NEWS RELEASE

Contact: Jim Ormond
                 212-626-0505
                 ormond@hq.acm.org

ACM ISSUES COMPUTING COMPETENCIES FOR UNDERGRADUATE DATA SCIENCE CURRICULA

International Effort Aims to Establish Guidelines for Transformative/Interdisciplinary Field

New York, NY, March 11, 2021 – Recognizing the explosive growth of data science as a field, as well as the demand for data science training at the undergraduate level, a Data Science Task Force convened by the Association for Computing Machinery's Education Board recently released *Computing Competencies for Undergraduate Data Science Curricula*. The ACM report seeks to define what the computing/computational contributions are to this new field, as well as to provide guidance on computing-specific competencies in data science for departments offering such programs of study at the undergraduate level.

"This seemed like the perfect time for the computing community to define our field's contributions to a well-rounded data science curriculum," remarked Paul Leidig, Professor, Grand Valley State University and Co-chair, ACM Data Science Task Force. "Data science is an interdisciplinary endeavor between computer science, mathematics, statistics, and applied areas such as natural sciences. We hope our effort in outlining computing competencies for data science will encourage more collaboration within the distinct disciplines that make up this field. This is an important step in establishing universal guidelines for a field that is attracting a great deal of interest from undergraduates, but is also, in many ways, still misunderstood."

To gain a picture of the current landscape of undergraduate degrees in data science, the ACM Data Science Task Force sent a survey to undergraduate institutions across the county asking a series of questions about their programs. Of the 672 institutions who responded, 24.7% indicated that they offer a Data Science major, while 16% responded that they offer a minor.

The Task Force also surveyed industry leaders to see if they were specifically interested in hiring candidates with an undergraduate degree in Data Science. To the question "Do you look for job candidates (specifically new graduates of undergraduate programs) with a Data Science background?", 48% of the 297 companies that responded said they do look for candidates with a Data Science background.

The interest in earning degrees in Data Science stems partially from the job prospects in the field, which includes both companies seeking formally trained data scientists, as well as a host of industries, including healthcare, natural sciences, finance, marketing, and businesses of all kinds, that are seeking employees with some data science skills.

"Until very recently, most people working in data science had earned traditional Computer Science Bachelor's degrees and then earned graduate degrees in Data Science, or perhaps learned advanced data science techniques on the job," added Leidig. "The trend of emphasizing experience as a 'data scientist' at earlier and earlier stages in one's career is a recognition that students should have familiarity with the ways in which computer science, mathematics, statistics, and applied areas overlap. Learning data science *holistically* will certainly benefit young people who are entering a field that is constantly changing and growing."

The ACM report also includes a chapter on broadening participation in the field, which outlines opportunities to reverse imbalances of participation for women, underrepresented minorities, and people with disabilities. Recognizing the impact of data science on all aspects of society, the report also includes a chapter on professionalism, including stressing that ethical issues are of vital importance for all involved in computing and information activities.

In their introduction to the report, the Task Force emphasized that data science is an inherently interdisciplinary field and noted that true interdisciplinary work is challenging. In welcoming collaborations with statisticians, mathematicians, and others in the data science environment, the Task Force wrote: "The difficulty…is to make the essential connections so that all the parts work together to support discovery and decision making in the domain. Cross references between courses, projects that call upon topics learned in other courses, and a comprehensive project to bring all the pieces together are essential to turn a mixed set of courses into a cohesive, interdisciplinary program."

About ACM
ACM, the Association for Computing Machinery, is the world's largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

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