CURRICULUM VITAE (May 2017)

Name (Last First Middle, degrees): Farkas Illés József, PhD, DSc & Habil.
Born: 1977. Married, two children (born 2010 and 2013).
Position: Scientific advisor at the Hungarian Academy of Sciences & Eötvös Univ.
LinkedIn: http://linkedin.com/in/illesfarkas, **GitHub:** http://github.com/fij
Home: http://hal.elte.hu/fij, **Google Scholar:** http://goo.gl/trcz4, **Referee ID**: 420824.
Degrees: PhD 2004, D.Sc. (Dr. of the Hun. Acad. of Sci.) 2016, Habilitation 2017

Education
2004, PhD Eötvös University, Physics, Title: *Random graphs in life*, Advisor: T. Vicsek
2000, MSc Eötvös University, Biophysics & Statistical Physics, Advisor: T. Vicsek

Languages (scale: A1-A2-B1-B2-C1-C2-Native)
English C2, German C2, Hungarian N, Chinese B1 (HSK4, HSKK 初级), Russian A2

Employment history
2009–2017.06, Senior res. associate, Scientific advisor at the HAS (Hun. Acad.of Sci.)
2003 and 2004–2008, Research assistant and Research associate at the HAS

Professional visits (1 month or longer), host scientist(s) and length
2016.Oct. Huazhong Univ of Sci and Techn, Wuhan, PRC, 张海涛 (H-T Zhang), 1 month
2011.07.01–2012.06.30, UCSF, C. Tang & W. A. Lim, 12 months
2005, Medical School, University of Pittsburgh, Z.-N. Oltvai, 3 months
2001 & 2002, Medical School, Northwestern University (Chicago), Z.-N. Oltvai, 8m & 1m
2000, University of Notre Dame (USA), A.-L. Barabasi, 1 month
1999, Universität Stuttgart, Germany, D. Helbing, 4 months

Teaching activity – Since '05: Perl (currently: Python) programming and Network models
- *Webpage:* course description, homework, solutions (code): http://hal.elte.hu/fij/python
- *Contains:* programming and mathematics tools for computational biology and physics
- *Purpose:* teaching interactively data-centric scientific programming and network models
- *Method:* coding together (students and teacher), deriving formulae, weekly homework

Professional skills (hyperlinks in the text show examples)
- Large-scale numerical algorithms for collective motion, e.g., pedestrian panic
- Computing graph spectra: eigenvalue / eigenvector pairs inside large graphs' spectra
- Identification of overlapping modules in social and molecular biological networks
- Compiling & searching tables listing information (e.g., names) of biomolecules
- Setting up, maintenance of and support for scientific software and web servers
- Programming: Perl and Python (teaching), C (fluent), used also: C++, JS, Java, PHP

Service Referee page: https://publons.com/a/420824
- Referee for Scientific Reports, PNAS, PLoS Computational Biology, PLoS ONE, Bioinformatics, Physical Review Letters, Physica A (**Excellence** in Reviewing 2013), New Journal of Physics, Europhysics Letters, Physical Review E.
- PhD thesis committee member (topics: protein-protein networks, social networks)
- Subject specialist reader of 2 **book translations**: Linked, Network Science Textbook.

Independent scientific thinking
- Senior author of the following publications (see publication list below): *Bioinformatics* (2009), *National Science Review* (2014), *Physical Review E* (2015).
- **Presentations:** ~15 conference talks (2 invited) and ~25 invited international seminars.
- 1-line questions on science and innovation: http://hal.elte.hu/fij/n.

Industrial innovation

2008, I am a small **co-founder** of the **start-up company** Maven Seven Network Research Ltd. (http://maven7.com), an internationally acclaimed innovator in organisational networks. **My contribution:** biomedical & social network analysis. News about the 2nd round of Venture Capital funding: http://goo.gl/ME9wzQ.

Registered intellectual property

I am a **participant** on this registered item: 2007.02.08, Hungarian Patent Office, Voluntary Register of Intellectual Property, Registration Number 000176, Document ID: Y0700022/1. Software algorithm for identifying overlapping **modules in networks**.

Publications

Summary of scientific publication activity – Statistics as of May 4, 2016

Research papers: **29** (first author on 10, last author on 1)
Review/Preview papers: **4** (first author on 3, last author on 1)
Cumulated impact factor of peer-reviewed papers: **157** (reviews with 1/3 multiplier)
In the Web of Science the average citation number per publication is **above 100**.
Book chapters: **3**. Popular science papers: **8**

		Web of Science	MTMT [1,,2]	Google Scholar [2]
Number of publications		29	57	48
Total citation number	All	4383	5995	10392
	Independent		5782	
Average citation number per publication	All citations	151.1	105.2	175.2
	Independent		101.4	
H index	All citations	18	19	23

List of publications (reverse time order), Citation counts (excluding self-citations)

The table below lists **independent citation numbers** (marked "IndepCit") from MTMT[1,2]. I have found no method for exporting all independent citation counts from the Web of Science or Google. A few journal names and citation numbers above 50 are highlighted. At papers **where I am not first or last** author, **my contribution** is explained.

Review publications
Szántó-Várnagy A, Pollner P, Vicsek T, Farkas I J. Scientometrics: Untangling the topics. *National Science Review (Oxford J.)* **1**, 343 (2014) ABS PDF IF:– IndepCit:–
Farkas I J, 9 co-authors, Csermely P. Network-based tools in the identification of novel drug targets. *Science Signaling* **4**, pt3 (2011) ABS PDF IF:7.6 IndepCit:34
Farkas I J, Beg Q K, Oltvai Z N. Exploring transcriptional regulatory networks in the worm. *Cell* **125**, 1032 (2006) ABS PDF IF:33.1 IndepCit:–. This is a preview paper.
Farkas I, Derényi I, Palla G, Vicsek T. Equilibrium statistical mechanics of network structures. *Lecture Notes in Physics* **650**, 163 (2004) ABS PDF IF:– IndepCit:25
Journal articles
Orosz K, Farkas I J, Pollner P. Quantifying the changing role of past publications. *Scientometrics* (2016) ABS PDF IF:2.2 IndepCit:–. Contribution: Concept, writing.
Farkas I J, Kun J, Jin Y, He G, Xu M. Keeping speed and distance for aligned motion. *Phys. Rev. E* **91**, 012807 (2015) ABS PDF IF:2.3 IndepCit:–

[1] MTMT (http://www.mtmt.hu) is the scientific publication and citation tracking database of the Hungarian Academy of Sciences.
[2] Note that MTMT and Google Scholar both include book chapters, while the Web of Science does not.

Xu M, Wu Y, Ye Y, Farkas I, Jiang H, Deng Z. Collective Crowd Formation Transform with Mutual Information–Based Runtime Feedback. *Comput. Graph. Forum* **34**, 60 (2015) ABS PDF IF:1.6 IndepCit:–. Contribution: Concept, modelling.
Fazekas D, 11 co-authors (incl. Farkas I J), Csermely P. SignaLink 2 – a signaling pathway resource with multi-layered regulatory networks. *BMC Syst. Biol.* **7**, 7 (2013) ABS PDF IF:2.9 IndepCit:20. Contribution: debugging, documentation, advising first author student. Science Signaling Netwatch | Perspective in PLoS Comput. Biol.
Farkas I J, Szántó-Várnagy A, Korcsmáros T. Linking proteins to signaling pathways for experiment design and evaluation. *PLoS ONE* **7**, e36202 (2012) ABS PDF IF:3.5 IndepCit:6. Web service with FAQ, API and downloads: http://PathwayLinker.org
Korcsmáros T, 7 co-authors (incl. Farkas I J), Vellai T. Signalogs: orthology-based identification of novel signaling pathway components … . *PLoS ONE* **6**, e19240 (2011) ABS PDF IF:3.5 IndepCit:11. Contribution: Statistics, website, concept, manuscript.
Korcsmáros T *, Farkas I J * (*: joint first authors), 7 co-authors, Csermely P. Uniformly curated signaling pathways reveal tissue-specific cross-talks and support drug target discovery. *Bioinformatics* **26**, 2042 (2010) ABS PDF SUPPL IF:4.6 IndepCit:32 Web service: SignaLink 1.0 (updated in 2013 to 2.0): http://SignaLink.org.
Boross G, Orosz K, Farkas I J. Human microRNAs co-silence in well-separated groups and … . *Bioinformatics* **25**, 1063 (2009) ABS PDF SUPPL IF:4.6 IndepCit:15.
Palla G, Farkas I J, Pollner P, Derényi I, Vicsek T. Fundamental statistical features and self-similar… . *New Journal of Physics.* **10**, 123026 (2008) ABS PDF DATA IF:3.7 IndepCit:21. Contribution: constructing and computing statistics of tagged networks.
Pollner P, 5 co-authors (incl. Farkas I J), Vicsek T. Centrality properties of directed module members in social networks. *Physica A* **387**, 4959 (2008) ABS PDF IF:1.7 IndepCit:8. Contribution: collecting social networks, applying centrality methods.
Palla G, Farkas I J, Pollner P, Derényi I, Vicsek T. Directed network modules. *New J. Phys.* **9**, 186 (2007) ABS PDF DATA IF:3.7 IndepCit:52. Contribution: algorithm with co-authors; computed link density of directed k-clique percolation transition.
Farkas I J, Ábel D, Palla G, Vicsek T. Weighted network modules. *New Journal of Physics.* **9**, 180 (2007) ABS PDF IF:3.7 IndepCit:71.
Farkas I J, 3 co-authors, Oltvai Z N. Topological basis of signal integration in the transcriptional-… . *BMC Bioinf.* **7**, 478 (2006) ABS PDF SUPPL IF:2.7 IndepCit:19.
Farkas I J, Vicsek T. Initiating a Mexican wave: an instantaneous collective decision with both … . *Physica A* **369**, 830 (2006) ABS PDF+SUPPL IF:1.7 IndepCit:1
Adamcsek B, Palla G, Farkas I J, Derényi I, Vicsek T. CFinder: Locating cliques and overlapping modules in biological networks. *Bioinformatics* **22**, 1021 (2006) ABS PDF IF:4.6 IndepCit:357. Free software: http://CFinder.org. Contribution: writing the manuscript, protein name conversion, functional analysis of modules.
Palla G, Derényi I, Farkas I, Vicsek T. Uncovering the overlapping community structure of complex networks in nature and society. *Nature* **435**, 814 (2005) ABS PDF SUPPL Free software. IF:42.4 IndepCit:1980. Contribution: compiling networks from raw data, Gene Ontology–based function analysis, visualisation of network modules.
Palla G, Farkas I, Derényi I, Barabási A L, Vicsek T. Reverse engineering of linking preferences from network restructuring. *Phys. Rev. E* **70**, 046115 (2004) ABS PDF IF:2.3 IndepCit:2. Contribution: numerical simulation of network models.
Derényi I, Farkas I, Palla G, Vicsek T. Topological phase transitions of random networks. *Physica A* **334**, 583 (2004) ABS PDF IF:1.7 IndepCit:20. Contribution: measuring the transition point of graphs at several noise levels (temperatures).

Palla G, Derényi I, Farkas I, Vicsek T. Statistical mechanics of topological phase transitions in networks. *Phys. Rev. E* **69**, 046117 (2004) ABS PDF IF:2.3 IndepCit:40. Contribution: numerical detection of first-order transitions in network topologies.

Farkas I, Helbing D, Vicsek T. Human waves in stadiums. *Physica A* **330**, 18 (2003) ABS PDF IF:1.7 IndepCit:12.

Farkas I, Jeong H, Vicsek T, Barabási A L, Oltvai ZN. The topology of the transcription regulatory network in the yeast, *Saccharomyces cerevisiae*. *Physica A* **318**, 601 (2003) ABS B/W PDF COLOR PDF SUPPL IF:1.7 IndepCit:72.

Farkas I, 5 co-authors, Barabási A L, Vicsek T. Networks in life: scaling properties and eigenvalue spectra. *Physica A* **314**, 25 (2002) ABS PDF IF:1.7 IndepCit:47.

Farkas I, Helbing D, Vicsek T. Social behaviour: Mexican waves in an excitable medium. *Nature* **419**, 131 (2002) ABS PDF Website IF:42.4 IndepCit:63.

Farkas I J, Derényi I, Barabási A L, Vicsek T. Spectra of "real-world" graphs: Beyond the semicircle law. *Phys. Rev. E* **64**,026704 (2001) ABS PDF IF:2.3 IndepCit:271.

Helbing D, Molnar P, Farkas I J, Bolay K. Self-organizing pedestrian movement. *Env. Plan. B: Plan. & Design* **28**, 361 (2001) ABS PDF Source code IF:1.7 IndepCit:316. Contribution: Writing C code analysing and visualising trails and pedestrian crossing.

Helbing D, Farkas I, Vicsek T. Simulating dynamical features of escape panic. *Nature* **407**, 487 (2000). ABS PDF | Nature front cover image | Nature News & Views | Webpage and Simulations. IF:42.4 IndepCit:1755. Contribution: implementing the numerical integration of the equations of motion (90%), visualising results (80%).

Helbing D, Farkas I J, Vicsek T. Freezing by heating in a driven mesoscopic system. *Phys. Rev. Lett.* **84**, 1240 (2000) ABS PDF Nature News & Views. IF:7.7 IndepCit:217. Contribution: writing C code, systematically exploring parameter space.

Vicsek T, Czirók A, Farkas I J, Helbing D. Application of statistical mechanics to collective motion in biology. *Physica A* **274**, 182 (1999) ABS PDF IF:1.7 IndepCit:42. Contribution: modelling collective motion in an M.Sc. student project.

Kemény T, 6 co-authors (incl. Farkas I), Vincze I. Inter-grain coupling in nanocrystalline soft magnets. *J. Phys.: Cond. Mat.* **10**, L221 (1998) ABS PDF IF:2.2 IndepCit:10. Contribution: magnetization measurements in a B.Sc. student project.

Book chapters

Pálfy M, Farkas I J, Vellai T, Korcsmáros T. Uniform curation protocol of metazoan signaling pathways to predict novel signaling components. *Methods Mol. Biol.* **1021**, 285 (2013) ABS PDF IF:1.3 IndepCit:–. Contribution: setting detailed rules of manual curation protocol (50%), pathway membership prediction (10%).

Helbing D, Farkas I J, Vicsek T. Crowd disasters and simulation of panic situations. Pages 334-354 in: Bunde A, et.al. (Editors). The Science of Disasters (Springer, Berlin, 2002) ABS Page 1 IF:– IndepCit:–. Contribution: numerical modelling of collective motion in panic situations.

Conference proceedings

Korcsmáros T *, Farkas I J * (*: joint first), 7 co-authors, P Csermely. A signaling pathway resource for cross-talk analysis. FEBS Protein Modules Workshop 2011.

Farkas I J, Vicsek T. Patterns in the Collective Behavior of Humans. Pages 1-15 in Marro J (Editor): AIP Conference Proceedings no. 779 (2005) ABS IF:– IndepCit:2

Helbing D, Farkas I J, Molnár P, Vicsek T. Simulation of pedestrian crowds in normal and evacuation situations. Pages 21-58 in Schreckenberg M, Sharma SD (Editors) Pedestrian and Evacuation Dynamics (Springer, 2002) ABS PDF IF:– IndepCit:212. Contribution: simulation of evacuation scenarios and their quantitative evaluation.

Theses for the title of Doctor of Science, by the Hungarian Academy of Sciences
2015, Title: Overlapping modules in molecular biological networks (in Hungarian)
http://hal.elte.hu/fij/dsc (theses: 131 pages, abstract book: 16 pages).

Research monographs and chapters in collective volumes
Two book chapters, see above in the subsection titled *Book chapters*:
- Pálfy M, Farkas I J, et.al., book chapter (Methods in Molecular Biology, 2013)
- Helbing D, Farkas I J, et.al., book chapter (*Springer*, Berlin, 2002).

Invited presentations
2004, Section opening talk at the Spring meeting of the German Physical Society, on modelling collective human motion, in particular escape panic.
2010, Opening talk, Extreme events workshop (Munster, Germany), collective motion.

Prizes and Awards
2009, Talentum Award, Hungary, 3 scientists per year below 35 from all fields
2007, Prima Junior Award, Hungary, 10 per year below 30 from all fields
2004, Young Scientist Award, German Physical Society, Socio-Economics, 1 per year
2001, Pro Scientia Medal, Hungary, 45 graduate & undergrad. students every 2nd year

Individual Research Fellowships
2011.07.01–2012.06.30 Senior Scholar of the Hung.-American Enterprise Scholarship Fund
2009.05–2010.04 EEA Postdoctoral Fellow, European Social Fund (Magyary Ösztöndíj)
2005 Bolyai Scholarship (Hungary, 200 scientists per year below 40) (Bolyai Ösztöndíj)
2004–2007 Postdoctoral Fellow of the Hungarian Scientific Research Fund (OTKA Posztdok.)
1999 Fellowship of the Republic of Hungary for Undergraduates (Köztársasági Ösztöndíj)

Research funding received so far
*(i) Research Grants with **PI or manager** scientist position*
- *PI and single senior participant in the following two projects:*
  2012.07–2016.06, OTKA NN103114, Molecular biological regulatory netw., 27k EUR
  2008.10–2011.06, OTKA (Hung.Sci.Res.Fund) K75334, Molec.biol.reg.nw., 20k EUR
- *Subproject manager (budget shown for subproject):*
  2008–9 Eotvos Univ. Regional Knowl. Centre, Modules in molec. biol. netw., 30k EUR

*(ii) **Participating scientist** in Research Projects (Project ID: Topic)*
2013–14, EU ESF Támop-4.2.2.C-11/1/KONV-2012-0013: Networks and modularity
2013–15, Chinese National Natural Science Fund 61202207: Collective motion
2007–10, OTKA (Hung. Sci. Research Fund) K68669: Modularity in networks
2005–09, OTKA K49674: Collective motion. 2004–07, OTKA F47203: Networks

Supervising and mentoring activities
- Currently supervising 1 PhD student and 1 MSc researcher.
- Supervised 4 completed MSc theses. All four students continued toward their PhDs.
- 1995–98, Mentoring students for the internat. physics competition IYPT (http://iypt.org).

Other activities
2004–, We did (our children do) **folk dancing**. Practices, public dancing, family events.
2001-03, I played ultimate frisbee. Rapid team sport, regular practices, competitions.
2001–, **Team run**: 6 runners 42km. My best: 7km in 29m 54s (vs. in 2015: 35m 25s).
1994–1995, 2nd place at a Hungarian national high school mathematics competition KÖMAL (students solve 6 Math problems per month for 9 months, Sept. to May).