Detection of design defects in object-oriented programs

Background
Design defects, coupled with poor error feedback for programmers, impede good design practices and slow down the evolution and maintenance of object-oriented architectures. To avoid escalating costs generated by design defects, techniques and processes have been proposed to correct them in the software development process and to ease the maintenance of these programs. However, because these defects are detected semi-automatically and corrected manually, their root causes are not easily identified, making them difficult to eliminate during the development phase.

Technology
This software allows for the systematic detection and correction of design flaws within object-oriented programs. Starting with an informal textual description of the design flaws to be corrected, a detection algorithm is generated automatically. The algorithm then produces a description of the detected design flaws and suggests appropriate corrections.

Application
Applications include:
• Detecting and correcting design flaws during development
• Training and performance enhancement of programmers
• Enabling quality control of software
Potential for:
• Enforcing quality standards
• Detecting any recurrent structures of copying, plagiarism, and malicious programs

Competitive Advantages
While other available tools take only numerical aspects into account (e.g. number of classes), with this novel method, defects are described according to the program’s unique structure and semantic properties.
UNIQUE: First software solution able to detect and correct design flaws automatically.
SPEED: List of design flaws generated quickly, even with large programs.
GENERIC: Can be used with any object-oriented program (ad-hoc solution not necessary).
STRUCTURE AND SEMANTIC ANALYSIS: Improves the program’s performance.

Patent
Source code protected by copyrights and trade secret.

Next Steps
Univalor is seeking partners to support the development phase and to commercialize this technology.

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