Bohdan Kivva

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EDUCATION

PhD in Mathematics and Computer Science (expected graduation: June 2022)
The University of Chicago *Sept. 2016 – present* Chicago, IL, USA
Advisors: László Babai and Aaron Potechin
M.S. in Mathematics
The University of Chicago *Sept. 2016 – June 2018* Chicago, IL, USA
B.S. in Mathematics
Taras Shevchenko National University of Kyiv *Sept. 2012 – June 2016* Kyiv, Ukraine

RESEARCH PAPERS AND PREPRINTS

11. "On the automorphism groups of rank-4 primitive coherent configurations" 2021, arXiv:2110.13861
10. "Learning latent causal graphs via mixture oracles" Bohdan Kivva, Goutham Rajendran, Pradeep Ravikumar and Bryon Aragam, to appear at NeurIPS'21, arXiv:2106.15563
9. "Structure learning in polynomial time: Greedy algorithms, Bregman information, and exponential families" Goutham Rajendran, Bohdan Kivva, Ming Gao and Bryon Aragam, to appear at NeurIPS'21
8. "Improved upper bounds for the rigidity of Kronecker products", In 46th International Symposium on Mathematical Foundations of Computer Science (MFCS'21), Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, volume 202, 2021. 68:1–68:18 (arXiv:2103.05631)
7. "Matrix rigidity depends on a target field", joint with László Babai, In 36th Computational Complexity Conf. (CCC'21). Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, volume 200, 2021. 41:1–41:26
6. "Exact nuclear norm, completion and decomposition for random overcomplete tensors via degree 4 SOS", joint with Aaron Potechin arxiv:2011.09416 (135 pages, submitted)
5. "A characterization of Johnson and Hamming graphs and proof of Babai's conjecture" in Journal of Combinatorial Theory, Ser. B, 151 (2021), pp. 339-374 (arxiv:1912.11427)
4. "On the spectral gap and the automorphism group of distance-regular graphs" in Journal of Combinatorial Theory, Ser. B, 149 (2021): pp. 161-197 (arxiv:1912.10571)
3. "Robustness of the Johnson scheme under fusion and extension", joint with László Babai, (in preparation)
2. "On the automorphism groups of distance-regular graphs and rank-4 primitive coherent configurations" (2018) arxiv:1802.06959
1. "Automaton groups and complete square complexes", joint with I. Bondarenko, to appear at Groups, Geometry and Dynamics (arxiv:1707.00215)

CONFERENCE AND SEMINAR TALKS

- "46th International Symposium on Mathematical Foundations of Computer Science" (MFCS'21)
  Online, August 2021
- "36th Computational complexity conference - 2021"
  Online, July 2021
- "CanaDAM-2021" conference, "Coherent configurations with few fibers" minisymposium (invited speaker),
  Online, May 2021
- "CanaDAM-2019" conference, "Graph symmetry" minisymposium (invited speaker)
  Vancouver, Canada, May 2019
- "Symmetry breaking in discrete structures" BIRS workshop (invited speaker)
  Oaxaca, Mexico, September 2018

- "Symmetry vs Regularity" conference (invited speaker)
  Pilsen, Czech Republic, July 2018
- Combinatorics and Theoretical Computer Science seminar
  The University of Chicago, Chicago, IL, USA, April 2018

TEACHING EXPERIENCE

- Instructor in Math15200-15300 Calculus II-III *Fall 2019 - Fall 2020*
- Instructor in Math13100-13300 Calculus sequence *Fall 2018 – Spring 2019*
- TA in Prof. R. Fefferman's "Honours calculus" course *Spring 2018*
- TA in Prof. J. Stehnova's "Basic algebra" course *Fall 2017 - Winter 2018*

ML and Quantum computing experience

- "Topics in ML: Deep learning" course by Michael Maire
  Term research project:"Incremental learning". Studied different strategies to learn ResNets incrementally. Showed improved performance in comparison to some transfer learning techniques on CIFAR-10 dataset.
- "Computer Vision" by Greg Shakhnarovich
  Term project: "Texture classification". Implemented a pipeline for texture recognition (for Describable Texture Dataset) based on Leung-Malik filters .
- "Unsupervised learning" by Karen Livescu
  Term project: "Flowers recognition". Compared different semisupervised learning techniques on "Flowers recognition" dataset, including label propagation and label spreading.
- "Statistical and computational learning theory" by Nathan Srebro (audit)
- "Introduction to Statistical Machine learning" by Greg Shakhnarovich
- "Quantum Computing" by Aleksandr Razborov

PROGRAMMING

Prog. Languages: Java, Python, C, MATLAB, SQL

Experience with PyTorch, Keras, OpenCV, scikit-learn

Yandex School for Data Analysis *(1 year out of 2 completed, dropped due to start of PhD)* *2015-2016*

ACHIEVEMENTS

- International Mathematical Competition for University Students (IMC) Gold medal 2014
  Blagoevgrad, Bulgaria
- International Mathematical Competition for University Students (IMC) Silver medal 2013
  Blagoevgrad, Bulgaria
- South Eastern European Math. Comp. for University Students (SEEMOUS) Gold medal 2013
  Athens, Greece
- International Mathematical Olympiad (IMO) Silver medal 2012
  Mar del Plata, Argentina
- Romanian Masters in Mathematics (RMM) Silver medal 2012
  Bucharest, Romania
- International Mathematical Olympiad (IMO) Bronze medal 2011
  Amsterdam, Netherlands

- Romanian Masters in Mathematics (RMM) — Gold medal 2011
  Bucharest, Romania
- Ukrainian National Mathematics Olympiad — First Prize 2009–2012
- Kyiv city Programming olympiad — Second Prize 2009-2012
- Academic scholar of the President of Ukraine — 2009–2013

SERVICE

- Student Volunteer for STOC 2020 *2020*
- Coordinator in the 8th Europian Girls' Mathematical Olympiad *2019*
- Lecturer in the IMO preparation Camp (Ukraine) *2013–2017*
- Jury member of the Team selection tests to IMO (Ukraine) *2014, 2015*
- Administrator of the website for Ukranian Mathematical olympiads *2013–2014*
- Lead advanced mathematical seminars for high school students (Ukraine) *2012–2015*
  (two of my students got a Bronze medal on IMO)