PERSONAL INFORMATION   Botond Molnár

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WORK EXPERIENCE

07/06/2018–Present   ### Physicist
Transylvanian Institute of Neuroscience
Timotei Cipariu Sq. 9, 400191 Cluj-Napoca (Romania)
www.tins.ro

25/04/2018–Present   ### Research assistant
Faculty of Physics, Babeș-Bolyai University
M. Kogălniceanu 1, 400084 Cluj-Napoca (Romania)
www.phys.ubbcluj.ro

28/09/2017–Present   ### Teaching assistant
Faculty of Mathematics and Computer Science, Babeș-Bolyai University
M. Kogălniceanu 1, 400084 Cluj-Napoca (Romania)
www.cs.ubbcluj.ro

01/01/2016–31/03/2018   ### Physicist
Romanian Institute of Science and Technology
str. Cireșilor nr. 29, 400487 Cluj-Napoca (Romania)
www.rist.ro

01/11/2011–31/10/2014   ### Research assistant
Faculty of Physics, Babeș-Bolyai University
str. Mihail Kogălniceanu nr. 1, 400084 Cluj-Napoca (Romania)
www.ubbcluj.ro

21/02/2011–21/11/2011   ### Software engineer
FRSGlobal Romania SRL. - a Wolters Kluwer Financial Services Company
Brâncuși Street 74-76, Cluj-Napoca (Romania)
www.frsglobal.com

10/2009–11/2010   ### Software developer
SC. eMedWare SRL.
Onisifor Ghibu street 14, Cluj-Napoca (Romania)
www.emedware.eu

09/01/2009–20/06/2009   ### Box Officer
SC. Odeon Cineplex SRL.
Maria Rosetti street 49A, 3rd floor, Bucharest, Cluj-Napoca (Romania)

www.odeoncineplex.ro

EDUCATION AND TRAINING

2011–21/10/2016	**PhD**

Babeș-Bolyai University, Cluj-Napoca (Romania)

Continuous-Time Dynamical Systems for Solving Constraint Satisfaction Problems

Scientific conductor: Dr. Prof. Zoltán Néda
Scientific advisor: Dr. Mária Ercsey-Ravasz

2008–2010	**Master in Physics**

Babeș-Bolyai University, Cluj-Napoca (Romania)

Correlation clustering on frustrated networks studied with a stochastic renormalization method
Scientific conductor: Dr. Prof. Zoltán Néda

2005–2008	**Bachelor's degree in Physics**

Babeș-Bolyai University, Cluj-Napoca (Romania)

Optimal clusterization of frustrated networks studied with a stochastic renormalization method
Scientific conductor: Dr. Prof. Zoltán Néda

1993–2005	**Baccalaureate exam**

"Székely Mikó" Secondary School, Sfântu Gheorghe (Romania)

Specialization in Mathematics and Computer Science

2001–2004	**Piano player degree**

School of folk arts, Sfântu Gheorghe (Romania)

- piano playing techniques
- general music theory
- general music history

PERSONAL SKILLS

Mother tongue(s)   Hungarian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
Romanian	C2	C2	C2	C2	C2
English	C2	C2	C2	C2	C2
German	C2	C2	B2	B1	B2
Chinese	A2	B1	A1	A2	B1
French	A2	A2	A1	A1	A2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Organisational / managerial skills   Leadership: from 2008 acting as a musical director of the Visszhang Students' Choir and Symphony Orchestra which has around 70-80 member

Organization skill gained during the school years when we were organizing several cultural events, like theater performances, exhibitions and continued in the Visszhang Cultural Association organizing cultural events, concerts, tours of the Visszhang Students' Choir and Symphony Orchestra and international collaborations, choir festivals.

Job-related skills	Teaching experience

Starting from 2011 - Electricity and magnetism, seminar, Faculty of Physics, Babeș-Bolyai University

Starting from 2014 - Introduction in programming, laboratory, Faculty of Mathematics and Computer Science, Babeș-Bolyai University

Starting from 2015 - Operating systems, laboratory, Faculty of Mathematics and Computer Science, Babeș-Bolyai University

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem-solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Digital skills - Self-assessment grid

Operating systems: MS-DOS, Windows family, Linux, Mac OS X

Programming languages: C, C++, C#, VB, Java, JavaScript, ActionScript, Mono, Fortran

Developer tools: XCode, Microsoft Visual Studio, Eclipse, Geany, MonoDevelop, MatLab, Wolfram Mathematica,

Hardware knowledge: advanced hardware knowledge (assemble, disassemble, troubleshooting, repairs)

Network/Infrastructure: HTTP, TCP/IP, infrastructure knowledge (building, configuring, troubleshooting, repairs)

Database: Access, MySQL, ORACLE

Multimedia: Avid Sibelius, Adobe Creative Suite, Corel Suite, Propellerhead Reason, Steinberg Cubase, Steinber Nuendo, 3DSMax

Web programming: HTML, CSS, JavaScript, angularJS, JQuery, XML, DOM, PHP

Other: SVN, FireBug, SeleniumHQ

ADDITIONAL INFORMATION

Publications

1.   **Molnár, B.**, Molnár, F., Varga, M., Toroczkai, Z. and Ercsey-Ravasz, M. (2018) *A continuous-time MaxSAT solver with high analog performance*, Nature Communcations, DOI: 10.1038/s41467-018-07327-2

2.   Sumi, R., **Molnár, B.** and Ercsey-Ravasz, M. (2014) *Robust optimization with transiently chaotic dynamical systems*, European Physics Letters, 106(4), DOI: 10.1209/0295-5075/106/40002

3.   **Molnár, B.** and Ercsey-Ravasz, M. (2014), *Analog dynamics for solving max-SAT problems*, 14th Int. Workshop on Cellular Nanoscale Networks and their Applications (CNNA), DOI:10.1109/CNNA.2014.6888597

4.   **Molnár, B.,** Sumi, R. and Ercsey-Ravasz, M. (2014), *A CNN SAT-solver robust to noise*, 14th Int. Workshop on Cellular Nanoscale Networks and their Applications (CNNA), DOI:10.1109/CNNA.2014.6888596

5.   **Molnár, B.** and Ercsey-Ravasz, M. (2013) *Asymmetric Continuous-Time Neural Networks without Local Traps for Solving Constraint Satisfaction Problems*, PLoS ONE, 8(9), DOI:10.1371/journal.pone.0073400

6.   **Molnár, B.**, Toroczkai, Z. and Ercsey-Ravasz, M. (2012), *Continuous-time Neural Networks Without Local Traps for Solving Boolean Satisfiability*, 13th Int. Workshop on Cellular Nanoscale Networks and their Applications (CNNA), DOI:10.1109/CNNA.2012.6331411

7.   Néda, Z., Sumi, R., Ercsey-Ravasz, M, Varga, M., **Molnár B.** and Cseh, Gy. *Correlation clustering on networks,* Journal of Physics A: Math. Theor. 42 (2009) 345003,   DOI:10.1088/1751-

8113/42/34/345003

Projects	SyBil-AA Horizon 2020

Modeling and validating disease state networks in human and animal brains for understanding pathophysiology, predicting outcomes and improving therapy

Project manager: Dr. Raul Mureșan

Starting Research Grant of the Romanian Goverment

Abordarea problemelor de optimizare prin sisteme dinamice cu timp continuu: dificultatea optimizarii ca haos transient

Project manager: Dr. Mária Ercsey-Ravasz

Conferences	2014 talk at the **14th IEEE CNNA2014** conference in Notre Dame, IN, USA

2012 talk at the **13th IEEE CNNA2012** conference in Torino, Italy

2010 plenary talk at the **3rd Yalta Optimization Conference** in Yalta, Ukraine

2009 Special Prize in **Complex Systems Physics Section of the 29th National Students' Scientific Conference** in Szombathely, Hungary

2008 presentation at the **Rodosz Conference** in Cluj

2008 presentation at the **Fall Scientific Conference organized by the Science Department of Transylvanian Museum Society** in Cluj

2008 1st prize in **Physics Section of the 11th Transylvanian Students' Scientific Conference** in Cluj

2008 presentation at the **Eötvös Conference** in Budapest, Hungary

2007 presentation at the **Fall Scientific Conference organized by the Science Department of Transylvanian Museum Society** in Cluj

2007 presentation on the „**Körmöczi János" Physics Day** in Cluj

2007 presentation at the **Physics Department of Hungarian University Federation of Cluj**

2007 Special prize in **Pedagogy Section of the 10th Transylvanian Students' Scientific Conference**

2004 presentation at the **Physics Department of Hungarian University Federation of Cluj**

Other Scientific Achievements	2014 summer school at **GEFENOL, IFISC on Statistical Physics of Complex and Small Systems**, Palma de Mallorca, Spain

2013 scientific visit at **Beth Israel Deaconess Medical Center – A teaching hospital of Harvard Medical School, Boston, MA, USA**

2013 scientific visit at **University of Notre Dame, IN, USA**

2013 scientific visit at **Pázmány Péter Catholic University, Budapest, Hungary**

2012 scientific visit at **University of Notre Dame, IN, USA**

2009 summer school at **IPP Summer University on Plasma Physics and Fusion Research** in *Max Planck Institut*, Greifswald, Germany

2007 professional practice at the **Atomic Power Plant**, at Paks, Hungary

2005 scientific visit at **CERN** (Geneva, Switzerland), **ILL** and **ESRF** (Grenoble, France)

Memberships	2008-2009 member of **Physics Department of Hungarian University Federation of Cluj**

2007-2008 member of **Pedagogy Department of Hungarian University Federation of Cluj**

2007-2008 member of **Physics Department of Hungarian University Federation of Cluj**
2006-2007 member of **Physics Department of Hungarian University Federation of Cluj**

2006-2007 member of **Pedagogy Department of Hungarian University Federation of Cluj**