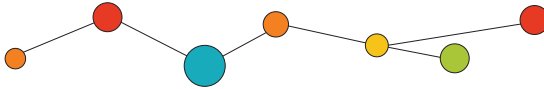# Preface

This book has been developed by the BIG Math Network, an organization supported by the mathematical sciences societies to improve networking between academia, business, industry, and government. The Network was launched at the 2016 Joint Mathematics Meetings and is supported by the American Mathematical Society (AMS), the American Statistical Association (ASA), the Institute for Operations Research and the Management Sciences (INFORMS), the Mathematical Association of America (MAA), the MathWorks Math Modeling Challenge (M3 Challenge), and the Society for Industrial and Applied Mathematics (SIAM).

In addition, the following societies have partnered with the BIG Math Network to disseminate information to their members: the American Mathematical Association of Two-Year Colleges (AMATYC), the Association for Women in Mathematics (AWM), the National Association of Mathematicians (NAM), and the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

The BIG Math Network steering committee and advisory board include representatives from small and large companies and government agencies as well as representation from the mathematical sciences societies. Each of these constituencies along with our partners and colleagues have contributed perspectives to this book. We would like to offer special thanks to Philippe Tondeur, who in 2011 envisioned a program to increase the number of internships in BIG, and to Reza Malek–Madani, who raised the issue of equity with respect to access to information, internships, and jobs.

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About the authors

Rachel Levy, PhD, credits her pursuit of advanced study to a senior capstone experience in operations research at the National Aeronautics and Space Administration (NASA), mentored by Bruce Pollack-Johnson. She advocates for mathematical modeling in K-16, and has supervised industry-sponsored capstone projects through the Harvey Mudd College Mathematics Department clinic program. She serves as the Vice President for Education for SIAM, and founded the BIG Math Network. Her piece on industrial mathematics in the *Princeton Companion to Applied Mathematics* was selected for inclusion in the anthology *Best Writing on Mathematics 2016*. She is the Deputy Executive Director of the Mathematical Association of America.

Richard Laugesen, PhD, collaborated with colleagues in the Department of Mathematics at the University of Illinois to create a graduate internship and training program that serves about 25 students per year, with funding from the U.S. National Science Foundation. This program offers a model for departments that want to help students make connections in BIG, yet have only a few faculty members identifying as applied mathematicians. He serves on the steering committee of the BIG Math Network, and gratefully acknowledges support from the Simons Foundation (#429422 to Richard Laugesen) and inspiration from Philippe Tondeur, former director of the Division of Mathematical Sciences at the National Science Foundation.

Fadil Santosa, PhD, has developed extensive ties to BIG through the Minnesota Center for Industrial Mathematics (1995–2007) and the Institute for Mathematics and its Applications at the University of Minnesota. From 2008 to 2017 he directed the Institute, which runs industrial postdoctoral positions, mathematical modeling in industry workshops, math-to-industry boot camps, and numerous workshops connecting mathematical scientists in academia with industry. He chairs the BIG Math Network Steering Committee, the SIAM Career Opportunities Committee, and the AMS Committee on the Profession. He is indebted to Avner Friedman for showing him the way into industrial mathematics.