Computing Competencies for Undergraduate Data Science

Curricular Guideline Recommendations -- Draft 2

For the Association of Computing Machinery (ACM)

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On Behalf of the ACM Data Science Task Force

Scope & Goals of the Guidelines

Task Force Charter:
"To add to the broad, interdisciplinary conversation on data science, with an articulation of the role of computing discipline-specific contributions to this emerging field. The task force should seek to define what the computing contributions are to this new field, and should provide guidance for undergraduate data science programs of study.

To create a report, which may then be used to invite collaboration and coordination with other (non-computing) professional societies"

Scope & Non-Scope
- In-Scope: Anything related to computing or typically taught by computing educators
- Out-of-Scope: Things not taught by computing educators, especially mathematics and statistics topics

What's New in Draft 2?

Refined what "Knowledge Areas" belonged in the draft
Includes detailed competencies with:
Tier 1, Tier 2, and Elective:
- Knowledge
- Skills
- Dispositions

Expanded Sections of Draft on Broadening Participation, Building Programs, and Institutional Challenges

Overview of the Report

Chapter 1 – Intro and Scope

Chapter 2 – Our Approach to Data Science and prior work

Chapter 3 – How we are approaching the "Body of Knowledge"

Chapter 4 – Recommendations for building new programs

Chapter 5 – Broadening Participant – Why and How

Chapter 6 – Goal Characteristics of Data Science Graduates

Chapter 7 – Reflections on Institutional Level Challenges

Appendix A – (Draft of) Competencies in Data Science

The Knowledge Areas and Competencies
(80 pages of content with 1500+ detailed competencies)

- Analysis and Presentation
- Artificial Intelligence
- Big Data Systems
- Computing and Computer Fundamentals
- Data Acquisition, Management, and Governance

- Data Mining
- Machine Learning
- Data Privacy, Security, Integrity, and Analysis for Security
- Professionalism
- Software Development and Maintenance

Intentionally Missing:
- Mathematics for Data Science
- Statistics for Data Science

You can contribute!
Invitations for Feedback and Example Courses

All Work & Most Up-to-date Draft is available here:
http://dstf.acm.org/

We welcome your feedback. Please submit comments at:
https://goo.gl/forms/pCQroVdI8sOtscRi1

Call for Example Courses: http://dstf.acm.org/callForExamples.html

- There's a template available!
- We want lots of variety – you just map what your teaching to the BoK!
- The course can ALSO have non-CS related competencies or goals.