1803 Upland Drive
Ann Arbor, MI 48105

Mark Heimann

724-713-3476
mheimann@umich.edu
https://markheimann.github.io/

Education

University of Michigan **Ann Arbor, MI** **2015-Present**

- Ph.D candidate in Computer Science. Advisor: Danai Koutra.
  - Representation learning for data mining tasks on multiple large networks

Washington University in St. Louis **St. Louis, MO** **2011-2015**

- M.S. in Computer Science with a certificate in data mining and machine learning.
- A.B. in Economics and Mathematics *cum laude* with high distinction in economics.

Publications

- Xiyuan Chen, **Mark Heimann**, Fatemeh Vahedian, and Danai Koutra. "Consistent Network Alignment via Proximity-Preserving Node Embedding." ArXiv preprint, 2020.
- **Mark Heimann**, Tara Safavi, and Danai Koutra. "Distribution of Node Embeddings as Multiresolution Features for Graphs." *ICDM 2019.* **Best Student Paper**
- Di Jin, **Mark Heimann**, Ryan Rossi, and Danai Koutra. "node2bits: Compact Time- and Attribute-aware Node Representations for User Stitching." *PKDD 2019.*
- Di Jin*, **Mark Heimann***, Tara Safavi, Mengdi Wang, Wei Lee, Lindsay Snider, and Danai Koutra. "Smart Roles: Inferring Professional Roles in Email Networks." *KDD 2019.*
- **Mark Heimann**, Haoming Shen, Tara Safavi, and Danai Koutra. "REGAL: Representation Learning-based Graph Alignment." *CIKM 2018.* **Taught in graduate classes at UMich, Purdue**
- **Mark Heimann***, Wei Lee*, Shengjie Pan, Kuan-Yu Chen, and Danai Koutra. "HashAlign: Hash-Based Alignment of Multiple Graphs." *PAKDD 2018.*
- Yujun Yan, **Mark Heimann**, Di Jin, and Danai Koutra. "Fast Flow-based Random Walk with Restart in a Multi-query Setting." *SDM 2018.*
- **Mark Heimann** and Danai Koutra. "On Generalizing Neural Node Embedding Methods to Multi-Network Problems." *KDD MLG Workshop*, *2017*.

** equal contribution*

Teaching Experience

- University of Michigan (2016-17): Foundations of Computer Science (EECS 376, ~500 students), Introduction to Artificial Intelligence (EECS 492/592, ~200 students), Advanced Data Mining (EECS 576, ~50 students)
- Washington University in St. Louis (2014-15): Introduction to Machine Learning (CSE 417A, ~100 students), Multi-Agent Systems (CSE 516A, ~30 students), Fair Division (CSE/Pol Sci 245A, ~50 students)

work Experience

Visiting Research Assistant **Information Sciences Institute** **Jun 2019-Aug 2019**
Artificial Intelligence Group Marina Del Rey, CA

- Used node embeddings to identify cyberbullying in social media sessions. *Python*
- Theoretically analyzed algorithmically fair node embedding methods and proposed new techniques. *Python*

Data Science Research Intern **Adobe Research** **Jan 2019-Apr 2019**
Big Data Experience Lab Ann Arbor, MI

- Performed large-scale entity resolution on cross-device web log data with millions of users. *Python*

Graduate Research Intern **Oak Ridge National Laboratory** **Apr 2018-Aug 2018**
Computational Data Analytics Group Oak Ridge, TN

- Developed dimensionality reduction algorithm with applications to unmixing of hyperspectral image data.
- Developed matrix factorization formulations for graph mining problems. *Python, Tensorflow, PyTorch*

Software Engineer Intern **Algorithmia** **Jun 2015-Aug 2015**
Algorithm Development Team Seattle, WA

- Made cutting edge machine learning algorithms easy to use through a standardized API. *Python*
- Created applications to demonstrate their potential (Face Recognition demo in top 10 on Hacker News).

Researcher **Harvey Mudd College** **Jun 2014-Aug 2014**
NSF REU Program Claremont, CA

- Designed and implemented an algorithm to generate more harmonically structured jazz solos. *Java*

Researcher **University of North Carolina, Greensboro** **Jun 2013-Jul 2013**
NSF REU Program Greensboro, NC

- Resolved open mathematical questions with applications to computer science and biology. *Java*

Student Trainee **Washington University School of Medicine** **Jun 2012-Jul 2012**
NHLBI Summer Institute for Training in Biostatistics (SIBS) St. Louis, MO

- Studied biostatistics and analyzed biomedical datasets as part of an accompanying practicum. *R*

AWARDS

- **Best Student Paper, ICDM 2019**: Best paper whose first author was a full-time student.
- **Travel grants (KDD 2017,2019; CIKM 2018; SDM 2019; ICDM 2019):** Attend and present work.
- **Adam Smith Prize for Excellence in Economics (2015):** For writing an outstanding senior thesis.
- **Arnold J. Lien Scholarship (2011):** Four-year full-tuition merit scholarship.

MENTORING

- Xiyuan Chen (UG, FL2019-WN2020)**.** Coauthored paper on refining network alignment, wrote senior thesis and led second paper on embedding-based network alignment. **Next:** MS at Stanford CS.
- Mark Jin (UG, WN2019-WN2020)**.** Led paper on evaluating structural node embeddings.
- Haoming Shen (MS, SU17-SU18). Coauthored paper on embedding-based network alignment. **Next:** PhD at UMich IOE.

REVIEWING

- **Program Committee:** ICANN, CIKM Demo Session, PKDD GEM Workshop, ICDM Demo Session
- **Reviewer:** TOC (IEEE), TKDE (IEEE)
- **Subreviewer:** KDD, WWW, SDM, AAAI, Complex Networks, PKDD, DAMI (Springer)

SELECTED TALKS

- *REGAL: Representation Learning-based Graph Alignment.* NABD Conference, Criteo Labs, Ann Arbor, MI. May 2019.
- *Machine Learning in Materials Science: An Introduction through Python.* Tutorial (co-instructor), Center for Nanophase Materials Science User Meeting, Oak Ridge National Laboratory. August 2018.

OTHER ACTIVITIES

- **Chess:** Active USCF Senior Master and FIDE Master (highest rating-based national and international titles). Multiple scholastic/collegiate national championship, state open championship titles. 10+ years teaching.
- **Other interests:** Powerlifting (USAPL competitor and state referee), music (experimental acoustic/electric)

REFERENCES

- Danai Koutra. *Assistant Professor of Computer Science, University of Michigan.* dkoutra@umich.edu
- Ramakrishnan Kannan. *Research Scientist, Oak Ridge National Laboratory.* kannanr@ornl.gov