A huge wealth of various data exists in the software development process, and hidden in the data is information about the quality of software and services as well as the dynamics of software development. With various analytic and computing technologies, software analytics is to enable software practitioners to perform data exploration and analysis in order to obtain insightful and actionable information for data-driven tasks around software and services [1].

Software analytics expands the scope of the previous work on analytics for software development [4][8] and software intelligence [7]. At the Software Analytics group in Microsoft Research Asia, we focus on three major topics – software systems, software users, and development process. Utilizing the rich data sets available for these topics, we strive to create innovative technologies as well as building tools and systems to help software practitioners improve the quality of software systems [2][3][6][9], the experience of software users, and the productivity of software development process [5]. In this talk, I will discuss some of our projects on each of the aforementioned research topics in software analytics.

Software analytics is naturally tied with the software development practice mainly because (1) the data under study comes from real practice; (2) there are real problems to be answered using the data; (3) one of the success metrics of software analytics research is its influence and impact on the development practice. In the past few years, in addition to conducting technology research, our group also collaborated extensively with different product teams across Microsoft to transfer our technologies into Microsoft products, and to build internal tools widely used in the company.

Technology transfer is never an easy process. There are various challenges along the way, e.g., dealing with the scale and complexity of the real data, walking the last mile to build tools working well in practice instead of only being a demo or prototype, and effectively engaging the software practitioners to adopt the tools and provide feedback. Knowledge and understanding of the real software development practice are indispensable for addressing these challenges [10]. A combination of expertise including research capabilities, engineering skills, project management, and communication is also important for conducting successful technology transfer. In this talk, I will discuss our approaches to bringing software analytics research to practice, and I will use a few case studies to share our experiences in technology transfer.

REFERENCES


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Dr. Dongmei Zhang is a Senior Researcher and research manager at the Software Analytics group of Microsoft Research Asia (MSRA). Her research interests include data-driven software analysis, machine learning, information visualization and large-scale computing platform. She founded the Software Analytics group at MSRA in 2009. Since then she has been leading the group to research software analytics technologies. Her group collaborates closely with multiple product teams in Microsoft, and has developed and deployed software analytics tools that have created high business impact.