SUMMARY OF THE SEARCH PROCESS.
Analysis of studies per criterion.

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
1	EC1	2007	Automatic binding-related error diagnosis in logic programs			X		
2	EC1	2009	An empirical study of the factors that reduce the effectiveness of coverage-based fault localization			X	X	
3	EC1	2009	Evaluating the Accuracy of Fault Localization Techniques	X				
4	EC1	2009	Taming coincidental correctness: Coverage refinement with context patterns to improve fault localization	X				
5	EC1	2009	Zoltar: A spectrum-based fault localization tool			X		
6	EC1	2009	Zoltar: A toolset for automatic fault localization			X		
7	EC1	2011	Search-based program analysis			X	X	
8	EC1	2012	Co-evolution of logical couplings and commits for defect estimation	X	X	X	X	
9	EC1	2012	Improving Coverage-Based Localization of Multiple Faults Using Algorithms from Integer Linear Programming	X		X	X	
10	EC1	2012	Is Text Search an Effective Approach for Fault Localization: A Practitioners Perspective		X		X	
11	EC1	2013	A distributed approach to diagnosis candidate generation			X	X	
12	EC1	2013	Efficient probe selection for fault localization using the property of submodularity			X	X	
13	EC1	2013	Provably optimal and human-competitive results in SBSE for spectrum based fault localisation			X	X	
14	EC1	2016	A Search Based Context-Aware Approach for Understanding and Localizing the Fault via Weighted Call Graph	X		X	X	
15	EC1	2016	On the "Naturalness" of Buggy Code	X	X	X	X	
16	EC1	2017	A theoretical analysis on cloning the failed test cases to improve spectrum-based fault localization			X		
17	EC1	2018	Are bug reports enough for text retrieval-based bug localization?	X		X	X	
18	EC1	2019	A systematic mapping study on higher order mutation testing					X
19	EC1	2019	An Analysis on the Negative Effect of Multiple-Faults for Spectrum-Based Fault Localization	X			X	
20	EC1	2019	Visualizing Sequences of Debugging Sessions Using Swarm Debugging		X			
21	EC1	2019	Why Train-and-select when You Can Use Them All?: Ensemble Model for Fault Localisation		X			
22	EC1, EC8	2011	Quality assessment methods for software fault localization reports			X	X	
23	EC1, EC9	2005	Chapter 4 - Debugging					X
24	EC1, EC9	2014	Mining unstructured software repositories			X	X	
25	EC2	2009	Business-oriented fault localization based on probabilistic neural networks			X		
26	EC2	2012	Creating and debugging performance CUDA C			X		
27	EC2	2014	Detecting and Preventing the Architectural Roots of Bugs		X			
28	EC2	2017	Improving fault localization for Simulink models using search-based testing and prediction models	X		X	X	
29	EC2	2018	Evolutionary algorithm for bug localization in the reconfigurations of models at runtime		X	X	X	
30	EC2	2019	Effective fault localization of automotive Simulink models: achieving the trade-off between test oracle effort and fault localization accuracy			X	X	
31	EC2, EC9	2018	On the influence of modification timespan weightings in the location of bugs in models			X		
32	EC3	2001	Development of a fault locating system using object-oriented programming	X		X	X	

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
33	EC3	2003	Systematic evaluation of fault trees using real-time model checker UPPAAL					X
34	EC3	2005	Simulation-based validation and defect localization for evolving, semi-formal requirements models	X				
35	EC3	2007	A Genetic Algorithm Approach to User Location Estimation in UMTS Networks	X		X	X	
36	EC3	2007	A Method for the Automatic Selection of Test Frequencies in Analog Fault Diagnosis	X		X	X	
37	EC3	2008	A gabor transform-based Universal fault detector for transmission lines			X		
38	EC3	2008	Experiments in applying evolutionary algorithms to software verification			X	X	
39	EC3	2009	A PSO application for locating defective elements in antenna arrays	X				
40	EC3	2009	Application of neural networks and genetic algorithms to the screening for high quality chips					X
41	EC3	2014	Diagnostic test generation for statistical bug localization using evolutionary computation			X	X	
42	EC3	2015	Ant colony optimization based multi-faults localization mechanism in elastic optical networks					X
43	EC3	2018	Fragment retrieval on models for model maintenance: Applying a multi-objective perspective to an industrial case study			X	X	X
44	EC4	2008	Evolutionary functional testing			X		
45	EC4	2009	An ant colony optimization approach to test sequence generation for control flow based software testing			X		
46	EC4	2010	Quality Improvement and Optimization of Test Cases: A Hybrid Genetic Algorithm Based Approach		X			
47	EC4	2011	A heuristic test data generation approach for program fault localization			X	X	
48	EC4	2011	Variance Based Selection to Improve Test Set Performance in Genetic Programming		X			
49	EC4	2013	Entropy-based test generation for improved fault localization	X		X	X	
50	EC4	2013	Generating partial covering array for locating faulty interactions in combinatorial testing			X	X	
51	EC4	2013	Survey of test case prioritization techniques for regression testing			X	X	
52	EC4	2015	An efficient software defect prediction model using optimized tabu search branch and bound procedure			X		
53	EC4	2016	Fault Localization Method Generated by Regression Test Cases on the Basis of Genetic Immune Algorithm	X		X	X	
54	EC4	2016	SCOUT: A Multi-objective Method to Select Components in Designing Unit Testing	X		X	X	
55	EC4	2016	Search based test suite minimization for fault detection and localization: A co-driven method			X	X	
56	EC4	2018	Automatic software fault localization based on artificial bee colony	X		X	X	
57	EC4	2018	Genetic Algorithm-based Test Generation for Software Product Line with the Integration of Fault Localization Techniques			X	X	
58	EC5	2008	On the Automation of Fixing Software Bugs		X	X	X	
59	EC5	2009	A Case for Automated Debugging Using Data Structure Repair	X				
60	EC5	2009	A Genetic Programming Approach to Automated Software Repair		X			
61	EC5	2009	Automatically finding patches using genetic programming	X	X	X	X	
62	EC5	2010	Automated program repair through the evolution of assembly code			X	X	
63	EC5	2010	Coevolutionary Automated Software Correction		X			
64	EC5	2010	Using Mutation to Automatically Suggest Fixes for Faulty Programs	X				

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
65	EC5	2011	Evolutionary repair of faulty software			X	X	X
66	EC5	2011	Evolving Patches for Software Repair		X	X		
67	EC5	2011	Scalability of the Coevolutionary Automated Software Correction System		X			
68	EC5	2012	Dynamic localisation and automatic correction of software faults using evolutionary mutation testing			X	X	
69	EC5	2012	Multi-objective Coevolutionary Automated Software Correction		X	X		
70	EC5	2013	Automated Repair of Binary and Assembly Programs for Cooperating Embedded Devices		X	X	X	
71	EC5	2013	Locating and correcting software faults in executable code slices via evolutionary mutation testing			X	X	
72	EC5	2014	An approach based on band to predict fault localization in cloud environment			X		
73	EC5	2015	The Impact of Search Algorithms in Automated Program Repair					X
74	EC5	2016	Angelix: Scalable Multiline Program Patch Synthesis via Symbolic Analysis		X			
75	EC5	2016	Anti-patterns in search-based program repair			X	X	
76	EC5	2017	An investigation into the use of mutation analysis for automated program repair			X	X	
77	EC5	2017	Enhancing automated program repair with deductive verification			X		
78	EC5	2018	A study of applying fault-based genetic-like programming approaches to automatic software fault corrections			X	X	
79	EC5	2018	Dynamic neural program embeddings for program repair			X	X	
80	EC5	2018	kGenProg: A High-Performance, High-Extensibility and High-Portability APR System	X				
81	EC5	2018	Learning to Synthesize		X			
82	EC5	2018	Search-Based Efficient Automated Program Repair Using Mutation and Fault Localization	X		X	X	
83	EC5	2019	A Hybrid Evolutionary System for Automatic Software Repair		X			
84	EC5	2019	AVATAR: Fixing Semantic Bugs with Fix Patterns of Static Analysis Violations	X		X	X	
85	EC5	2019	Harnessing Evolution for Multi-hunk Program Repair		X			
86	EC5	2019	Practical program repair via bytecode mutation			X	X	
87	EC5	2019	Semantic Fitness Function in Genetic Programming Based on Semantics Flow Analysis		X			
88	EC5	2019	Using software testing to repair models			X		
89	EC5, EC8	2018	Automatic Program Repair Techniques: A Survey			X	X	
90	EC5, EC8	2019	Example-evolution-driven Automatic Repair of Student Programs			X	X	
91	EC6	2007	The Business Case for Automated Software Engineering		X			
92	EC6	2013	Optimization model of software fault detection			X	X	
93	EC6	2014	Compositional Vector Space Models for Improved Bug Localization	X		X	X	
94	EC6	2015	Fault localization method based on enhanced GABP neural network			X	X	
95	EC6	2016	Effective software fault localization using GA-RBF neural network			X		
96	EC6	2016	Inferring Links between Concerns and Methods with Multi-abstraction Vector Space Model	X		X	X	
97	EC6	2017	Directed Greybox Fuzzing		X			
98	EC6	2018	Bug localization in software using NSGA-II	X		X	X	

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
99	EC6	2018	Fusing multi-abstraction vector space models for concern localization			X	X	
100	EC6	2018	On the value of bug reports for retrieval-based bug localization	X		X	X	
101	EC7	2001	An Efficient Approximate Allocation Algorithm for Combinatorial Auctions		X			
102	EC7	2003	PowerTrim: An Automated Decision Support Algorithm for Preprocessing Family-Based Genetic Data					X
103	EC7	2003	Using inverse methods for estimating soil hydraulic properties from field data as an alternative to direct methods			X		X
104	EC7	2004	Genetic evidence for involvement of maternally derived Wnt canonical signaling in dorsal determination in zebrafish					X
105	EC7	2004	Percolation search in power law networks: Making unstructured peer-to-peer networks scalable			X	X	
106	EC7	2004	The generalized earthquake-location (GENLOC) package: An earthquake-location library			X		X
107	EC7	2005	Incorporating Non-local Information into Information Extraction Systems by Gibbs Sampling		X			
108	EC7	2005	Optimal valve location in rehabilitation and design of pipe networks using a scatter search metaheuristic procedure			X	X	
109	EC7	2005	Precise distributed localization algorithms for wireless networks	X				
110	EC7	2005	Randomized algorithms for motif detection			X	X	
111	EC7	2005	Solution quality of random search methods for discrete stochastic optimization					X
112	EC7	2005	Systems of Systems and Coordinated Atomic Actions		X			
113	EC7	2006	Bioinformatic identification and characterization of new members of short-chain dehydrogenase/reductase superfamily					X
114	EC7	2006	Computer benchmark for static and dynamic damage identification in bridges			X		
115	EC7	2006	Damage location in flexible structures using H2 and H∞ norm approaches			X		
116	EC7	2006	Fault section detection and location on distribution network using analytical voltage sags database			X		
117	EC7	2006	Ozzy, a Jag1 vestibular mouse mutant, displays characteristics of Alagille syndrome					X
118	EC7	2006	Polycystic kidney disease: Cell division without a c(l)ue?					X
119	EC7	2006	Software Cultivation Using the Artificial Intelligence Design Framework		X			
120	EC7	2007	3D Triangular Mesh Optimization in Geometry Processing for CAD		X			
121	EC7	2007	A GA mechanism for optimizing the design of attribute double sampling plan					X
122	EC7	2007	Arabidopsis intragenomic conserved noncoding sequence			X		
123	EC7	2007	Bio-basis function neural networks in protein data mining			X		
124	EC7	2007	Cross-layer design for intrusion detection and data security in wireless ad hoc sensor networks			X	X	
125	EC7	2007	Localization in ultra wideband sensor networks using Tabu search			X		
126	EC7	2008	A Measurement Study of Unstructured P2P Overlay	X		X		
127	EC7	2008	Cancer-associated carbonic anhydrases and their inhibition			X		
128	EC7	2008	Cognitive-enhancing effects of angiotensin IV			X		
129	EC7	2008	Genetic algorithm based parameter estimation of Nash model			X	X	
130	EC7	2008	License Plate Recognition Based on Genetic Algorithm	X		X	X	

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
131	EC7	2008	Precise failure localization using automated layout analysis of diagnosis candidates			X		
132	EC7	2008	User-Specific Iris Authentication Based on Feature Selection	X		X	X	
133	EC7	2009	ICP based on Polar Point Matching with application to Graph-SLAM	X				
134	EC7	2009	Relationship-based Change Propagation: A Case Study		X			
135	EC7	2009	The tumor suppressor WTX shuttles to the nucleus and modulates WT1 activity			X		
136	EC7	2009	Vehicle Localization by Matching Triangulated Point Patterns		X			
137	EC7	2010	A networked mobile sensor test-bed for collaborative multi-target tracking applications			X		
138	EC7	2010	Breadcrumbs: Efficient Context Sensitivity for Dynamic Bug Detection Analyses		X			
139	EC7	2010	Fault diagnosis system for tapped power transmission lines			X		
140	EC7	2010	Foregut separation and tracheo-oesophageal malformations: The role of tracheal outgrowth, dorso-ventral patterning and programmed cell death					X
141	EC7	2010	Population Restarting: A Study Case of Feature Extraction from Remotely Sensed Imagery Using Textural Information		X			
142	EC7	2010	Predicting the time to localized muscle fatigue using ANN and evolved sEMG feature	X				
143	EC7	2011	A new strategy for automotive off-board diagnosis based on a meta-heuristic engine			X	X	X
144	EC7	2011	Accurate Construction of Consensus Genetic Maps via Integer Linear Programming		X			
145	EC7	2011	Automated analysis of neuronal morphology, synapse number and synaptic recruitment			X		
146	EC7	2011	Development, maturation, and necessity of transcription factors in the mouse suprachiasmatic nucleus			X		
147	EC7	2011	Mitigating FPGA Interconnect Soft Errors by In-place LUT Inversion		X			
148	EC7	2011	The knockdown of the maternal estrogen receptor 2a (esr2a) mRNA affects embryo transcript contents and larval development in zebrafish					X
149	EC7	2012	City Fire Risk Assessment Model Based on the Adaptive Genetic Algorithm and BP Network	X		X	X	
150	EC7	2012	Distribute localization for wireless sensor networks using particle swarm optimization	X		X	X	
151	EC7	2012	Localization and profile error evaluation of freeform surface based on CAD model-directed measurement			X	X	
152	EC7	2012	Synthesis of Minimal-error Control Software		X			
153	EC7	2012	VFSARES—a very fast simulated annealing FORTRAN program for interpretation of 1-D DC resistivity sounding data from various electrode arrays					X
154	EC7	2013	1866 – Novel candidate genomic loci for mental retardation					X
155	EC7	2013	Accurate evaluation of free-form surface profile error based on quasi particle swarm optimization algorithm and surface subdivision			X	X	
156	EC7	2013	Ant clustering based text detection in natural scene images	X				
157	EC7	2013	Brain white matter oedema due to ClC-2 chloride channel deficiency: An observational analytical study					X
158	EC7	2013	Genetic algorithm in locating the optimum mid-connection of Off-Centre braced system			X	X	
159	EC7	2013	Image processing and feature extraction of circular objects from biological images			X		
160	EC7	2013	MHS2: A map-reduce heuristic-driven minimal hitting set search algorithm			X	X	
161	EC7	2013	MLSTest: Novel software for multi-locus sequence data analysis in eukaryotic organisms					X

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
			SUMMARY OF THE SEARCH PROCESS.					
			Analysis of studies per criterion.					
162	EC7	2013	Multi-platform RF emitter localization using extremum seeking control			X	X	
163	EC7	2013	Planar cell polarity (PCP) and Wnt signaling in renal disease					X
164	EC7	2013	Research on localization for distribution communication wireless sensor networks based on DV-Hop			X	X	
165	EC7	2014	A Novel Algorithm for Distributed Localization in Wireless Sensor Networks		X			
166	EC7	2014	An improved PSO algorithm for distributed localization in wireless sensor networks	X		X		
167	EC7	2014	An unsatisfiable subformulae extraction algorithm based on refutation proof and local search			X		
168	EC7	2014	Automated Design of Algorithms and Genetic Improvement: Contrast and Commonalities		X			
169	EC7	2014	Development of optimal path planning based on ant colony and wireless sensor network localization techniques for an autonomous mobile service robot	X		X	X	
170	EC7	2014	Generating profile-based signatures for online intrusion and failure detection			X	X	X
171	EC7	2014	Sampling strategy for free-form surface inspection by using coordinate measuring machines			X	X	
172	EC7	2014	Sampling strategy for free-form surface inspection using coordinate measuring machines			X	X	
173	EC7	2015	Application of a new crustal velocity model in earthquake location in Ningxia			X		
174	EC7	2015	Heuristic Model Checking Using a Monte-Carlo Tree Search Algorithm		X			
175	EC7	2015	PlasMatch: A Tool for Choosing Usable Restriction Enzymes and Plasmid Backbones		X			
176	EC7	2015	Repairing COTS Router Firmware Without Access to Source Code or Test Suites: A Case Study in Evolutionary Software Repair		X	X	X	
177	EC7	2015	The on-line evolutionary method for soft fault diagnosis in diode-transistor circuits			X	X	
178	EC7	2016	A bio-inspired method for locating the diffusion source with limited observers	X				
179	EC7	2016	A swarm-based approach to real-time 3D indoor localization: Experimental performance analysis			X	X	X
180	EC7	2016	Co-repressor CBFA2T2 regulates pluripotency and germline development			X		
181	EC7	2016	Fault localization based on combines active and passive measurements in computer networks by ant colony optimization			X	X	X
182	EC7	2016	Optimization of corrosion diagnosis of grounding grid based on continuous genetic algorithm			X	X	
183	EC7	2016	Prediction of relative position of CT slices using a computational intelligence system					X
184	EC7	2016	Range based wireless node localization using Dragonfly Algorithm	X		X	X	
185	EC7	2016	SPSA-NC: simultaneous perturbation stochastic approximation localization based on neighbor confidence			X	X	
186	EC7	2017	A Highly Accurate Method of Locating Microseismic Events Associated With Rockburst Development Processes in Tunnels	X				
187	EC7	2017	A Survey on Data-Flow Testing		X	X	X	
188	EC7	2017	A Truthful Mechanism for the Generalized Assignment Problem		X			
189	EC7	2017	Bi-objective reliable location-inventory-routing problem with partial backordering under disruption risks: A modified AMOSA approach					X
190	EC7	2017	Comparison of in silico prediction and experimental assessment of ABCB4 variants identified in patients with biliary diseases					X
191	EC7	2017	Improved Wi-Fi Indoor Positioning Based on Particle Swarm Optimization	X				

| | | | SUMMARY OF THE SEARCH PROCESS. | | | | | |
| | | | Analysis of studies per criterion. | | | | | |
#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
192	EC7	2017	Indoor High Precision Three-Dimensional Positioning System Based on Visible Light Communication Using Particle Swarm Optimization	X				
193	EC7	2017	Loss of PopZAt activity in agrobacterium tumefaciens by deletion or depletion leads to multiple growth poles, minicells, and growth defects			X		
194	EC7	2017	Optimized localization by mobile anchors in Wireless Sensor Network by particle swarm optimization	X		X	X	
195	EC7	2017	Reactive Oxygen Species Localization Programs Inflammation to Clear Microbes of Different Size					X
196	EC7	2017	Study on DV-HOP node location algorithm for Wireless Sensor Networks	X		X	X	
197	EC7	2017	The Preliminary Results of GMSTech: A Software Development for Microseismic Characterization			X	X	
198	EC7	2018	A BBO-based algorithm for slope stability analysis by locating critical failure surface			X	X	
199	EC7	2018	An analysis of anterior segment development in the chicken eye					X
200	EC7	2018	Analysis of slope stability and detection of critical failure surface using gravitational search algorithm	X		X	X	
201	EC7	2018	Deterministic and Stochastic Precipitation Downscaling Using Multi-objective Genetic Programming		X			
202	EC7	2018	Distributed multi-GNSS timing and localization for nanosatellites			X	X	
203	EC7	2018	Distributed situation-aware scheduling algorithm for network navigation			X		
204	EC7	2018	Electroanatomic and Pathologic Right Ventricular Outflow Tract Abnormalities in Patients With Brugada Syndrome					X
205	EC7	2018	Fault localization for transmission lines with optimal Phasor Measurement Units			X	X	X
206	EC7	2018	HotSpot: Anomaly Localization for Additive KPIs With Multi-Dimensional Attributes	X				
207	EC7	2018	LRP10 genetic variants in familial Parkinson's disease and dementia with Lewy bodies: a genome-wide linkage and sequencing study					X
208	EC7	2018	Multi controller software defined network link fault location based on tree decomposition method			X	X	
209	EC7	2019	Comparing and Combining Lexicase Selection and Novelty Search		X			
210	EC7	2019	Fam208a orchestrates interaction protein network essential for early embryonic development and cell division					X
211	EC7	2019	Linear Scaling with and Within Semantic Backpropagation-based Genetic Programming for Symbolic Regression		X			
212	EC7	2019	Neural Network Architecture Search with Differentiable Cartesian Genetic Programming for Regression		X			
213	EC7	2019	Parameter Tuning of a Peak Fitting Algorithm with an Evolved Experimental Design	X				
214	EC7	2019	Single Amino Acid Change Underlies Distinct Roles of H2A.Z Subtypes in Human Syndrome					X
215	EC7	2019	Waveguide-Invariant-Based Ranging and Receiver Localization Using Tonal Sources of Opportunity	X		X	X	
216	EC7 EC9	2014	Chapter 4.4.1 - Subduction Zones: Structure and Deformation History					X
217	EC7, EC8	2019	A Transformer Partial Discharge UHF Localization Method Based on TDOA and TS-PSO			X	X	
218	EC7, EC9	2012	A multi-robot chemical source localization strategy based on fluid physics: Experimental results			X	X	
219	EC8	2016	Genetic algorithm based multiple faults localization technique			X	X	

#	Criterion	Year	Title	IEEEXplore	ACM DL	Scopus	Engineering Village	Science Direct
220	EC8, EC9	2001	Auscultation des barrages en beton par ecoute microsismique: Detectabilite et localisation des evenements				X	
221	IC1	2018	Localizing multiple software faults based on evolution algorithm			X	X	X
222	IC2	2011	Search-based fault localization	X	X	X	X	
223	IC2	2012	Evolving human competitive spectra-based fault localisation techniques			X	X	
224	IC2	2015	Multiple Bug Spectral Fault Localization Using Genetic Programming	X				
225	IC2	2017	Empirical Evaluation of Conditional Operators in GP Based Fault Localization		X	X	X	
226	IC2	2017	FLUCCS: Using Code and Change Metrics to Improve Fault Localization		X	X	X	
227	IC2	2017	Human Competitiveness of Genetic Programming in Spectrum-Based Fault Localisation: Theoretical and Empirical Analysis		X	X	X	
228	IC2	2018	Evolutionary composition of customised fault localisation heuristics			X	X	
229	IC2	2018	Learning fault localisation for both humans and machines using multi-objective GP			X	X	
230	IC2	2018	Learning without peeking: Secure multi-party computation genetic programming			X	X	
231	IC2	2018	Mutation-Based Evolutionary Fault Localisation	X		X	X	
232	IC2	2018	Spectral-based fault localization using hyperbolic function			X	X	
233	IC2	2019	Empirical Evaluation of Fault Localisation Using Code and Change Metrics	X				