Curriculum Vitae

Dora Erdos   665 Commonwealth Avenue, Boston, MA, 02215
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Professional Experience

Senior Lecturer, Boston University, Computer Science   **2022-present**

Director of Undergraduate Studies, Boston University, Computer Science   **2021-present**

Undergraduate Program Director, Boston University, Computer Science   **2017- 2021**

Lecturer, Boston University, Computer Science   **2017-2022**

Postdoctoral Research Associate, Brown University, Computer Science   **2015 - 2016**
    Research in computational biology under Prof. Ben Raphael

Research Associate, Hungarian Academy of Science   **2008-2009**
    Institute for Computer Science and Control, Data Mining and Web Search Group

Intern, American Express, New York, NY   **Summer 2013**
Intern, Max Planck Institute for Informatics, Saarbrücken, Germany   **Summer 2012**

Education

PhD in Computer Science   **2010 - 2015**
    Boston University, Boston, MA, USA.
    PhD Advisor: Prof. Evimaria Terzi
    Thesis title: Centrality Measures and Analyzing Dot-product Graphs.

Diploma (equivalent to BS + MS) in Mathematics   **2003 - 2008**
    Eötvös Loránd University, Budapest, Hungary
    MS Advisor: Prof. András Frank
    Thesis title: Connection Between the Clar Number and the Coherent Cyclic Order.

| **Director of Undergraduate Studies** | **2021-present** |
| **Undergraduate Program Director** | **2017- 2021** |

- Responsible for **undergraduate advising** of CS majors, CS+X joint majors and minors (1500+ students). Work closely with departmental advising team, and CAS Advising.

- Faculty contact to CAS and other academic units.

- **BA/MS program**, student advising, admissions, faculty contact to GRS

- Decide course equivalencies

- Help faculty prepare new course and HUB proposals.

- **Support decision making** in the department with regard to undergrad education.

  – Collect data on student outcomes, feedback from current students, alumni and faculty.
  – Identify curricular needs, advise on course offerings and extracurriculars.

- **Advisor/ Mentor to new faculty** with regard to teaching.

  – Familiarize with rules and requirements, administrative procedures, student resources.
  – University and departmental resources available to faculty, working with and expectations towards TFs, TAs, CAs, graders.
  – Class visits for feedback, advise on course organization, advise on individual student cases.

Curriculum development in computer science. (Please see the section CURRICULUM AND COURSE DEVELOPMENT for details.)

- **Revised the CS minor** requirements. **2017**

- **Head the committee** on designing and implementing a substantial overhaul of the major in Computer Science. **2019-present**

- **Member of the subcommittee** on developing a new Introduction to Computer Science course sequence within the curriculum changes to the CS major. **2019-present**

- Worked on the **proposals for the joint majors** in Statistics+CS, Linguistics+CS, Physics+CS, Economics+CS. **2019-present**

- Helped develop and implemented the BA/MS program in Computer Science for the joint mathematics+CS major. **2021-2022**

- Work with faculty on **new course** and **HUB proposals**. **2017-present**

- **Developed new course** , CS365 Foundations of Data Science **2019**

Lecturer Merit Review Committee, member (head in 2024)   **2022 - present**

Full-time Lecturer Search Committee, member   **2022 - present**

 classroom observer for other lecturers   **2022 - present**

BU HUB Assessment Workshop, reviewer   **June 2022**

Faculty Mentor, CS200 Applied Problem Solving   **2021 - 2023**

- Student-led course on developing high performance algorithms.

- Mentor and support the student-instructors in preparing material, teaching the classes, interaction with students.

Kilachand honors thesis advisor, Taylor Hazlett   **2019-2020**

CURRICULUM AND COURSE DEVELOPMENT

Proposed and implemented changes to the CS minor requirements.   **2017-2018**

- Found that with the former requirements many CS minor students were underprepared to take the advanced-level CS courses that were required for the minor.

- Revised the requirements for the foundational courses in the minor to solve this problem.

- Since the revision we find that students in the minor are coming out with stronger skills.

Head committee on revision of the CS major curriculum.   **2019-present**

- Assembled and lead committee on the curriculum development, organize and coordinate the work of the committee members.

- Collected strengths and shortcomings of the current curriculum; analyzed data on student outcomes, made observations based on my advising work, collected anecdotal evidence through extensive interviews with students and faculty.

- Wrote the draft proposal, presented to the faculty on multiple occasions, collected extensive feedback from faculty.

- Contacted individuals in computer science departments at other universities to learn about their experience in developing similar curricular changes to their programs.

- The proposal has to date undergone multiple revisions and updates and is well underway.

Member of the subcommittee on development of a new Introduction to Computer Science course sequence.

- This subcommittee is part of the committee for revising the CS major requirements.

- Recognized that the current 2-course sequence no longer serves all students in the major well. New majors come from a range of no prior exposure to CS to experienced programmers with extensive technology knowledge. We need to adapt the major to serve both ends of the spectrum.

- Proposed to revise the current 2-course sequence into 3 courses, but creating multiple entry points to accommodate students with various backgrounds in CS.

Co-developed new course, CS365 Foundations of Data Science   **2019**

- Identified the curricular need for this course in the CS major and co-developed it from scratch with one of my colleagues.

- The concept of this course is quite unique among peer programs. Many offer some type of practical course in data science. But none have this kind of course consolidating the foundations of multiple related areas into one.

- The CS department offers a number of elective courses in the "data" area (e.g. Data Science, Machine Learning, Data Mining, etc.). These topics share common fundamentals in mathematical and statistical concepts, in measurements and evaluating results, common foundational algorithms, and technical tools for collecting and manipulating data. CS365 is designed to cover these common foundations and now serves as the prerequisite to the more advanced courses. As a result all students going in to any of the latter courses have the same foundations that we then can build on in the specialized areas.

CS365 Foundations of Data Science   **Fall 2019, Spring 2021**

- Co-developed this course from scratch.

- had 90 students per semester, I taught the initial offering.

- CS365 has recently been made the prerequisite to most electives in data-related areas in CS.

- Covers the main concepts and technical tools to understanding data. This includes topics in statistics, various mathematical tools, data metrics, most common algorithms, data management.

- (course was formerly listed as CS391)

CS330 Analysis of Algorithms   **Spring 2017 - present**

- Required course in the CS and CS+X joint majors.

- Taught CS330 every semester, including summers. 200-300 students per semester.

- Most advanced required theoretical course. The content is regarded as difficult by students, but worthwhile to put the effort in. I have worked over the semesters to make it more approachable.

  - Improved my presentation to make it more intuitive. Developed a good set of examples and applications to give intuition on how and why certain algorithms work.
  - Switched from longer, bi-weekly to shorter, weekly assignments. Students have reported that with weekly assignments they feel they work very hard, but it helps them tremendously with following the material.
  - Use TopHat to foster in-class participation and understanding.

- CS330 is a large course that has two sections. It has been co-taught by two instructors (every other semester). This was the first course in CS to adopt the co-teaching model. It worked out so well that now it is being (successfully) applied to multiple of our large courses.

- I am the constant faculty member in CS330, while my teaching partner changes by semester. I was able to forge good working relationships with all of my co-instructors. Was able to adjust to their different styles while also maintaining the course structure that I have developed over the years.

GRS CS630 Graduate Algorithms   **Fall 2022**

- Algorithms course for MS and BA/MS students, 150 students.

- Content is a continuation of the undergraduate Algorithms course.

CS131 Combinatoric Structures   **Spring and Summer 2019**

- Freshman course in discrete mathematics. Taught 150 students in the spring.

- The course teaches the foundations of "computational thinking". I specifically requested to teach this course to get a better insight on how students master these concepts that are fundamental to computer science. This experience has informed my work both in teaching more advanced courses (e.g., CS330), advising students and in developing the revision to the CS curriculum.

CS565 Algorithmic Data Mining   **Fall 2018**

- Elective course for seniors and graduate students, taught 50 students.

- Algorithms concepts to find patterns in large data sets. Covers both traditional algorithms as well as state-of-the-art developments in the field.

Teaching Fellow
       Boston University (various courses related to algorithms)   **2010-2015**
       Eötvös University (graph theory, algorithms)   **2007-2009**

Honors and awards

Boston University DHI Research Incubation Award   **2018**
       19K research grant
       Co-PI: Prof. Jessica Kramer, University of Florida (then at BU Sergeant College)

Research Excellence Award, BU Dept. of Computer Science   **2014**

Hariri Award for Innovative Computing Models, Algorithms, and Systems   **2011**

Presidential Fellowship   **2010 - 2011**
       fellowship for promising PhD students at Boston University.

Publications

Refereed journal publications

J2. Dora Erdos, András Frank, Krisztián Kun, *Sink-stable Sets of Digraphs*, SIAM journal of Discrete Mathematics **(SIDMA)**, vol. 28, Issue 4, pp. 1651 – 1674, 2014

J1. Dora Erdos, Rainer Gemulla, Evimaria Terzi, *Reconstructing Graphs from Neighborhood Data*, ACM Transactions on Knowledge Discovery from Data **(TKDD)**, Volume 8 Issue 4, Article No. 23, ACM New York, NY, USA, August 2014

Refereed conference publications

C10. Charalampos Mavroforakis, **Dora Erdos**, Mark Crovella, Evimaria Terzi, *Active Positive-Definite Matrix Completion*, SIAM Data Mining SDM 2017

C9. Sanaz Bahargam, **Dora Erdos**, Azer Bestavros, Evimaria Terzi, *Personalized Education; Solving a Group Formation and Scheduling Problem for Educational Content*, Educational Data Mining **EDM** 2015, Madrid, Spain

C8. Dora Erdos, Vatche Ishakian, Azer Bestavros, Evimaria Terzi, *A Divide-and-Conquer Algorithm for Betweenness Centrality*, SIAM Data Mining Conference, **SDM**, 2015, Vancouver, Canada

C7. Dora Erdos, Pauli Miettinen, *Walk'N'Merge: A ScalableAlgorithm for Boolean Tensor Factorization*, IEEE International Conference on Data Mining, **(ICDM)**, 2013, Dallas, TX, December 2013

C6. Dora Erdos, Pauli Miettinen, *Discovering Facts with Boolean Tensor Tucker Decomposition*, Conference on Information and Knowledge Management **(CIKM)**, San Francisco, CA, USA, October 2013

C5. Dora Erdos, Vatche Ishakian, Azer Bestavros, Evimaria Terzi, *Repetition-Aware Content Placement in Navigational Networks*, ACM International Conference on Knowledge Discovery and Data Mining **(SIGKDD)**, Chicago, IL, USA, August, 2013

C4. Dora Erdos, Rainer Gemulla, Evimaria Terzi, *Reconstructing Graphs from Neighborhood Data*, IEEE International Conference on Data Mining **(ICDM)** Brussels, Belgium, December 2012

C3. Dora Erdos, Vatche Ishakian, Andrei Lapets, Evimaria Terzi, Azer Bestavros, *The Filter Placement Problem and its Application to Minimizing Information Multiplicity*, International Conference on Very Large DataBases **(VLDB)**, Istanbul, Turkey, August 2012

C2. Vatche Ishakian, **Dora Erdos**, Evimaria Terzi, Azer Bestavros, *A Framework for the Evaluation and Management of Network Centrality*, SIAM Data Mining Conference **(SDM)**, Anaheim, CA, April, 2012

C1. Dora Erdos, Zsolt Fekete, András Lukács, *Visualized subgraph search*, IEEE Visual Analytics Science and Technology **(VAST)**, Atlantic City, PA, USA, October, 2009

Preprints

P2. Dora Erdos, Vatche Ishakian, Azer Bestavros, and Evimaria Terzi, A Divide-and-Conquer Algorithm for Betweenness Centrality, arXiv:1406.4173

P1. Dora Erdos, Pauli Miettinen, Scalable Boolean Tensor Factorizations using Random Walks, arXiv:1310.4843

REFEREE

PC member: SIGKDD 2014, ECML/PKDD 2014, CIKM 2014, SDM 2015, SIGKDD 2015, CIKM 2015, SDM 2016, WWW 2016, SIGKDD 2016, ECML/PKDD 2016, CIKM 2016, SDM 2017, SIGKDD 2018, CIKM18, ECML/PKDD 2018, SDM 2019, ECML/PKDD 2019, IAAA 2019, SIGKDD 2019.
Journal reviewer: Mathematical Communications, Journal of Combinatorial Optimization, Data Mining and Knowledge Discovery, IEEE Big Data.

LANGUAGES

Hungarian (native), English (fluent), German (fluent), Dutch (good)