RÓBERT PÁLOVICS

PERSONAL INFORMATION

Born	1989, Hungary
Address	819 College Ave, Palo Alto, CA, 94306, USA
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PERSONAL STATEMENT

I am a postdoctoral scholar at the *Wu Tsai Neurosciences Institute of Stanford University*. My research investigates *machine learning for biomedical sciences*. I leverage data from large-scale biological studies that describe organisms at the cellular level and use machine learning (ML), statistical methods and network science to catalyze biological research. My work helps to understand *aging*, the single greatest cause of disease and death worldwide. I seek to understand the functional changes with ageing starting from the cell level and search for signatures that will serve as the basis for potential rejuvenation and lifespan extension.

RESEARCH INTERESTS

single-cell data science, aging, data mining, machine learning, network science, recommender systems

EDUCATION

Stanford University July 2019 - Present
Postdoctoral Scholar

Department: Neurology
Advisor: Tony Wyss-Coray

Stanford University April 2018 - June 2019
Postdoctoral Scholar

Department: Computer Science
Advisor: Jure Leskovec

Budapest University of Technology and Economics September 2012 - January 2018
Ph.D. in Mathematics and Computer Sciences

Advisor: András Benczúr
Thesis: Revealing Information Networks

Budapest University of Technology and Economics September 2010 - June 2012
M.Sc. in Physics

Advisor: András Benczúr
Thesis: Information Spreading in Social Networks

Budapest University of Technology and Economics September 2007 - June 2010
B.Sc. in Physics

Advisor: János Kertész
Thesis: Scaling telecommunication networks via simulated annealing (Hungarian)

WORKING EXPERIENCE

Stanford University April 2018 - Present
Postdoctoral Scholar *Stanford*

Leading data scientist of the single-cell atlas project investigating heterochronic parabiosis [1]
Contributed as a data scientist to the Tabula Muris Senis aging cell atlas [2, 3]
Studied the effect of idiosyncratic shocks in production networks during economic crises [4]

Informatics Laboratory of the Hungarian Academy of Sciences August 2012 - March 2018
Research Assistant *Budapest*

Research projects on recommender systems [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]
Research projects on temporal networks [17, 18, 19]
Advisor of the ACM International Recommender Systems Challenge 2017
Organizer of the ACM International Recommender Systems Challenge 2016 [20]
Organizer of the ECML/PKDD International Data mining Challenge 2016
Organizer of the Budapest Bike Sharing Data Mining Challenge 2015

Université Paul Sabatier, CNRS Summer 2013
Research Assistant *Toulouse*

Collaboration with the research group of Dima Shepelyansky [12]

TEACHING

Aquincum Institute of Technology Spring 2013 - Spring 2017
Data mining (course language: English) *Budapest*

Lecturer since Fall 2015
Teaching assistant since Spring 2013

Budapest University of Technology and Economics Fall 2012 - Spring 2013
Programming I & II *Budapest*

Teaching assistant

Informatics Laboratory of the Hungarian Academy of Sciences Spring 2013 - Present
Supervisor *Budapest*

Mentored and assisted multiple students with their B.Sc. and M.Sc. theses in machine learning, data science, and network science

REVIEWING, PROGRAM COMMITTEE MEMBERSHIP

ACM Recsys 2018-Present
The Web Conf. 2019, 2021, 2022
MLCB 2019, 2020
RecSys ORSUM 2019
Reviewed for Data Mining and Knowledge Discovery (Springer)

AWARDS

2020-2021 Awardee of the Stanford Aging and Ethnogeriatrics (SAGE) Research Center
Leader of team "Budapest" [21] on the ACM International RecSys Challenge 2015, Prize: 5
Leader of team "BenHuns" [22] on the ACM International RecSys Challenge 2014, Prize: 2

PRESENTATIONS

ACM DEBS 2021 — Online
Tutorial on graph stream analytics [23]

ACM RecSys 2017 — Como, Italy
Tutorial on Open Source Online Learning Recommenders [6]

ACM WSDM 2017 — Cambridge, UK
Raising Graphs from Randomness to Reveal Information Networks [19]

INRA 2015 (ACM RecSys 2015) — Vienna, Austria
Predicting User-specific Temporal Retweet Count Based on Network and Content Information [13]

ACM RecSys 2014 — Foster City, Silicon Valley, USA
Exploiting temporal influence in online recommendation [14]

ASONAM 2013 — Niagara Falls, Canada
Temporal influence over the Last.fm social network [16]

PUBLICATIONS

[1] **Róbert Pálovics**, Andreas Keller, Nicholas Schaum, Weilun Tan, Tobias Fehlmann, Michael Borja, Fabian Kern, Liana Bonanno, Kruti Calcuttawala, James Webber, et al. Molecular hallmarks of heterochronic parabiosis at single-cell resolution. *Nature*, pages 1–6, 2022.

[2] Nicholas Schaum, Benoit Lehallier, Oliver Hahn, **Róbert Pálovics**, Shayan Hosseinzadeh, Song E Lee, Rene Sit, Davis P Lee, Patricia Morán Losada, Macy E Zardeneta, et al. Ageing hallmarks exhibit organ-specific temporal signatures. *Nature*, 583(7817):596–602, 2020.

[3] **Tabula Muris Consortium** et al. A single-cell transcriptomic atlas characterizes ageing tissues in the mouse. *Nature*, 583(7817):590–595, 2020.

[4] **Róbert Pálovics**, Primož Dolenc, and Jure Leskovec. Companies under stress: the impact of shocks on the production network. *EPJ Data Science*, 10(1):57, 2021.

[5] András A Benczúr, Levente Kocsis, and **Róbert Pálovics**. Online machine learning algorithms over data streams. *Encyclopedia of Big Data Technologies*, 2019.

[6] **Róbert Pálovics**, Domokos Kelen, and András A Benczúr. Tutorial on open source online learning recommenders. *Tutorial at the 11th ACM Conference on Recommender Systems*, pages 400–401, 2017.

[7] Erzsébet Frigó, **Róbert Pálovics**, Domokos Kelen, Levente Kocsis, and András Benczúr. Alpenglow: Open source recommender framework with time-aware learning and evaluation. *Poster at the 11th ACM Conference on Recommender Systems*, 2017.

[8] Erzsébet Frigó, **Róbert Pálovics**, Domokos Kelen, Levente Kocsis, and András Benczúr. Online ranking prediction in non-stationary environments. In *Proceedings of the Temporal Reasoning in Recommender Systems Workshop at the 11th ACM Conference on Recommender Systems*. CEUR-WS. org, 2017.

[9] **Róbert Pálovics**, Péter Szalai, Júlia Pap, Erzsébet Frigó, Levente Kocsis, and András A Benczúr. Location-aware online learning for top-k recommendation. *Pervasive and Mobile Computing*, 38:490–504, 2017.

[10] **Róbert Pálovics**, Peter Szalai, Levente Kocsis, Júlia Pap, Erzsébet Frigó, and András A Benczúr. Location-aware online learning for top-k hashtag recommendation. In *LocalRec@ RecSys*, pages 36–39, 2015.

[11] **Róbert Pálovics** and András A Benczúr. Temporal influence over the last. fm social network. *Social Network Analysis and Mining*, 5(1):4, 2015.

[12] **Róbert Pálovics**, Bálint Daróczy, András Benczúr, Julia Pap, Leonardo Ermann, Samuel Phan, Alexei D Chepelianskii, and Dima L Shepelyansky. Statistical analysis of nomao customer votes for spots of france. *The European Physical Journal B*, 88(8):1–10, 2015.

[13] Bálint Daróczy, **Róbert Pálovics**, Vilmos Wieszner, Richárd Farkas, and András A Benczúr. Predicting user-specific temporal retweet count based on network and content information. In *INRA@ RecSys*, pages 6–13, 2015.

[14] **Róbert Pálovics**, András A Benczúr, Levente Kocsis, Tamás Kiss, and Erzsébet Frigó. Exploiting temporal influence in online recommendation. In *Proceedings of the 8th ACM Conference on Recommender systems*, pages 273–280. ACM, 2014.

[15] Márton Balassi, **Róbert Pálovics**, and András A Benczúr. Distributed frameworks for alternating least squares. In *Proceedings of the 2nd large scale recommender systems workshop at recsys*, 2014.

[16] **Róbert Pálovics**, Bálint Daróczy, and András A Benczúr. Temporal prediction of retweet count. In *Cognitive Infocommunications (CogInfoCom), 2013 IEEE 4th International Conference on*, pages 267–270. IEEE, 2013.

[17] Ferenc Béres, Domokos M Kelen, **Róbert Pálovics**, and András A Benczúr. Node embeddings in dynamic graphs. *Applied Network Science*, 4(1):1–25, 2019.

[18] Ferenc Béres, **Róbert Pálovics**, Anna Oláh, and András A Benczúr. Temporal walk based centrality metric for graph streams. *Applied Network Science*, 3(1):1–26, 2018.

[19] **Róbert Pálovics** and András A Benczúr. Raising graphs from randomness to reveal information networks. In *Proceedings of the Tenth ACM International Conference on Web Search and Data Mining*, pages 23–32. ACM, 2017.

[20] Fabian Abel, András Benczúr, Daniel Kohlsdorf, Martha Larson, and **Róbert Pálovics**. Recsys challenge 2016: Job recommendations. In *Proceedings of the 10th ACM Conference on Recommender Systems*, pages 425–426. ACM, 2016.

[21] **Róbert Pálovics**, Péter Szalai, Levente Kocsis, Adrienn Szabó, Erzsébet Frigó, Júlia Pap, Zsófia K Nyikes, and András A Benczúr. Solving recsys challenge 2015 by linear models, gradient boosted trees and metric optimization. In *Proceedings of the 2015 International ACM Recommender Systems Challenge*, page 4. ACM, 2015.

[22] **Róbert Pálovics**, Frederick Ayala-Gómez, Balázs Csikota, Bálint Daróczy, Levente Kocsis, Dominic Spadacene, and András A Benczúr. Recsys challenge 2014: an ensemble of binary classifiers and matrix factorization. In *Proceedings of the 2014 Recommender Systems Challenge*, pages 13–18. ACM, 2014.

[23] András Benczúr, Ferenc Béres, Domokos Kelen, and **Róbert Pálovics**. Tutorial on graph stream analytics. In *Proceedings of the 15th ACM International Conference on Distributed and Event-based Systems*, pages 168–171, 2021.

[24] Balint Daroczy, David Siklosi, **Róbert Pálovics**, and Andras A Benczur. Text classification kernels for quality prediction over the c3 data set. In *Proceedings of the 24th International Conference on World Wide Web*, pages 1441–1446. ACM, 2015.

[25] Anna Mándli, **Róbert Pálovics**, Mátyás Susits, and András A Benczúr. Time series classification for scrap rate prediction in transfer molding. In *3rd SIGKDD Workshop on Mining and Learning from Time Series*, 2017.

[26] Oxana Kapitansky, Gidon Karmon, Shlomo Sragovich, Adva Hadar, Meishar Shahoha, Iman Jaljuli, Lior Bikovski, Eliezer Giladi, **Róbert Pálovics**, Tal Iram, et al. Single cell adnp predictive of human muscle disorders: Mouse knockdown results in muscle wasting. *Cells*, 9(10):2320, 2020.

[27] Andrew C Yang, Ryan T Vest, Fabian Kern, Davis P Lee, Maayan Agam, Christina A Maat, Patricia M Losada, Michelle B Chen, Nicholas Schaum, **Róbert Pálovics**, et al. A human brain vascular atlas reveals diverse mediators of alzheimer's risk. *Nature*, pages 1–8, 2022.