Hasan Kurban

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Research Interests

Data Mining, Machine Learning, Big Data, Data Science, Artificial Intelligence

Publications

Journal Articles [Refereed]

J9. Kurt Zimmer, Hasan Kurban, Mark Jenne & Mehmet Dalkilic: A Data-Driven Solution to Public Transportation Optimization Problem, International Journal of Data Science and Analytics (JDSA), 2020 (accepted)

J8. Hasan Kurban, Mehmet Dalkilic, Selcuk Temiz & Mehmet Mustafa Kurban: Tailoring the structural properties and electronic structure of anatase, brookite and rutile phase TiO2 nanoparticles: DFTB calculations, Computational Materials Science, 2020 (under review)

J7. Hasan Kurban, Mustafa Kurban, Mehmet Dalkilic: An R package for Structural Analysis of Nanoparticles, Journal of Statistical Software, (link for the software: `https://github.com/hasankurban/Structural-Analysis-NanoParticles`, paper in preparation), 2020

J6. Parichit Sharma, Hasan Kurban, & Mehmet Dalkilic: DCEM: An R package for Expectation Maximization Algorithm, Journal of Statistical Software, (link for the software: `https://cran.r-project.org/web/packages/DCEM/DCEM.pdf`, under review), 2020

J5. Hasan Kurban & Mustafa Kurban: Study of Structural and Optoelectronic Properties of Hexagonal ZnO Nanoparticles, Bilecik Seyh Edebali Üniversitesi Fen Bilimleri Dergisi , 6 (2) , 124-131.

J4. Mustafa Kurban, Hasan Kurban & Mehmet Dalkilic: Controlling structural and electronic properties of ZnO NPs, Bilge International Journal of Science and Technology Research , 3 (0) , 35-39, 2019

J3. Hasan Kurban, Mustafa Kurban & Mehmet Dalkilic: Density-functional tight-binding approach for the structural analysis and electronic structure of copper hydride metallic nanoparticles, Materials Today Communications, 21, 100648(1-7), 2019

J2. Hasan Kurban, Mark Jenne and Mehmet M. Dalkilic: Using data to build a better EM: EM* for big data, International Journal of Data Science and Analytics vol.4, no.2, pp. 83-97, 2017

J1. Mark Jenne, Owen Boberg, Hasan Kurban and Mehmet M. Dalkilic: Studying the Milky Way Galaxy using ParaHeap-k, a parallel heap-based k-means, Computer, vol.47, no.9, pp.26-33, 2014

Conference Proceedings [Refereed]

C6. Hasan Kurban, Mustafa Kurban and Mehmet Dalkilic: Size Dependent Electronic Structure and Structural Properties of Cupric Oxide (CuO) Nanoparticles, International Natural Science, Engineering and Material Technologies Conference (NEM'19), Istanbul, Turkey

C5. Kurt Zimmer, Hasan Kurban, Mark Jenne, Logan Keating, Perry Maull, Mehmet Dalkilic: Using Data Analytics to Optimize Public Transportation on a College Campus, IEEE International Conference on Data Science and Advanced Analytics (DSAA'18), Turin, Italy

C4. Hasan Kurban, Mehmet M. Dalkilic: A novel approach to optimization of iterative machine learning algorithms: over heap structure, IEEE International Conference on Big Data (Big Data 2017), Boston, MA, USA

C3. Hasan Kurban, Mark Jenne and Mehmet M. Dalkilic: EM*: An EM algorithm for Big Data, IEEE International Conference on Data Science and Advanced Analytics (DSAA'16), Montreal, Canada, 2016 (received "Honorable Mention Paper Award", best paper awards)

C2. Hussein Mohsen, Hasan Kurban, Kurt Zimmer, Mark Jenne, Mehmet Dalkilic: Red-RF: Reduced Random Forest for big data using priority voting & dynamic data reduction, International Congress on Big Data, IEEE BigData Congress 2015, New York, USA, 2015

C1. Hussein Mohsen, Hasan Kurban, Mark Jenne, Mehmet Dalkilic: A new set of Random Forests with varying dynamic data reduction and voting techniques, IEEE International Conference on Data Science and Advanced Analytics (DSAA'14), Shanghai, China, 2014

Workshop Proceedings [Refereed]

W2. Hasan Kurban, Can Kockan, Mark Jenne and Mehmet M. Dalkilic: Improving Expectation Maximization Algorithm over Stellar Data, Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data, Boston, MA, USA

W1. Mark Jenne, Alex Zimmerman, Hasan Kurban, Claudia Johnson and Mehmet M. Dalkilic: Employing Software Engineering Principles to Enhance Management of Climatological Datasets for Coral Reef Analysis, The 6th International Workshop on Climate Informatics (CI'16), Colorado, USA, 2016

Poster Proceedings [Refereed]

P1. Hasan Kurban, Can Kockan, Mark Jenne and Mehmet M. Dalkilic: Case study: clustering big stellar data with EM*, IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT 2017), Austin, Texas, USA (received "Best Poster Award")

Book Reviews

B2. Mastering Social Media Mining with R, Sharan Kumar Ravindran, 2015, ISBN 1784396311

B1. Learning Data Mining with R, Bater Makhabel, 2015, ISBN 1783982101

Education

Indiana University Bloomington, IN, USA
Ph.D., Computer Science and minor in Statistics, September 30, 2017
Dissertation: A Novel Approach to Optimization of Iterative Machine Learning Algorithms: Over Heap Structure
Committee: Mehmet M. Dalkilic, Predrag Radivojac, Michael W. Trosset, Yuzhen Ye

Indiana University Bloomington, IN, USA
M.Sc., Computer Science, May 2012

Inonu University, Malatya, Turkey
B.Sc., Mathematics, June 2008

Invited Talks

Invited Talks [Conferences]

- Using Data Analytics to Optimize Public Transportation on a College Campus (DSAA'18), Turin, Italy (10/4/2018)
- A novel approach to optimization of iterative machine learning algorithms: over heap structure, IEEE International Conference on Big Data (Big Data 2017), Boston, MA, USA (12/14/2017)
- Improving Expectation Maximization Algorithm over Stellar Data, Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data, Boston, MA, USA (12/12/2017)
- Case study: clustering big stellar data with EM*, IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT 2017), Austin, Texas, USA (12/07/2017)
- EM*: An EM algorithm for Big Data, IEEE International Conference on Data Science and Advanced Analytics (DSAA'16), Montreal, Canada (10/18/2016)
- A new set of Random Forests with varying dynamic data reduction and voting techniques, IEEE International Conference on Data Science and Advanced Analytics, Shanghai, China (10/30/2014)

Invited Talks [Teaching]

- Clustering, Computer Engineering Department, Ankara Yildirim Beyazit University, Spring 2019
- Data Science, Informatics Department, Istanbul Technical University, Fall 2018
- Expectation Maximization Algorithm for clustering, Computer Science Department, Indiana University, Fall 2016
- Principal Component Analysis, Computer Science Department, Indiana University, Fall 2016
- Data Structures, Computer Science Department, Indiana University, Spring 2014
- Ensemble Models, Computer Science Department, Indiana University, Spring 2013

Teaching Experience

Assistant Professor, Computer Engineering Department, Siirt University, Turkey

- Data Structures, Artificial Neural Networks, Introduction to Computer Engineering, Fall 2018
- Data Security, Algorithms and Programming II, Web and Internet Technologies, Spring 2019
- Algorithms and Programming I, Artificial Neural Networks, Introduction to Computer Engineering, Fall 2019

Visiting Assistant Professor, Computer Science Department, Indiana University Bloomington, USA

- Applied Machine Learning (Graduate), Online Applied Data Mining (Graduate), Fall 2017
- Elements of Artificial Intelligence (Graduate), Introduction to Data Analysis and Mining (Undergraduate), Spring 2018

Associate Instructor, Indiana University Bloomington, IN, US

Worked as an Associate Instructor in the Computer Science Department at Indiana University Bloomington between Aug. 2012 - May 2016. Graded homeworks, exams, weekly quizzes; taught labs; held office hours, weekly help sessions; lectured

- Data Mining (Graduate), Fall 2012, Fall 2013, Spring 2015, Spring 2016
- Machine Learning (Graduate), Spring 2013
- Data Structures (Undergraduate/Graduate), Spring 2014
- Seminar in Computer Science: Data Mining (Undergraduate),Fall 2014, Fall 2015
- Topics in Algorithms and Computing Theory (Graduate), Fall 2014
- Real World Data Science (Graduate), Summer 2016: Online class sponsored by Eli Lilly and Company

Senior Associate Instructor, Indiana University, Bloomington, IN, USA

Head Associate Instructor (AI). Managed a group of AIs; lectured; designed homeworks; graded homeworks, exams

- Data Mining (Graduate), Fall 2016
- Introduction to Artificial Intelligence (Graduate), Spring 2017

Professional Experience

Siirt University, Siirt, Turkey

Assistant Professor, Computer Engineering Department (Aug. 2018 - Current)

Contact: Musa Atas, hakmesyo@gmail.com

Indiana University Bloomington, IN, USA

Visiting Assistant Professor, Computer Science Department (Aug. 2017 - Aug. 2018)

Contact: Amr Sabry, sabry@indiana.edu

Turbo Appeal, Chicago IL, USA

Data Scientist (Jan 2015 - Dec. 2015): Predictive analytics on valuation of homes; web scraping; stored, processed, analyzed, modeled big data sets

Contact: Scott Beason, scottmbeason@gmail.com

Indiana University Bloomington, IN, USA

Undergraduate Research Mentor (Jan. 2015 - May 2017): Designed data mining research projects for undergraduate students; coached undergraduate students

Contact: Dr. Lamara D. Warren, ldwarren@indiana.edu

Honors and Awards

- Best Paper Awards: Honorable Mention Paper Award, IEEE International Conference on Data Science and Advanced Analytics (DSAA'16), Montreal, Canada, 2016
- Best Poster Award, UCC/BDCAT 2017
- Turkish National Ministry of Education Scholarship (all tuitions, fees, and a stipend): Scholarship awarded to high-achieving Turkish university graduates enabling them to pursue graduate study and research in top-ranked universities abroad, 2009 - 2017
- Computer Science Graduate Fellowship, Indiana University, Bloomington, Aug. 2010 - May 2012
- Nomination for Associate Instructor of the year: Being nominated for the Computer Science Program Associate Instructor of the year award, 2014-2015, Indiana University Bloomington
- Nomination for Researcher of the year: Being nominated for the Computer Science Program Researcher of the year award, 2016-2017, Indiana University Bloomington

Computer and Language Skills	Programming Languages and Skills: Microsoft Windows, Linux, Mac-OS Python, R, C / C++, Java, MATLAB, Octave, OpenBUGS, WinBUGS MySQL, NoSQL, PostgreSQL, SQL Server Weka, Rattle, Tableau, KNIME Languages: English (fluent), Turkish (native)
References	Available upon request