Queen's School of Computing

Seminar

# ULSS Distinguished Seminar

## Monday, September 26th, 3:30-4:30 pm
## Walter Light Hall 302


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## Automatically Localizing Functional Field Failures in Deployed Software Applications.


In this talk, we discuss our novel theoretical foundation that allows stakeholders to predict and localize functional faults for field failures automatically with a high degree of precision using symptoms only (e.g., the sign of the output value is incorrect) and without instrumenting deployed applications to collect runtime data, thus avoiding the deployment runtime overhead, and without having any tests with oracles to uncover the fault, without performing contrasting successful and failed runs, and without collecting runtime data from field failures. With this theoretical foundation, researchers can collaborate more closely in planning the future of fault localization by expanding each other's results based on probabilistic graphical models as common abstractions. Based only on failure symptoms occurring during deployment of a given application, the location of faults in the source code will be determined, as well as navigation paths from likely faults to the code that can fix these faults. We will describe our initial results and discuss current limitations of our approach as well as new directions that our solution opens.


**Dr. Grechanik** is an Assistant Professor at the Department of Computer Science at the University of Illinois at Chicago. His research area is software engineering in general, with particular interests in software testing, systems, and programming languages. Dr.Grechanik earned his Ph.D. in Computer Science from the department of Computer Sciences of the University of Texas at Austin. In parallel with his academic activities, he has worked for over 25 years as a software consultant for startups and Fortune 500 companies. Dr.Grechanik is a recipient of best paper awards from competitive conferences, his research is funded by NSF and Microsoft and he holds many patents. His ideas are implemented and used by different companies and organizations. Dr. Grechanik is a senior member of ACM and a senior member of IEEE and he was elected as a member-at-large of the ACM SigSoft executive committee. Dr.Grechanik was the General Chair in 2016 of the IEEE International Conference on Software Testing, Verification and Validation (ICST'16), the premier conference in all areas related to software quality, he is elected to serve on the ICST Steering Committee, and he serves on the Editorial board of the