## Semantic Approximation for Reducing Code Bloat in Genetic Programming

Thi Huong Chu<sup>a</sup>, Quang Uy Nguyen<sup>a</sup>

<sup>a</sup>Faculty of IT, Le Quy Don Technical University, Hanoi, Vietnam

## Suppelment: The average bloat, overfitting and complexity over generations on problems

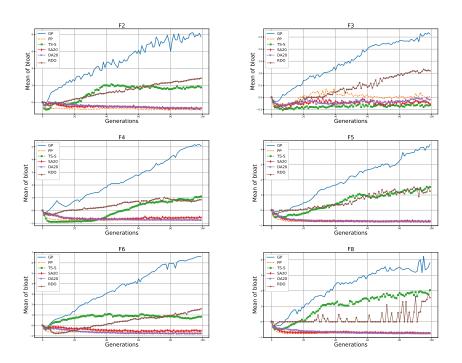
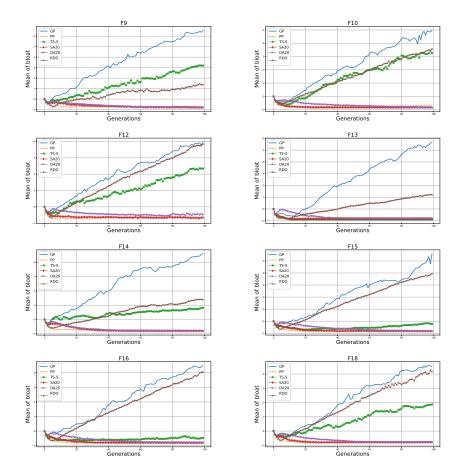
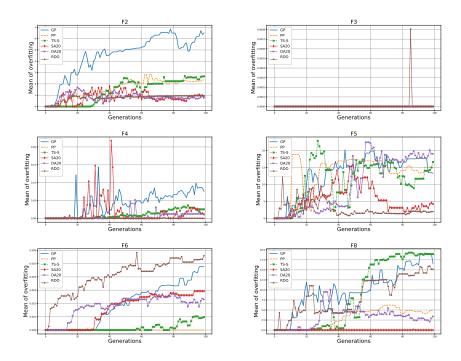


Figure 1: The average bloat over generations on problems F2, F3, F4, F5, F6 and F8.

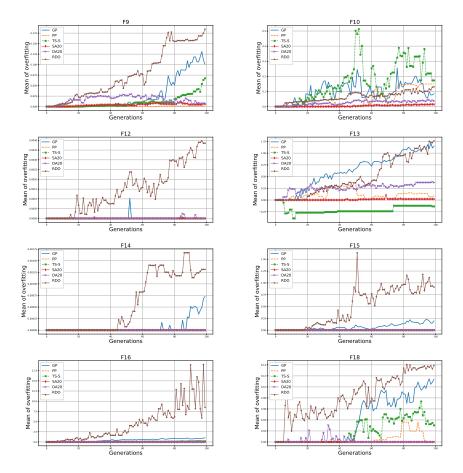
 $Email\ addresses: \verb+huongktqs@gmail.com+ (Thi\ Huong\ Chu\ ),\ \verb+quanguyhn@gmail.com+ (Quang\ Uy\ Nguyen)$ 



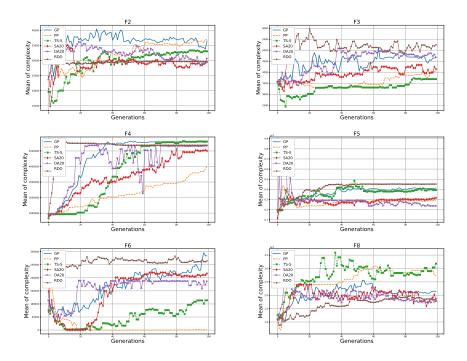
**Figure 2:** The average bloat over generations on problems F9, F10, F12, F13, F14, F15, F16 and F18.



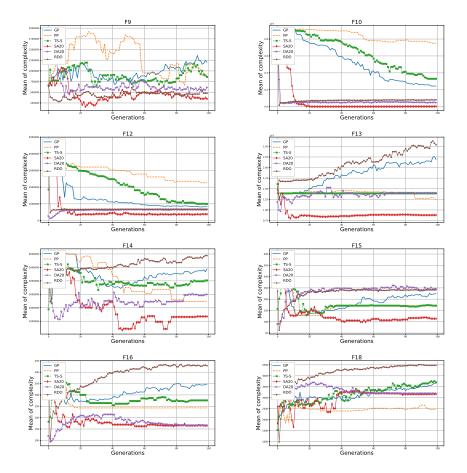
**Figure 3:** The average overfitting over the generations on problems F2, F3, F4, F5, F6 and F8.



**Figure 4:** The average overfitting over the generations on problems F9, F10, F12, F13, F14, F15, F16 and F18.



**Figure 5:** The average complexity of the best individual over the generations on problems F2, F3, F4, F5, F6 and F8.



**Figure 6:** The average complexity of the best individual over the generations on problems F9, F10, F12, F13, F14, F15, F16 and F18.