#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
			SUMMARY OF THE BACKWARD SNOWBALLING PROCESS.														
			Analysis of studies per criterion.														
1	EC1	1978	Hints on test data selection: Help for the practicing programmer											X			
2	EC1	1986	Expertise in debugging computer programs: An analysis of the content of verbal protocols							X				X			
3	EC1	1989	Evaluating the effectiveness of reliability-assurance techniques			X									X		
4	EC1	1994	Experiments of the effectiveness of dataflow and controlflow-based test adequacy criteria	X													X
5	EC1	1995	Fault localization using execution slices and dataflow tests		X	X									X		
6	EC1	1998	An empirical investigation of program spectra		X			X									
7	EC1	2001	Finding failures by cluster analysis of execution profiles												X		
8	EC1	2001	The control of the false discovery rate in multiple testing under dependency										X				
9	EC1	2001	Visualization for fault localization		X		X	X	X	X				X		X	
10	EC1	2002	Isolating cause-effect chains from computer programs	X		X									X		
11	EC1	2002	Simplifying and isolating failure-inducing input	X		X									X		
12	EC1	2002	Software debugging, testing, and verification						X								X
13	EC1	2002	Visualization of test information to assist fault localization		X	X	X	X	X	X			X		X	X	X
14	EC1	2003	Bug isolation via remote program sampling	X													
15	EC1	2003	Fault localization with nearest neighbor queries	X	X			X	X						X		
16	EC1	2004	Evolutionary testing of classes	X													
17	EC1	2005	DART: directed automated random testing					X							X		
18	EC1	2005	Empirical evaluation of the tarantula automatic fault-localization technique	X	X	X	X	X	X						X	X	
19	EC1	2005	Is mutation an appropriate tool for testing experiments?										X	X			
20	EC1	2005	Lightweight bug localization with ample		X	X	X	X	X				X		X	X	
21	EC1	2005	Locating causes of program failures	X													
22	EC1	2005	Scalable statistical bug isolation		X												
23	EC1	2005	Sober: Statistical model-based bug localization	X													
24	EC1	2005	Supporting controlled experimentation with testing techniques: an infrastructure and its potential impact		X	X			X				X	X	X		X
25	EC1	2006	An evaluation of similarity coefficients for software fault localization		X			X	X					X	X		X
26	EC1	2006	Discriminative pattern mining in software fault detection												X		
27	EC1	2007	Debugging in parallel		X								X		X		
28	EC1	2007	Effective fault localization using code coverage		X	X	X	X	X						X	X	
29	EC1	2007	On the accuracy of spectrum-based fault localization	X	X				X						X		
30	EC1	2007	Using machine learning to support debugging with tarantula		X										X		
31	EC1	2008	A comparative analysis of the efficiency of change metrics and static code attributes for defect prediction					X								X	
32	EC1	2008	A crosstab-based statistical method for effective fault localization										X				

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
33	EC1	2008	On similarity-awareness in testing-based fault localization		X				X								
34	EC1	2008	RAPID: Identifying bug signatures to support debugging activities			X									X		
35	EC1	2009	A linear programming approach for automated localization of multiple faults										X				
36	EC1	2009	A practical evaluation of spectrum-based fault localization	X						X							
37	EC1	2009	A simple coverage-based locator for multiple faults										X				
38	EC1	2009	A systematic review of search-based testing for non-functional system properties						X								
39	EC1	2009	Common trends in software fault and failure data										X				
40	EC1	2009	Insights on fault interference for programs with multiple bugs										X				
41	EC1	2009	Spectrum-based multiple fault localization			X	X	X	X				X	X	X	X	
42	EC1	2010	An extensive comparison of bug prediction approaches					X								X	
43	EC1	2010	Causal inference for statistical fault localization	X	X												
44	EC1	2010	Comprehensive evaluation of association measures for fault localization	X						X				X	X		X
45	EC1	2010	Defect prediction from static code features: current results, limitations, new approaches					X								X	
46	EC1	2010	Practical fault localization for dynamic web applications	X													
47	EC1	2011	A Dynamic Fault Localization Technique with Noise Reduction for Java Programs						X								
48	EC1	2011	A model for spectra-based software diagnosis		X	X	X	X	X				X	X	X		
49	EC1	2011	Are automated debugging techniques actually helping programmers?				X	X	X						X	X	
50	EC1	2011	Micro interaction metrics for defect prediction					X								X	
51	EC1	2011	On the influence of multiple faults on coverage-based fault localization						X				X				
52	EC1	2011	Spectrum-based sequential diagnosis						X								
53	EC1	2012	Are faults localizable?										X				
54	EC1	2012	Bug prediction based on fine-grained module histories					X								X	
55	EC1	2012	BugRedux: reproducing field failures for in-house debugging						X								
56	EC1	2012	Factorising the multiple fault localization problem: adapting single-fault localizer to multi-fault programs										X				
57	EC1	2012	GZoltar: An eclipse plug-in for testing and debugging												X		
58	EC1	2012	Improving the effectiveness of spectra-based fault localization using specifications										X				
59	EC1	2012	Regression testing minimization, selection and prioritization: a survey					X									
60	EC1	2012	Spectral debugging: How much better can we do?			X			X						X		
61	EC1	2012	Towards better fault localization: A crosstab-based statistical approach			X									X		
62	EC1	2012	Using mutants to locate "unknown" faults			X								X	X		
63	EC1	2013	A theoretical analysis of the risk evaluation formulas for spectrum-based fault localization				X	X	X		X		X			X	

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
64	EC1	2013	Does automated white-box test generation really help software testers?						X								
65	EC1	2013	Duals in spectral fault localization			X									X		
66	EC1	2013	F3: fault localization for field failures						X								
67	EC1	2013	Fault localization prioritization: Comparing information-theoretic and coverage-based approaches						X								
68	EC1	2013	How significant is the effect of fault interactions on coverage-based fault localizations?										X				
69	EC1	2013	Improving bug localization using structured information retrieval										X				
70	EC1	2013	Threats to the validity and value of empirical assessments of the accuracy of coverage-based fault locators				X	X					X			X	
71	EC1	2013	Using HTML5 visualizations in software fault localization						X								
72	EC1	2014	Ask the mutants: Mutating faulty programs for fault localization			X			X		X			X	X	X	
73	EC1	2014	Crashlocator: locating crashing faults based on crash stacks										X				
74	EC1	2014	Defects4j: a database of existing faults to enable controlled testing studies for java programs				X	X			X	X	X	X		X	
75	EC1	2014	Effective fault localization via mutation analysis: a selective mutation approach			X									X		
76	EC1	2014	Empirical evaluation of existing algorithms of spectrum based fault localization										X				
77	EC1	2014	Estimating the effectiveness of spectrum-based fault localization										X				
78	EC1	2014	Extending the theoretical fault localization effectiveness hierarchy with empirical results at different code abstraction levels										X				
79	EC1	2014	Fusion fault localizers												X		
80	EC1	2014	Learning to Combine Multiple Ranking Metrics for Fault Localization				X	X						X	X	X	
81	EC1	2014	The dstar method for effective software fault localization										X	X			
82	EC1	2015	Constrained feature selection for localizing faults												X		
83	EC1	2015	Evaluation of measures for statistical fault localisation and an optimising scheme			X									X		
84	EC1	2015	Faster mutation-based fault localization with a novel mutation execution strategy											X			X
85	EC1	2015	Information retrieval and spectrum based bug localization: better together					X							X	X	
86	EC1	2015	Metallaxis-f1: mutation-based fault localization											X		X	
87	EC1	2015	Should I follow this fault localization tool output?												X		
88	EC1	2016	A learning-to-rank based fault localization approach using likely invariants				X	X						X	X	X	X
89	EC1	2016	A Survey on Software Fault Localization				X	X		X	X	X	X	X	X	X	X
90	EC1	2016	Automated debugging considered harmful considered harmful: A user study revisiting the usefulness of spectra-based fault localization techniques with professionals using real bugs from large systems										X		X		
91	EC1	2016	Evaluation of fault localization techniques										X				

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
92	EC1	2016	Mutation-aware fault prediction													X	
93	EC1	2016	Practitioners' expectations on automated fault localization												X		
94	EC1	2016	Properties of effective metrics for coverage-based statistical fault localization										X				
95	EC1	2016	Revisit of automatic debugging via human focus-tracking analysis										X				
96	EC1	2017	A test-suite diagnosability metric for spectrum-based fault localization approaches										X				
97	EC1	2017	Accuracy graphs of spectrum-based fault localization formulas										X				
98	EC1	2017	An empirical study on mutation, statement and branch coverage fault revelation that avoids the unreliable clean program assumption										X				
99	EC1	2017	Codeflaws: A Programming Competition Benchmark for Evaluating Automated Program Repair Tools											X			
100	EC1	2017	Evaluating and improving fault localization										X	X	X		
101	EC1	2017	Fault localization for automated program repair: effectiveness, performance, repair correctness										X				
102	EC1	2017	Fault localization using itemset mining under constraints													X	
103	EC1	2017	Improving spectral-based fault localization using static analysis												X		
104	EC1	2018	Behavioral fault localization by sampling suspicious dynamic control flow subgraphs													X	
105	EC1	2017	Boosting spectrum-based fault localization using pagerank													X	
106	EC1, EC9	1990	Software Testing Techniques (2Nd Ed.)										X				
107	EC1, EC9	2001	Proteum: A family of tools to support specification and program testing based on mutation											X			
108	EC1, EC9	2002	The Economic Impacts of Inadequate Infrastructure for Software Testing				X	X								X	
109	EC1, EC9	2003	Agile Software Development: Principles, Patterns, and Practices										X				
110	EC1, EC9	2004	Cooperative Bug Isolation			X									X		
111	EC1, EC9	2005	Automatic Isolation of Cause-Effect Chains with Machine Learning												X		
112	EC1, EC9	2005	Why Programs Fail: A Guide to Systematic Debugging		X												
113	EC1, EC9	2007	Cooperative Bug Isolation (PHD Thesis)												X		
114	EC1, EC9	2009	A survey of software fault localization		X												
115	EC1, EC9	2011	FLINT: Fault localisation using information theory		X												
116	EC1, EC9	2011	Software debugging using program spectra			X	X	X							X	X	
117	EC1, EC9	2012	On the analysis of spectrum-based fault localization				X										
118	EC1, EC9	2014	No pot of gold at the end of program spectrum rainbow: greatest risk evaluation formula does not exist				X						X		X	X	
119	EC2	2002	Pinpoint: problem determination in large, dynamic internet services										X				
120	EC2	2005	Use of relative code churn measures to predict system defect density					X								X	
121	EC2	2007	Automatic Error Detection Techniques based on Dynamic Invariants			X									X		
122	EC2	2010	Falcon: fault localization in concurrent programs		X				X								

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
123	EC4	2002	Specification-based regression test selection with risk analysis				X		X								
124	EC4	2004	Search-based software test data generation: a survey: Research Articles					X	X							X	
125	EC4	2006	Locating faults through automated predicate switching	X		X									X		
126	EC4	2006	The species per path approach to search-based test data generation	X													
127	EC4	2007	Search algorithms for regression test case prioritization	X													
128	EC4	2008	An empirical study of the effects of test-suite reduction on fault localization		X				X								
129	EC4	2010	Cleansing Test Suites from Coincidental Correctness to Enhance Fault-Localization						X								
130	EC4	2010	Directed test generation for effective fault localization	X	X				X								
131	EC4	2011	Prioritizing tests for fault localization through ambiguity group reduction						X								
132	EC4	2013	Whole Test Suite Generation				X	X								X	
133	EC4	2014	Test case purification for improving fault localization										X		X		
134	EC4	2015	Do Automatically Generated Test Cases Make Debugging Easier? An Experimental Assessment of Debugging Effectiveness and Efficiency						X								
135	EC4	2016	Diversity maximization speedup for localizing faults in single-fault and multi-fault programs												X		
136	EC4	2016	Sapienz: multi-objective automated testing for Android applications				X										
137	EC4, EC9	2007	IGUANA: Input Generation Using Automated Novel Algorithms. A Plug and Play Research Tool				X										
138	EC5	2001	Automated debugging: Are we close?		X												
139	EC5	2001	Genetic programming model for software quality classification									X					
140	EC5	2010	Prioritizing Tests for Software Fault Localization						X								
141	EC5	2012	A systematic study of automated program repair: Fixing 55 out of 105 bugs for $8 each		X			X								X	
142	EC5	2013	Current challenges in automatic software repair						X								
143	EC5	2013	Using automated program repair for evaluating the effectiveness of fault localization techniques						X		X		X			X	
144	EC5	2014	Combining mutation and fault localization for automated program debugging			X							X		X		
145	EC5	2015	Automated software transplantation						X								
146	EC5	2017	Co-evolutionary multi-population genetic programming for classification in software defect prediction									X					
147	EC5	2017	On the multiple sources and privacy preservation issues for heterogeneous defect prediction									X					
148	EC5	2017	S3: Syntax- and semantic-guided repair synthesis via programming by examples										X				
149	EC7	2015	Tinygarble: highly compressed and scalable sequential garbled circuits									X					
150	EC7	F	The use of ranks to avoid the assumption of normality implicit in the analysis of variance										X				

SUMMARY OF THE BACKWARD SNOWBALLING PROCESS.

Analysis of studies per criterion.

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
151	EC7	1940	On habitat and association of species of anopheline larvae in south-eastern Madras						X								
152	EC7	1978	A method for obtaining digital signatures and public-key cryptosystems									X					
153	EC7	1979	A statistical-thermodynamic approach to determination of structure amplitude phases										X				
154	EC7	1979	How to share a secret									X					
155	EC7	1981	Gauss and the invention of least squares										X				
156	EC7	1981	The thermodynamic approach to the structure analysis of crystals										X				
157	EC7	1983	Optimization by simulated annealing	X									X				
158	EC7	1985	A randomized protocol for signing contracts									X					
159	EC7	1986	How to generate and exchange secrets									X					
160	EC7	1995	Support-Vector Networks					X								X	
161	EC7	1998	Violin Plots: A Box Plot-Density Trace Synergism				X										
162	EC7	1999	Dynamically discovering likely program invariants to support program evolution				X	X								X	
163	EC7	2000	A critique and improvement of the "CL" common language effect size statistics of McGraw and Wong		X		X	X									
164	EC7	2001	Random Forests													X	
165	EC7	2001	Search based software engineering		X												
166	EC7	2001	Secure multi-party computation problems and their applications: a review and open problems									X					
167	EC7	2002	A fast and elitist multiobjective genetic algorithm: NSGA-II								X						
168	EC7	2003	Improving symbolic regression with interval arithmetic and linear scaling									X					
169	EC7	2006	Sparse gaussian processes using pseudo-inputs													X	
170	EC7	2007	Gaussian process functional regression modeling for batch data													X	
171	EC7	2009	Learning to rank for information retrieval					X								X	
172	EC7	2009	New effect size rules of thumb										X				
173	EC7	2009	Order of nonlinearity as a complexity measure for models generated by symbolic regression via pareto genetic programming									X					
174	EC7	2010	Genetic programming for effort estimation: an analysis of the impact of different fitness functions									X					
175	EC7	2010	Software module clustering as a multi-objective search problem								X						
176	EC7	2010	The relationship between search based software engineering and predictive modeling		X												
177	EC7	2011	A practical guide for using statistical tests to assess randomized algorithms in software engineering					X									
178	EC7	2011	Automatically detecting and describing high level actions within methods													X	
179	EC7	2011	LIBSVM: A library for support vector machines					X								X	

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
			SUMMARY OF THE BACKWARD SNOWBALLING PROCESS. Analysis of studies per criterion.														
180	EC7	2011	Semantically-based crossover in genetic programming: application to real-valued symbolic regression									X					
181	EC7	2011	Software Engineering Meets Evolutionary Computation						X								
182	EC7	2011	Ten years of search based software engineering: a bibliometric analysis						X								
183	EC7	2012	DEAP: evolutionary algorithms made easy					X			X	X		X		X	
184	EC7	2012	Distributed learning, communication complexity and privacy									X					
185	EC7	2012	Search-based software engineering: Trends, techniques and applications				X		X								
186	EC7	2012	Search-based software engineering: trends, techniques and applications										X				
187	EC7	2013	API design for machine learning software: experiences from the scikit-learn project													X	
188	EC7	2013	Balancing privacy and utility in cross-company defect prediction									X					
189	EC7	2013	Better GP benchmarks: community survey results and proposals									X					
190	EC7	2013	How to effectively use topic models for software engineering tasks? an approach based on genetic algorithms					X									
191	EC7	2013	Innovative instructions and software model for isolated execution									X					
192	EC7	2013	Innovative technology for CPU based attestation and sealing									X					
193	EC7	2013	Signal processing and machine learning with differential privacy: algorithms and challenges for continuous data									X					
194	EC7	2014	A hitchhiker's guide to statistical tests for assessing randomized algorithms in software engineering											X			X
195	EC7	2014	Large-scale linear ranksvm					X								X	
196	EC7	2014	Practical homomorphic encryption: a survey									X					
197	EC7	2014	Shielding applications from an untrusted cloud with haven									X					
198	EC7	2015	Suggesting accurate method and class names													X	
199	EC7	2015	VC3: trustworthy data analytics in the cloud using SGX									X					
200	EC7	2016	Aggregating private sparse learning models using multi-party computation									X					
201	EC1	2016	DFL: Dual-service fault localization										X				
202	EC7	2016	Similarity to a single set												X		
203	EC7	2017	GPGPGPU: evaluation of parallelisation of genetic programming using GPGPU									X					
204	EC7	2017	Pretzel: email encryption and provider-supplied functions are compatible									X					
205	EC7	2017	Privacy-preserving distributed linear regression on high-dimensional data									X					
206	EC7, EC8	1957	Zoogeographic studies on the soleoid fishes found in Japan and its neighbouring regions	X	X	X		X							X		
207	EC7, EC9	1992	Adaptation in Natural and Artificial Systems: An Introductory Analysis with Applications to Biology, Control, and Artificial Intelligence	X													
208	EC7, EC9	1992	Genetic programming: on the programming of computers by means of natural selection					X				X		X			X
209	EC7, EC9	1992	Individual Comparisons by Ranking Methods										X				

#	Criterion	Year	Title	R1	R2	R3	R4	R5	R7	R8	R9	R10	R11	R12	R13	R14	R6
			SUMMARY OF THE BACKWARD SNOWBALLING PROCESS.														
			Analysis of studies per criterion.														
210	EC7, EC9	1996	Genetic Algorithms in Engineering and Computer Science										X				
211	EC7, EC9	1998	An Introduction to Genetic Algorithms										X				
212	EC7, EC9	2001	SciPy: Open sourcescientific tools for Python													X	
213	EC7, EC9	2002	Classification and Regression by randomForest													X	
214	EC7, EC9	2004	SLOCCount						X								
215	EC7, EC9	2005	Gaussian Processes for Machine Learning (Adaptive Computation and Machine Learning)													X	
216	EC7, EC9	2007	Cobertura: A code coverage ut													X	
217	EC7, EC9	2008	A Field Guide to Genetic Programming					X	X			X				X	
218	EC7, EC9	2008	Mathematical Statistics with Applications	X													
219	EC7, EC9	2009	Nonparametric Statistics for Non-Statisticians: A Step-by-Step Approach						X								
220	EC7, EC9	2012	GPy: A gaussian process framework in python													X	
221	EC7, EC9	2013	Gaussian processes for big data													X	
222	EC7, EC9	2013	Hyperopt: Distributed asynchronous hyperparameter optimization													X	
223	EC7, EC9	2015	Obliv-C: a language for extensible data-oblivious computation									X					
224	EC7, EC9	2015	R: A Language and Environment for Statistical Computing					X									
225	EC7, EC9	2016	JaCoCo				X	X								X	
226	EC8	1901	Étude comparative de la distribution florale dans une portion des Alpes et des Jura		X		X		X								
227	EC9	2017	Using Source Code Metrics to Improve Fault Localisation				X										
228	IC2	2017	Genetic programming-based composition of fault localization heuristics							X							