

Country: Hungary

### EDUCATION AND TRAINING

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#### PhD degree (summa cum laude)

*ELTE Eötvös Loránd University* [ 2020 ]

Address: Budapest (Hungary)

Thesis title: "Biomedical image and signal processing by means of transformation methods"

#### PhD in Computer Science

*ELTE Eötvös Loránd University* [ 2014 – 2017 ]

Address: Budapest (Hungary)

#### MSc in Computer Science

*ELTE Eötvös Loránd University* [ 2012 – 2014 ]

Address: Budapest (Hungary)

#### BSc in Computer Science

*ELTE Eötvös Loránd University* [ 2008 – 2012 ]

Address: Budapest (Hungary)

### LANGUAGE SKILLS

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Mother tongue(s): **Hungarian**

Other language(s):

#### English

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

#### German

LISTENING B1 READING B1 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

## PUBLICATIONS

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### Publications

- G. Bognár. "Image quality measurement for low-dose human lung CT scans." *38th Int. Conf. Telecom. Sign. Proc. (TSP)*. 2015, 587–591.
- G. Bognár. "A No-Reference Image Quality Metric with Application in Low-Dose Human Lung CT Image Processing." *Int. J. Adv. Telecom. Elect. Sign. Syst.* 5.1 (2016), 1–7.
- G. Bognár, S. Fridli, P. Kovács and F. Schipp. "Adaptive Rational Transformations in Biomedical Signal Processing." *Progress in Industrial Mathematics at ECMI 2018*. Eds. S. Péter et al. Springer, Cham, 2019, 239–247.
- G. Bognár and S. Fridli. "Heartbeat Classification of ECG Signals Using Rational Function Systems." *Computer Aided Systems Theory – EUROCAST 2017. Lecture Notes in Computer Science, vol. 10672*. Eds. R. Moreno-Díaz et al. Springer, Cham, 2018, 187–195.
- G. Bognár and S. Fridli. "ECG Segmentation by Adaptive Rational Transform." *Computer Aided Systems Theory – EUROCAST 2019. Lecture Notes in Computer Science, vol. 12014*. Eds. R. Moreno-Díaz et al. Springer, Cham, 2020, 347–354.
- G. Bognár and S. Fridli. "On the Pole Stability of Rational Approximation." *Ann. Univ. Sci. Budapest., Sect. Comp.* 49 (2019), 35–51.
- G. Bognár and F. Schipp. "Geometric interpretation of QRS complexes in ECG signals by rational functions." *Ann. Univ. Sci. Budapest., Sect. Comp.* 47 (2018), 155–166.
- T. Dózsa, G. Bognár and P. Kovács. "Ensemble learning for heartbeat classification using adaptive orthogonal transformations." *Computer Aided Systems Theory – EUROCAST 2019. Lecture Notes in Computer Science, vol. 12014*. Eds. R. Moreno-Díaz et al. Springer, Cham, 2020, 355–363.
- G. Bognár and S. Fridli. "ECG Heartbeat Classification by Means of Variable Rational Projection." *Biomed. Sign. Process. Control* 61 (2020), 102034.
- P. Kovács, G. Bognár, C. Huber, and M. Huemer. "VPNet: Variable Projection Networks." *Int. J. Neural Syst.* 32.01 (2022), 2150054.
- S. Baumgartner, G. Bognár, O. Lang, and M. Huemer. "Neural Network Based Data Estimation for Unique Word OFDM." *2021 55th Asilomar Conference on Signals, Systems, and Computers*, 2021, 381–388.
- G. Bognár, S. Baumgartner, O. Lang, and M. Huemer. "Neural Network Optimal UW-OFDM." *2021 55th Asilomar Conference on Signals, Systems, and Computers*, 2021, 389–394.
- T. Dózsa, C. Böck, G. Bognár, J. Meier, and P. Kovács. "Color classification of visually evoked potentials by means of Hermite functions." *2021 55th Asilomar Conference on Signals, Systems, and Computers*, 2021, 251–255.

## JOB-RELATED SKILLS

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### Job-related skills

- Research skills (independently and as part of a team), experience in industrial research projects
- University teaching and mentoring skills
- Good command of mathematical analysis, numerical methods, signal and image processing techniques, computer graphics and GPU computing (CUDA, OpenGL, OpenCL), machine learning
- Advanced user of MATLAB, experienced in C/C++, Delphi/Pascal, Java, Python
- Programming methodologies and software development skills
- Good command of information technologies (system, network, database management, web development)

## RESEARCH INTEREST

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### Research interest

- Signal and image processing
- Biomedical signal processing (CT, ECG, EEG)
- Noise modelling, measurement, and removal
- Mathematical model based computer simulations
- Adaptive transformation methods
- Time and frequency domain representations, feature extraction
- Machine learning for classification and cluster analysis
- Model-based and knowledge-augmented neural networks