# ACM Data Science Task Force

- Charter and committee
- First Draft Curriculum Report
- Timeline
- Community Engagement

# ACM Data Science 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.*

# Data Science Task Force

- Andrea Danyluk, Williams C. and Northeastern U., USA (co-chair)
- Paul Leidig, Grand Valley State University, USA (co-chair)
- Scott Buck, Intel, USA
- Boots Cassel, Villanova University, USA
- Andrew McGettrick, University of Strathclyde, UK
- Jian Pei, Simon Fraser University, Canada
- Christian Servin, El Paso Community College, USA
- Hongzhi Wang, Harbin Institute of Technology, China
- Weining Qian, East China Normal University, China
- Tin Kam Ho, IBM, USA

# Other Data Science Efforts

- EDISON Project (2017)
  - A competency-based framework to be used as guidance for educators, employers, etc.
  - Most similar to ACM effort; Europe focus.
  - Missing some key competencies
- Park City Report (2017)
  - Topics and learning outcomes for undergraduate data science curricula
  - Sample course outline
- National Academies report (2018)
  - Articulation of the importance of data science education
  - Synthesis of approaches
  - High level recommendations for this emerging field

# Other ACM Efforts

- ACM/IEEE-CS Joint Task Force on Computing Curricula 2013
  - www.cs2013.org

- https://www.acm.org/education/curricula-recommendations

# Draft Report Contents

**Chapter 1 Introduction**

- 1.1 Charter
- 1.2 Prior work on defining data science curricula
- 1.3 Committee work and processes
- 1.4 Survey of academic and industry representatives
- 1.5 Knowledge areas
- 1.6 Data Science in context
- 1.7 Competency framework
- 1.8 Motivating the study of data science
- 1.9 Overview of this report

**Chapter 2 The Competency Framework**

- 2.1 Competency in theory
- 2.2 Competencies and professional practice

**References**

**Appendix A Draft of Competencies for Data Science**

**Appendix B Summary of Survey Responses**

# Draft Report Contents

**Chapter 1 Introduction**

**Chapter 2 The Competency Framework**

**References**

**Appendix A Draft of Competencies for Data Science**

**Appendix B Summary of Survey Responses**

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**Chapter 1 Introduction**

**Chapter 2 The Competency Framework**

**Chapter 3 Toward an Interdisciplinary Data Science Curriculum**

**Chapter 4 Broadening Participation**

**References**

**Appendix A Body of Knowledge**

**Competencies for Data Science**

**Competency Details**

**Appendix B Summary of Survey Responses**

**Appendix C Example Courses and Curricula**

# Knowledge Areas (Draft 2)

- Computing Fundamentals
  - Programming, Data Structures, Algorithms, Software Engineering, Complexity
- Data Acquirement and Governance
- Data Management, Storage, and Retrieval
- Data Privacy, Security, and Integrity
- AI
  - Machine Learning, NLP/Text Processing, Vision/Image Processing
- Data Mining
- Big Data Systems
  - Cloud storage and computing, Parallel Computing, HPC
- Analysis and Presentation
  - HCI, Visualization
- Professionalism

# Timeline

- Early 2019:
  - Draft report out for comment
  - Outreach and gathering of feedback
  - Note: Initial comment period ended March 31
- Spring 2019 (f2f @ SIGCSE)
  - Begin work on next phase, including new KAs and competency details
- Spring 2019+: Outreach, presentations and information gathering
- Summer 2019:
  - Next draft to SIGCSE Education Advisory Committee (formerly Education Council)
  - Call for joint task force
- Fall 2019:
  - Second Draft report out for comment
- 2020
  - Release final report

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# Call for Joint Task Force

- Why?
  - Data Science is inherently interdisciplinary
  - Diversity of background and thought leads to a better product
- Why should it matter to you?
  - CS Departments are accustomed to using ACM curricular documents as references. (If CS Depts involved in DS programs…)
  - ABET may be moving to accreditation of DS programs; they frequently refer to ACM curricular documents
  - We all want to get this right
- Who?
- Representatives of major Stats and Math societies around the world