

Title: Human-Machine Pair Programming: An Automated Approach to Enhancing Software Productivity and Quality

Abstract:

Pair programming is one of the promising techniques advocated in agile development paradigm, but it tends to be more costly than one person-based programming and to lack a rigorous principle for governing the cooperation of the two programmers. In our recent work on Agile Formal Engineering Methods, we put forward a novel technique called Software Construction Monitoring and Predicting (SCMP) to study an intelligent and automatic approach to human-machine pair programming (HMPP). Its aim is to automatically, dynamically monitor the process of software construction for fault detection and to predict the possible future contents of the software towards its error-free completion based on existing programming experiences and knowledge. This research field is still in its beginning and there are many challenging issues to be addressed.

In this talk, I will first discuss the theoretical foundation and frameworks for HMPP. I will then discuss with examples how it can be applied to support specification construction and program construction, respectively. Finally, I will talk about some challenging issues to be addressed in the future.