

An overview on diversity and Software Testing

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Resumen:

Software testing is one of the most challenging research field of Software Engineering. Traditional strategies, such as coverage, have predominated for the last decades, however, these techniques hardly overcome random approaches. Researchers are looking for new methodologies to improve the quality on automatic testing, specially focused on test prioritisation and test suite generators. During these years, researches started to hypothesise that every test has the same probability of triggering a bug. This hypothesis is the base for diversification. Testing by diversity aims to extends the testing strategies exposing rare and different paths that can be hardly activated using heuristics. In this talk we will explore the meaning of diversity, having different perspective from information theory and we will discuss different applications to automatic test suite generators and testing prioritisation, based on input, behaviour and output diversity.

Sobre Héctor D. Menéndez:

Héctor Menéndez is a Research Associate at University College London, working on applications of information theory to software testing. He has a BSc in Computer Science, a BSc in Mathematics, an MSc in Computer Science an MSc in Mathematics and a PhD in Computer Science by the Universidad Autónoma de Madrid, Spain. He has published 13 journal papers (6 of them are Q1 top journals according to the Journal Citations Report) and 27 international conferences. Originally, he worked designing machine learning algorithms based on graph structures and search based optimisation. He has applied these ideas to several different fields, where the most relevant are malware analysis, unmanaged air vehicles and, currently, software testing. During his current project, InfoTestSS, he has investigated different testing strategies to reach specific sections of programs. These strategies include fuzzy testing and trigger activation. He was a co-organiser of WIMS 2013, IDC 2014, INISTA 2015, the 57th COW in Information Theory and Testing, and the 2018 TAROT Summer School in Testing, Verification and Validation.