Report 1: Searching and Classifying Empirical Studies (year 2015)

Group 20

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year 2015

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1. Search Process

1.1 Search Description

1.1.1 Plan description

Our plan is to complete the literature search of empirical studies in software engineering in 2015. The task of manually searching is delivered averagely to the group members and each group member should finish the search work and submit the result for the final completion of our presentation and report. The result should contain some basic information about the studies we have chosen and their classification of them.

1.1.2 Search Venues and Database

According to the advice mentioned in the teaching lecture slides, three venues are chosen as our search venues, which are Empirical Software Engineering Journal(EMSE), International Symposium on Empirical Software Engineering and Measurement(ESEM), and International Conference on Evaluation and Assessment in Software Engineering(EASE), and the related databases are presented in the following table.

VENUE/JOURNAL	DATABASE
Empirical Software Engineering Journal(EMSE)	Springer https://www.springer.com/journal/10664
International Symposium on Empirical Software Engineering and Measurement(ESEM)	ACM digital library https://dl.acm.org
International Conference on Evaluation and Assessment in Software Engineering(EASE)	ACM digital library https://dl.acm.org

1.1.3 Selection and Classification Criteria

Given that so many papers are published in one year, some of which do not meet our demand, we've made some inclusion criteria in the first place. First, the paper should be written in English. Meanwhile, there should be at least one empirical research method used in the paper. Besides, the paper should be no less than 6 pages and must be a full research paper. We classified those papers according to the research methods applied in their studies. Since each of these methods has some specific features, we would refer to these features as the criteria when classifying. And the features are as follows.

RESEARCH METHOD
Controlled Experiments
Case Studies
Surveys
Ethnographies
Action Research
Systematic Literature Reviews
Expert Opinions

1.1.4 Execution process

step1 choosing database

After our discussion and consultation about a suitable database, we've decided to use Springer and ACM digital library. The former is for journals, and the latter is for conferences. According to the venues we chose, Springer is used for EMSE searching, while ACM digital library is prepared for ESEM and EASE.

step2 Screening & getting papers list and download by sci-hub

Referring to the inclusion criteria, some search results were filtered out. After screening, we try to get the list of papers and start downloading.

step3 Categorizing

As shown in Table 1.1.3, seven research methods are retained for classification, including Controlled Experiments, Case Studies, Surveys, Ethnographies, Action Research, Systematic Literature Reviews, and Expert Opinions. And they serve as an important reference for classification. We first check the keywords and sentences in the abstract. In order to make the judgment more accurate, the next step is to scan the entire article and classify it according to the above characteristics. If in some cases papers are difficult to classify, we flag them and discuss them with the rest of the group.

1.2 Problems and Experience

Problems

problem1: There may be multiple research methods in one particular paper so that it may be hard to decide the specific research method it belongs to. For example, some papers take a review of past studies, and they also proposed a new framework in that field.

solution: We choose the main research method adopted in the paper as the final result.

problem2: some papers focus on introducing an algorithm 0or a concrete tech, like a test framework

solution: This kind of paper usually uses experiments to validate their algorithm/tech, so classify them into Controlled Experiment

Experience

1. Some research methods are relatively more common than other kinds.
2. The retrieved papers in 2015 were mainly related to the fields of game entertainment, children's education, human sensory experience improvement, animal research, etc. Among them, those that were not highly relevant to society mainly used research methods such as Controlled Experiments, Action Research, and Case Studies. Those with a high correlation to society will also use surveys and other methods

2. Search Result

2.1 Statistic Summary

> Table 1 Method Categorizing Studies

VENUES	COUNT
ESEM	67
EASE	32
EMSE	55
Total	154

> Table2: Method Statistics

	ESEM	EASE	EMSE	TOTAL
Controlled Experiments	17	11	24	52
Case Studies	10	2	6	18
Surveys	7	5	4	16
Action Research	18	3	9	30
Systematic Literature Reviews	2	8	7	17
Ethnographies	2	1	0	3

Expert Opinions	0 ESEM	2 EASE	EMSE	TOTAL
other/can not judge	11	2	3	16
total	67	32	55	154

2.2.1 ESEM

Figure 1 Method Categorizing Studies

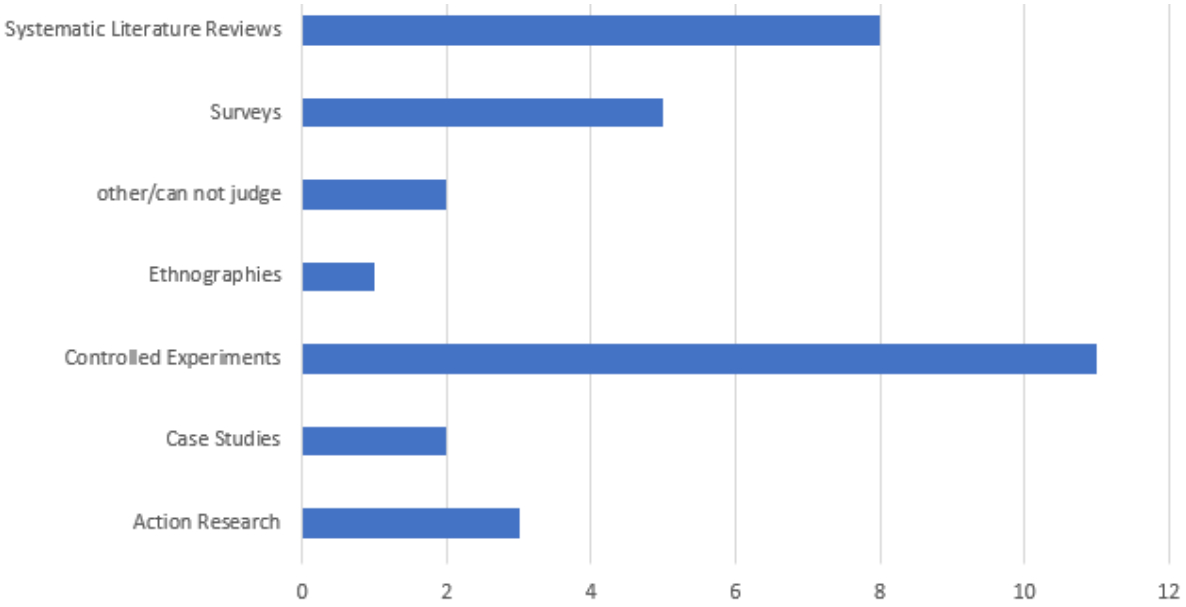

Table 1 Method Categorizing Studies

EMPIRICAL METHOD	EMPIRICAL STUDIES	COUNT
Controlled Experiments	[2],[4],[6],[8],[10],[13],[24],[27],[28],[31],[34],[44],[45], [46],[54],[57],[64]	17
Case Studies	[1],[36],[38],[47],[51],[52],[58],[59],[63],[65]	10
Surveys	[3],[12],[17],[18],[20],[35],[53]	7
Action Research	[5],[9],[11],[14],[26],[29],[30],[33],[37],[41],[42],[48],[49], [55],[56],[61],[62],[66]	18
Systematic Literature Reviews	[15],[50]	2
Ethnographies	[7],[16]	2
Expert Opinions		0
other/can not judge	[19],[21],[22],[23],[25],[32],[39],[40],[43],[60],[67]	11

Table2: Method Statistics

INDEX	CITATION	METHOD
1	Lindsay Grace, G. Tanner Jackson, Christopher Totten, Julian Parker, and Joyce Rice. 2015. Designing microgames for assessment: a case study in rapid prototype iteration. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 20, 1–4. https://doi.org/10.1145/2832932.2832969	Case Studies
2	Timo Nummenmaa, Heikki Tyni, Annakaisa Kultima, Kati Alha, and Jussi Holopainen. 2015. Need to touch, wonder of discovery, and social capital: experiences with interactive playful seats. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 10, 1–12. https://doi.org/10.1145/2832932.2832959	Controlled Experiments
3	Menno Deen, Frank Nack, and Mata Haggis. 2015. Diversity through specificity: design lessons learned from the Games [4Diversity] Jams. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 5, 1–10. https://doi.org/10.1145/2832932.2832957	Surveys
4	Pedro Centieiro, Teresa Romão, and A. Eduardo Dias. 2015. Emotion sharing during live sports broadcasts: studying its potential and the users' preferences. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 22, 1–4. https://doi.org/10.1145/2832932.2832986	Controlled Experiments
5	Pedro Centieiro, Rui Neves Madeira, Teresa Romão, A. Eduardo Dias, and Nuno Correia. 2015. In sync with fair play! delivering a synchronized and cheat-preventing second screen gaming experience. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 6, 1–11. https://doi.org/10.1145/2832932.2832953	Action Research
6	Courgeon Matthieu and Duhaut Dominique. 2015. Artificial companions as personal coach for children: the interactive drums teacher. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 16, 1–4. https://doi.org/10.1145/2832932.2832981	Controlled Experiments

INDEX	CITATION	METHOD
7	Ng Ee Ching @ Candice, Zeliha Gul Inanc, Galina Mihaleva, and Ivy Maria Lim. 2015. Cultural play: a tangible interactive game-based learning project on the cultural heritage of Singapore. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 45, 1–3. https://doi.org/10.1145/2832932.2832960	Ethnographies
8	Satu Jumisko-Pyykkö, Panos Markopoulos, and Miska M. Hannuksela. 2015. Who is moving - user or device? experienced quality of mobile 3d video in vehicles. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 13, 1–11. https://doi.org/10.1145/2832932.2832948	Controlled Experiments
9	Natsumi Hashimoto and Itiro Siio. 2015. StudI/O: locating toy blocks by projection. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 30, 1–4. https://doi.org/10.1145/2832932.2832974	Action Research
10	Olivia Johnston-Wilder, Clara Mancini, Brendan Aengenheister, Joe Mills, Rob Harris, and Claire Guest. 2015. Sensing the shape of canine responses to cancer. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 63, 1–4. https://doi.org/10.1145/2832932.2837017	Controlled Experiments
11	Hiroki Watanabe, Tsutomu Terada, and Masahiko Tsukamoto. 2015. UltraSoundLog: location/person-aware sound log system for museums. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 12, 1–10. https://doi.org/10.1145/2832932.2832954	Action Research
12	Kohki Ikeuchi, Mohammed AlSada, and Tatsuo Nakajima. 2015. Providing ambient information as comfortable sound for reducing cognitive overload. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 29, 1–5. https://doi.org/10.1145/2832932.2832985	Surveys

INDEX	CITATION	METHOD
13	Olivia Petit, Carlos Velasco, Adrian David Cheok, and Charles Spence. 2015. Consumer sensory neuroscience in the context of food marketing. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 49, 1–4. https://doi.org/10.1145/2832932.2856226	Controlled Experiments
14	Paul Strohmeier. 2015. DisplayPointers: seamless cross-device interactions. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 4, 1–8. https://doi.org/10.1145/2832932.2832958	Action Research
15	Francisco Lepe-Salazar. 2015. A model to analyze and design educational games with pedagogical foundations. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 1, 1–14. https://doi.org/10.1145/2832932.2832951	Systematic Literature Reviews
16	Fredrik Aspling, Oskar Juhlin, and Elisa Chiodo. 2015. Smelling, pulling, and looking: unpacking similarities and differences in dog and human city life. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 64, 1–9. https://doi.org/10.1145/2832932.2837013	Ethnographies
17	Nurul Nisa Omar, Lim Yan Peng, and Tengku Putri Norishah. 2015. Educational online games: implementing MMO approach to enhance users' affective learning experiences. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 21, 1–5. https://doi.org/10.1145/2832932.2832973	Surveys
18	Duncan Rowland, Kwamena Appiah-Kubi, Victoria Shipp, Richard Mortier, and Steve Benford. 2015. Annotation and anonymity: playful photo-sharing by visiting groups of teenagers. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 2, 1–10. https://doi.org/10.1145/2832932.2832955	Surveys

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19	Hiroki Kobayashi, Kana Muramatsu, Junya Okuno, Kazuhiko Nakamura, Akio Fujiwara, and Kaoru Saito. 2015. Playful rocksalt system: animal-computer interaction design in wild environments. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 62, 1–4. https://doi.org/10.1145/2832932.2837012	other/can not judge
20	Elena Márquez Segura. 2015. Co-creating embodied sketches playing as a method to design with children. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 18, 1–7. https://doi.org/10.1145/2832932.2832975	Surveys
21	Adrian David Cheok, Kasun Karunanayaka, Nur Amira Samshir, and Nurafiqah Johari. 2015. Initial basic concept of thermal sweet taste interface. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 52, 1–3. https://doi.org/10.1145/2832932.2856225	other/can not judge
22	Ryuichi Yoshida, Haruya Tamaki, Tsugunosuke Sakai, Machi Saito, Ryohei Egusa, Shinichi Kamiyama, Miki Namatame, Masanori Sugimoto, Fusako Kusunoki, Etsuji Yamaguchi, Shigenori Inagaki, Yoshiaki Takeda, and Hiroshi Mizoguchi. 2015. Experience-based learning support system to enhance child learning in a museum: touching real fossils and "experiencing" paleontological environment. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 25, 1–4. https://doi.org/10.1145/2832932.2832977	other/can not judge
23	Hanna E. Wirman and Ida K. H. Jørgensen. 2015. Designing for intuitive use for non-human users. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 58, 1–8. https://doi.org/10.1145/2832932.2837008	other/can not judge
24	Joaquim Dantas, Cristina Sylla, Pedro Branco, Vítor Carvalho, and Eva Oliveira. 2015. T-stories: improving and expanding t-words. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 38, 1–5. https://doi.org/10.1145/2832932.2832940	Controlled Experiments

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25	Cristina Sylla, Eva Oliveira, Joaquim Dantas, Vítor Carvalho, and Pedro Branco. 2015. Record, play, go... In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 47, 1–3. https://doi.org/10.1145/2832932.2832963	other/can not judge
26	Tomohiro Tanikawa, Hidenori Uzuka, Takuji Narumi, and Michitaka Hirose. 2015. Integrated view-input ar interaction for virtual object manipulation using tablets and smartphones. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 7, 1–8. https://doi.org/10.1145/2832932.2832956	Action Research
27	Fernando Garcia-Sanjuan, Javier Jaen, Vicente Nacher, and Alejandro Catala. 2015. Design and evaluation of a tangible-mediated robot for kindergarten instruction. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 3, 1–11. https://doi.org/10.1145/2832932.2832952	Controlled Experiments
28	Sean Mealin, Mike Winters, Ignacio X. Domínguez, Michelle Marrero-García, Alper Bozkurt, Barbara L. Sherman, and David L. Roberts. 2015. Towards the non-visual monitoring of canine physiology in real-time by blind handlers. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 66, 1–8. https://doi.org/10.1145/2832932.2837018	Controlled Experiments
29	Daniel Kade, Rikard Lindell, Hakan Ürey, and Oğuzhan Özcan. 2015. Acting 2.0: when entertainment technology helps actors to perform. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 15, 1–4. https://doi.org/10.1145/2832932.2832984	Action Research
30	Kei Nitta, Keita Higuchi, Yuichi Tadokoro, and Jun Rekimoto. 2015. Shepherd pass: ability tuning for augmented sports using ball-shaped quadcopter. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 11, 1–7. https://doi.org/10.1145/2832932.2832950	Action Research

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31	Ryo Okugawa, Kazuya Murao, Tsutomu Terada, and Masahiko Tsukamoto. 2015. Training system of bicycle pedaling using auditory feedback. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 17, 1–4. https://doi.org/10.1145/2832932.2832972	Controlled Experiments
32	Nicolas Sabouret, Björn Schuller, Lucas Paletta, Erik Marchi, Hazaël Jones, and Atef Ben Youssef. 2015. Intelligent user interfaces in digital games for empowerment and inclusion. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 8, 1–8. https://doi.org/10.1145/2832932.2832949	other/can not judge
33	Patricia Pons, Javier Jaen, and Alejandro Catala. 2015. Developing a depth-based tracking system for interactive playful environments with animals. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 59, 1–8. https://doi.org/10.1145/2832932.2837007	Action Research
34	Ryota Koshiyama, Takashi Kikuchi, Jun Morita, and Maki Sugimoto. 2015. VolRec: haptic display of virtual inner volume in consideration of angular moment. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 32, 1–4. https://doi.org/10.1145/2832932.2832970	Controlled Experiments
35	Nur Intan Adhani M. Nazri, Dayang Rohaya Awang Rambli, and Azfar Tomi. 2015. A mobile augmented reality game design approach for on product advertising. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 48, 1–8. https://doi.org/10.1145/2832932.2856222	Surveys
36	Fredrik Aspling. 2015. Animals, plants, people and digital technology: exploring and understanding multispecies-computer interaction. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 55, 1–4. https://doi.org/10.1145/2832932.2837010	Case Studies

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37	Hiroyuki Kanke, Tsutomu Terada, and Masahiko Tsukamoto. 2015. A percussion learning system by rhythm internalization using haptic indication. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 14, 1–5. https://doi.org/10.1145/2832932.2832971	Action Research
38	Shuangshuang Huo. 2015. All in pieces: a new media installation about information fragmentation. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 33, 1–4. https://doi.org/10.1145/2832932.2832933	Case Studies
39	Goh Wen Shyan, Brian Mak, Wong Chee Onn, Tan Yee Lyn, and Tey Zi Ming. 2015. The harp of light: a musical string projection mapping. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 43, 1–3. https://doi.org/10.1145/2832932.2832944	other/can not judge
40	Marius H. Braun and Adrian D. Cheok. 2015. Using scent actuation for engaging user experiences. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 54, 1–3. https://doi.org/10.1145/2832932.2856224	other/can not judge
41	Kazutaka Kurihara. 2015. Toolification of games: achieving non-game purposes in the redundant spaces of existing games. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 31, 1–5. https://doi.org/10.1145/2832932.2832965	Action Research
42	Lindsay Grace, Peter Jamieson, Naoki Mizuno, and Boyu Zhang. 2015. VerilogTown: cars, crashes and hardware design. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 39, 1–3. https://doi.org/10.1145/2832932.2832936	Action Research
43	Sarah Webber. 2015. Design and evaluation of interactive technology for human-animal encounters at the zoo. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 57, 1–3. https://doi.org/10.1145/2832932.2837009	other/can not judge

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44	Giancarlo Valentin, Joelle Alcaidinho, Ayanna Howard, Melody M. Jackson, and Thad Starner. 2015. Towards a canine-human communication system based on head gestures. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 65, 1–9. https://doi.org/10.1145/2832932.2837016	Controlled Experiments
45	Stefanie Angelia, Naohisa Ohta, and Kazunori Sugiura. 2015. Design and evaluation of educational kinesthetic game to encourage collaboration for kindergarten children. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 19, 1–5. https://doi.org/10.1145/2832932.2832967	Controlled Experiments
46	Michael Winters, Rita Brugarolas, John Majikes, Sean Mealin, Sherrie Yuschak, Barbara L. Sherman, Alper Bozkurt, and David Roberts. 2015. Knowledge engineering for unsupervised canine posture detection from IMU data. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 60, 1–8. https://doi.org/10.1145/2832932.2837015	Controlled Experiments
47	Akihiko Fukushima and Yoichiro Kawaguchi. 2015. Insect leg inspired friction attachment for miniature quadcopter. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 34, 1–4. https://doi.org/10.1145/2832932.2832941	Case Studies
48	Chong Teak Wei, Gabriel Zoe Chew, Wong Jack Xen, and Wong Chee Onn. 2015. Listen to your eye- turn the visual into sound. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 35, 1–4. https://doi.org/10.1145/2832932.2832938	Action Research
49	Shigeyuki Hirai and Daiki Ito. 2015. Entertainment applications for tapping on a bathtub edge using embedded acoustic sensors. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 24, 1–2. https://doi.org/10.1145/2832932.2832983	Action Research

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50	Marcus Carter, Sarah Webber, and Sally Sherwen. 2015. Naturalism and ACI: augmenting zoo enclosures with digital technology. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 61, 1–5. https://doi.org/10.1145/2832932.2837011	Systematic Literature Reviews
51	Yuki Akai, Ryo Yamashita, and Mitsunori Matsushita. 2015. Giving emotions to characters using comic symbols. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 26, 1–4. https://doi.org/10.1145/2832932.2832979	Case Studies
52	Yongsoon Choi. 2015. Electronic wearable using personalizable sound and fragrance for personal branding. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 51, 1–4. https://doi.org/10.1145/2832932.2856221	Case Studies
53	Shuhei Tsuchida, Tsutomu Terada, and Masahiko Tsukamoto. 2015. A system for dancing with multiple robotic balls. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 40, 1–3. https://doi.org/10.1145/2832932.2832943	Surveys
54	Wong Bee Suan and Evi Indriasari Mansor. 2015. A lo-fi prototype testing with preschoolers to design organic user interfaces. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 44, 1–4. https://doi.org/10.1145/2832932.2832962	Controlled Experiments
55	Junichi Kanebako, Fusako Kusunoki, Shigenori Inagaki, and Miki Namatame. 2015. Proposal for science learning materials using a "VibGrip". In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 36, 1–3. https://doi.org/10.1145/2832932.2832935	Action Research
56	Tan Kong Cheng, Lee Ming Xiang, Tan Yee Lyn, and Soo Yaw Thang. 2015. To? journey or destination? In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 37, 1–5. https://doi.org/10.1145/2832932.2832939	Action Research

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57	Vygandas Vegas Šimbelis and Anders Lundström. 2015. Stratic: performing the sampling rate. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 42, 1–4. https://doi.org/10.1145/2832932.2832945	Controlled Experiments
58	Anton Nijholt. 2015. Mischief humor: from games to playable cities. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 67, 1–5. https://doi.org/10.1145/2832932.2975583	Case Studies
59	Annika Waern, Jon Back, Eva-Lotta Sallnäs Pysander, Caspar J. H. Heefer, Andreas Rau, Susan Paget, and Linda Petterson. 2015. DigiFys: the interactive play landscape. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 46, 1–4. https://doi.org/10.1145/2832932.2832961	Case Studies
60	Olivia Petit, Adrian David Cheok, Charles Spence, Carlos Velasco, and Kasun Thejitha Karunanayaka. 2015. Sensory marketing in light of new technologies. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 53, 1–4. https://doi.org/10.1145/2832932.2837006	other/can not judge
61	Tatsunori Hirai, Hironori Doi, and Shigeo Morishima. 2015. MusicMixer: computer-aided DJ system based on an automatic song mixing. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 41, 1–5. https://doi.org/10.1145/2832932.2832942	Action Research
62	Gilang Andi Pradana, Emma Yann Zhang, Adrian David Cheok, and Yukihiro Morisawa. 2015. Delivering haptic sensations in mobile marketing. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 50, 1–3. https://doi.org/10.1145/2832932.2856223	Action Research

INDEX	CITATION	METHOD
63	Rania Mousa, Hoshang Kolivand, and Mohd Shahrizal Sunar. 2015. Enhanced exemplar based inpainting algorithm for hiding the augmented reality marker. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 23, 1–4. https://doi.org/10.1145/2832932.2832968	Case Studies
64	Katsuya Fujii, Sophia S. Russo, Pattie Maes, and Jun Rekimoto. 2015. MoveMe: 3D haptic support for a musical instrument. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 9, 1–8. https://doi.org/10.1145/2832932.2832947	Controlled Experiments
65	Jean-Loup Rault, Sarah Webber, and Marcus Carter. 2015. Cross-disciplinary perspectives on animal welfare science and animal-computer interaction. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 56, 1–5. https://doi.org/10.1145/2832932.2837014	Case Studies
66	Emily C. Collins, Tony J. Prescott, Ben Mitchinson, and Sebastian Conran. 2015. MIRO: a versatile biomimetic edutainment robot. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 28, 1–4. https://doi.org/10.1145/2832932.2832978	Action Research
67	Rossana Santos and Nuno Correia. 2015. Haunted house: an interactive experience using a pico projector. In Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology (ACE '15). Association for Computing Machinery, New York, NY, USA, Article 27, 1–4. https://doi.org/10.1145/2832932.2832980	other/can not judge

2.2.2 EASE

> Figure 1 Method Categorizing Studies

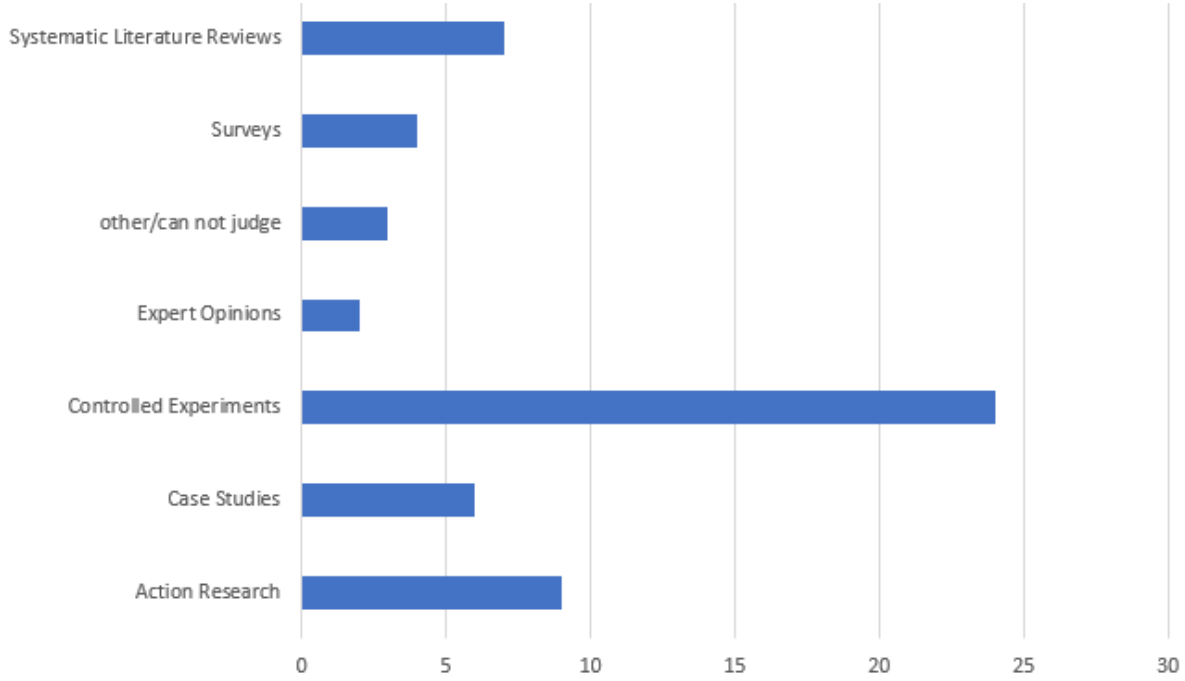


Table 1 Method Categorizing Studies

EMPIRICAL METHOD	EMPIRICAL STUDIES	COUNT
Controlled Experiments	[1],[3],[6],[9],[10],[12],[14],[15],[17],[27],[30]	11
Case Studies	[8],[32]	2
Surveys	[7],[11],[18],[24],[26]	5
Action Research	[5],[25],[31]	3
Systematic Literature Reviews	[4],[13],[19],[20],[21],[22],[28],[29]	8
Ethnographies	[2]	1
Expert Opinions		0
other/can not judge	[16],[23]	2

Table2: Method Statistics

INDEX	CITATION	METHOD
1	Barbara Kitchenham. 2015. Robust statistical methods: why, what and how: keynote. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 1, 1–6. https://doi.org/10.1145/2745802.2747956	Controlled Experiments
2	Margaret-Anne Storey. 2015. Selecting research methods for studying a participatory culture in software development: keynote. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 2, 1–5. https://doi.org/10.1145/2745802.2747957	Ethnographies
3	Klaas Andries de Graaf, Peng Liang, Antony Tang, and Hans van Vliet. 2015. Supporting architecture documentation: a comparison of two ontologies for knowledge retrieval. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 3, 1–10. https://doi.org/10.1145/2745802.2745804	Controlled Experiments
4	Alcemir Rodrigues Santos, Raphael Pereira de Oliveira, and Eduardo Santana de Almeida. 2015. Strategies for consistency checking on software product lines: a mapping study. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 5, 1–14. https://doi.org/10.1145/2745802.2745806	Systematic Literature Reviews
5	Bo Zhou, Iulian Neamtiu, and Rajiv Gupta. 2015. Predicting concurrency bugs: how many, what kind and where are they? In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 6, 1–10. https://doi.org/10.1145/2745802.2745807	Action Research
6	Bo Zhou, Iulian Neamtiu, and Rajiv Gupta. 2015. A cross-platform analysis of bugs and bug-fixing in open source projects: desktop vs. Android vs. iOS. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 7, 1–10. https://doi.org/10.1145/2745802.2745808	Controlled Experiments

INDEX	CITATION	METHOD
7	Mohammad Mahdi Hassan and Martin Blom. 2015. Applying clustering to analyze opinion diversity. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 8, 1–10. https://doi.org/10.1145/2745802.2745809	Surveys
8	Didar Zowghi, Francesca da Rimini, and Muneera Bano. 2015. Problems and challenges of user involvement in software development: an empirical study. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 9, 1–10. https://doi.org/10.1145/2745802.2745810	Case Studies
9	Mahmoud O. Elish and Yasser Al-Ghamdi. 2015. Fault density analysis of object-oriented classes in presence of code clones. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 10, 1–7. https://doi.org/10.1145/2745802.2745811	Controlled Experiments
10	Muhammad Atif Javed and Uwe Zdun. 2015. On the effects of traceability links in differently sized software systems. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 11, 1–10. https://doi.org/10.1145/2745802.2745812	Controlled Experiments
11	Muhammad Usman, Emilia Mendes, and Jürgen Börstler. 2015. Effort estimation in agile software development: a survey on the state of the practice. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 12, 1–10. https://doi.org/10.1145/2745802.2745813	Surveys
12	You Zhou, He Zhang, Xin Huang, Song Yang, Muhammad Ali Babar, and Hao Tang. 2015. Quality assessment of systematic reviews in software engineering: a tertiary study. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 14, 1–14. https://doi.org/10.1145/2745802.2745815	Controlled Experiments

INDEX	CITATION	METHOD
13	Gaoxuan Liu, Guoping Rong, He Zhang, and Qi Shan. 2015. The adoption of capture-recapture in software engineering: a systematic literature review. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 15, 1–13. https://doi.org/10.1145/2745802.2745816	Systematic Literature Reviews
14	Asim Abdulkhaleq and Stefan Wagner. 2015. A controlled experiment for the empirical evaluation of safety analysis techniques for safety-critical software. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 16, 1–10. https://doi.org/10.1145/2745802.2745817	Controlled Experiments
15	Deepika Badampudi, Claes Wohlin, and Kai Petersen. 2015. Experiences from using snowballing and database searches in systematic literature studies. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 17, 1–10. https://doi.org/10.1145/2745802.2745818	Controlled Experiments
16	Sherlock A. Licorish, Stephen G. MacDonell, and Tony Clear. 2015. Analyzing confidentiality and privacy concerns: insights from Android issue logs. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 18, 1–10. https://doi.org/10.1145/2745802.2745819	other/can not judge
17	Passakorn Phannachitta, Akito Monden, Jacky Keung, and Kenichi Matsumoto. 2015. Case consistency: a necessary data quality property for software engineering data sets. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 19, 1–10. https://doi.org/10.1145/2745802.2745820	Controlled Experiments
18	Alan Charpentier, Jean-Rémy Falleri, David Lo, and Laurent Réveillère. 2015. An empirical assessment of Bellon's clone benchmark. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 20, 1–10. https://doi.org/10.1145/2745802.2745821	Surveys

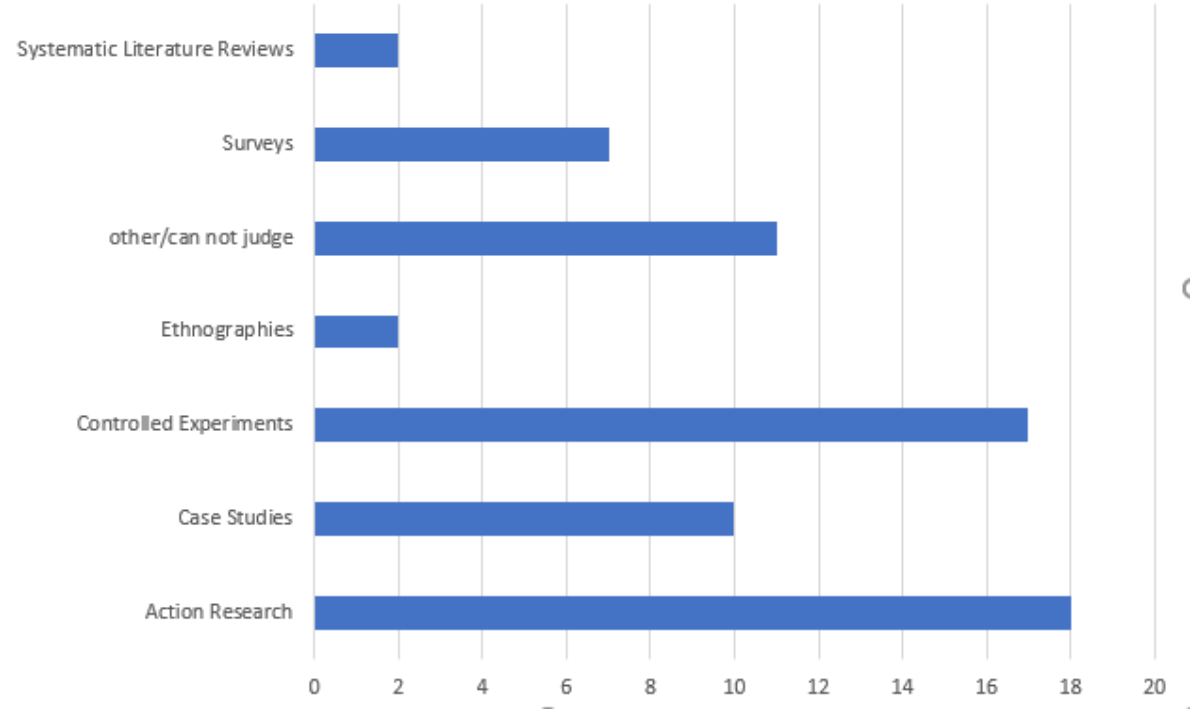
INDEX	CITATION	METHOD
19	Srdjan Stevanetic and Uwe Zdun. 2015. Software metrics for measuring the understandability of architectural structures: a systematic mapping study. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 21, 1–14. https://doi.org/10.1145/2745802.2745822	Systematic Literature Reviews
20	Alex Borges, Waldemar Ferreira, Emanoel Barreiros, Adauto Almeida, Liliane Fonseca, Eudis Teixeira, Diogo Silva, Aline Alencar, and Sergio Soares. 2015. Support mechanisms to conduct empirical studies in software engineering: a systematic mapping study. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 22, 1–14. https://doi.org/10.1145/2745802.2745823	Systematic Literature Reviews
21	Christopher Marshall and Pearl Brereton. 2015. Systematic review toolbox: a catalogue of tools to support systematic reviews. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 23, 1–6. https://doi.org/10.1145/2745802.2745824	Systematic Literature Reviews
22	Jefferson Seide Molléri and Fabiane Barreto Vavassori Benitti. 2015. SESRA: a web-based automated tool to support the systematic literature review process. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 24, 1–6. https://doi.org/10.1145/2745802.2745825	Systematic Literature Reviews
23	Davide Fucci, Burak Turhan, and Markku Oivo. 2015. On the effects of programming and testing skills on external quality and productivity in a test-driven development context. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 25, 1–6. https://doi.org/10.1145/2745802.2745826	other/can not judge
24	Christopher Marshall, Pearl Brereton, and Barbara Kitchenham. 2015. Tools to support systematic reviews in software engineering: a cross-domain survey using semi-structured interviews. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 26, 1–6. https://doi.org/10.1145/2745802.2745827	Surveys

INDEX	CITATION	METHOD
25	Yangchao Liu, Xiaobing Sun, and Yucong Duan. 2015. Analyzing program readability based on WordNet. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 27, 1–2. https://doi.org/10.1145/2745802.2745837	Action Research
26	Dana Sulistiyo Kusumo and Ariadi Nugroho. 2015. Understanding differences in process perspectives between developers and acquirers in off-the-shelf-based custom software projects undertaken in Indonesia. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 28, 1–6. https://doi.org/10.1145/2745802.2745828	Surveys
27	Marian Daun, Andrea Salmon, Thorsten Weyer, and Klaus Pohl. 2015. The impact of students' skills and experiences on empirical results: a controlled experiment with undergraduate and graduate students. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 29, 1–6. https://doi.org/10.1145/2745802.2745829	Controlled Experiments
28	Faezeh Siavashi and Dragos Truscan. 2015. Environment modeling in model-based testing: concepts, prospects and research challenges: a systematic literature review. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 30, 1–6. https://doi.org/10.1145/2745802.2745830	Systematic Literature Reviews
29	Sajjad Mahmood, Sajid Anwer, Mahmood Niazi, Mohammad Alshayeb, and Ita Richardson. 2015. Identifying the factors that influence task allocation in global software development: preliminary results. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 31, 1–6. https://doi.org/10.1145/2745802.2745831	Systematic Literature Reviews
30	Boyce Sigweni and Martin Shepperd. 2015. Using blind analysis for software engineering experiments. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 32, 1–6. https://doi.org/10.1145/2745802.2745832	Controlled Experiments

INDEX	CITATION	METHOD
31	Bilyaminu Auwal Romo and Andrea Capiluppi. 2015. Towards an automation of the traceability of bugs from development logs: a study based on open source software. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 33, 1–6. https://doi.org/10.1145/2745802.2745833	Action Research
32	Xin Xia, David Lo, Jingfan Tang, and Shanping Li. 2015. Customer satisfaction feedback in an IT outsourcing company: a case study on the insigma Hengtian company. In Proceedings of the 19th International Conference on Evaluation and Assessment in Software Engineering (EASE '15). Association for Computing Machinery, New York, NY, USA, Article 34, 1–5. https://doi.org/10.1145/2745802.2745834	Case Studies

2.2.3 EMSE

> Figure 1 Method Categorizing Studies



> Table 1 Method Categorizing Studies

EMPIRICAL METHOD	EMPIRICAL STUDIES	COUNT
Controlled Experiments	[5],[8],[9],[11],[12],[14],[16],[17],[20],[22],[24],[27],[30],[31],[35],[36],[41],[43],[46],[47],[48],[52],[53],[55]	24
Case Studies	[2],[6],[18],[19],[25],[33]	6
Surveys	[13],[39],[45],[49]	4
Action Research	[3],[7],[23],[26],[28],[34],[37],[44],[50]	9
Systematic Literature Reviews	[15],[21],[29],[32],[38],[42],[54]	7
Ethnographies		0
Expert Opinions	[4],[40]	2
other/can not judge	[1],[10],[51]	3

Table2: Method Statistics

INDEX	CITATION	METHOD
1	Claes Wohlin and Aybüke Aurum. 2015. Towards a decision-making structure for selecting a research design in empirical software engineering. Empirical Softw. Engg. 20, 6 (December 2015), 1427–1455. https://doi.org/10.1007/s10664-014-9319-7	other/can not judge
2	Manuel J. Moreno-Lizaranzu and Federico Cuesta. 2015. A framework and architecture for rapid software development: a success story. Empirical Softw. Engg. 20, 6 (December 2015), 1456–1485. https://doi.org/10.1007/s10664-014-9320-1	Case Studies
3	Mariano Ceccato, Andrea Capiluppi, Paolo Falcarin, and Cornelia Boldyreff. 2015. A large study on the effect of code obfuscation on the quality of java code. Empirical Softw. Engg. 20, 6 (December 2015), 1486–1524. https://doi.org/10.1007/s10664-014-9321-0	Action Research
4	Julian M. Bass. 2015. How product owner teams scale agile methods to large distributed enterprises. Empirical Softw. Engg. 20, 6 (December 2015), 1525–1557. https://doi.org/10.1007/s10664-014-9322-z	Expert Opinions
5	Martin P. Robillard and Yam B. Chhetri. 2015. Recommending reference API documentation. Empirical Softw. Engg. 20, 6 (December 2015), 1558–1586. https://doi.org/10.1007/s10664-014-9323-y	Controlled Experiments
6	Build systems specify how source code is translated into deliverables. They require continual maintenance as the system they build evolves. This build maintenance can become so burdensome that projects switch build technologies, potentially having to rewrite thousands of lines of build code. We aim to understand the prevalence of different build technologies and the relationship between build technology and build maintenance by analyzing version histories in a corpus of 177,039 repositories spread across four software forges, three software ecosystems, and four large-scale projects. We study low-level, abstraction-based, and framework-driven build technologies, as well as tools that automatically manage external dependencies. We find that modern, framework-driven build technologies need to be maintained more often and these build changes are more tightly coupled with the source code than low-level or abstraction-based ones. However, build technology migrations tend to coincide with a shift of build maintenance work to a build-focused team, deferring the cost of build maintenance to them.	Case Studies

INDEX	CITATION	METHOD
7	Daniela S. Cruzes, Tore Dybå, Per Runeson, and Martin Höst. 2015. Case studies synthesis: a thematic, cross-case, and narrative synthesis worked example. Empirical Softw. Engg. 20, 6 (December 2015), 1634–1665. https://doi.org/10.1007/s10664-014-9326-8	Action Research
8	Giuseppe Scanniello, Andrian Marcus, and Daniele Pascale. 2015. Link analysis algorithms for static concept location: an empirical assessment. Empirical Softw. Engg. 20, 6 (December 2015), 1666–1720. https://doi.org/10.1007/s10664-014-9327-7	Controlled Experiments
9	Jason Mczara, Shahryar Sarkani, Thomas Holzer, and Timothy Eveleigh. 2015. Software requirements prioritization and selection using linguistic tools and constraint solvers--a controlled experiment. Empirical Softw. Engg. 20, 6 (December 2015), 1721–1761. https://doi.org/10.1007/s10664-014-9334-8	Controlled Experiments
10	Lise Tordrup Heeager and Jeremy Rose. 2015. Optimising agile development practices for the maintenance operation: nine heuristics. Empirical Softw. Engg. 20, 6 (December 2015), 1762–1784. https://doi.org/10.1007/s10664-014-9335-7	other/can not judge
11	Maria Kechagia, Dimitris Mitropoulos, and Diomidis Spinellis. 2015. Charting the API minefield using software telemetry data. Empirical Softw. Engg. 20, 6 (December 2015), 1785–1830. https://doi.org/10.1007/s10664-014-9343-7	Controlled Experiments
12	Elder Macedo Rodrigues, Flávio Moreira De Oliveira, Leandro Teodoro Costa, Maicon Bernardino, Avelino Francisco Zorzo, Simone Rocio Senger Souza, and Rodrigo Saad. 2015. An empirical comparison of model-based and capture and replay approaches for performance testing. Empirical Softw. Engg. 20, 6 (December 2015), 1831–1860. https://doi.org/10.1007/s10664-014-9337-5	Controlled Experiments
13	Osama Al-Baik and James Miller. 2015. The kanban approach, between agility and leanness: a systematic review. Empirical Softw. Engg. 20, 6 (December 2015), 1861–1897. https://doi.org/10.1007/s10664-014-9340-x	Surveys

INDEX	CITATION	METHOD
14	The systematic review (SR) is a methodology used to find and aggregate all relevant existing evidence about a specific research question of interest. One of the activities associated with the SR process is the selection of primary studies, which is a time consuming manual task. The quality of primary study selection impacts the overall quality of SR. The goal of this paper is to propose a strategy named "Score Citation Automatic Selection" (SCAS), to automate part of the primary study selection activity. The SCAS strategy combines two different features, content and citation relationships between the studies, to make the selection activity as automated as possible. Aiming to evaluate the feasibility of our strategy, we conducted an exploratory case study to compare the accuracy of selecting primary studies manually and using the SCAS strategy. The case study shows that for three SRs published in the literature and previously conducted in a manual implementation, the average effort reduction was 58.2 % when applying the SCAS strategy to automate part of the initial selection of primary studies, and the percentage error was 12.98 %. Our case study provided confidence in our strategy, and suggested that it can reduce the effort required to select the primary studies without adversely affecting the overall results of SR.	Controlled Experiments
15	Yann-Gaël Guéhéneuc and Tom Mens. 2015. Introduction to the special issue on software maintenance and evolution research. Empirical Softw. Engg. 20, 5 (October 2015), 1193–1197. https://doi.org/10.1007/s10664-015-9398-0	Systematic Literature Reviews
16	Bogdan Dit, Evan Moritz, Mario Linares-Vásquez, Denys Poshyvanyk, and Jane Cleland-Huang. 2015. Supporting and accelerating reproducible empirical research in software evolution and maintenance using TraceLab Component Library. Empirical Softw. Engg. 20, 5 (October 2015), 1198–1236. https://doi.org/10.1007/s10664-014-9339-3	Controlled Experiments

INDEX	CITATION	METHOD
17	Debugging is a crucial yet expensive activity to improve the reliability of software systems. To reduce debugging cost, various fault localization tools have been proposed. A spectrum-based fault localization tool often outputs an ordered list of program elements sorted based on their likelihood to be the root cause of a set of failures (i.e., their suspiciousness scores). Despite the many studies on fault localization, unfortunately, however, for many bugs, the root causes are often low in the ordered list. This potentially causes developers to distrust fault localization tools. Recently, Parnin and Orso highlight in their user study that many debuggers do not find fault localization useful if they do not find the root cause early in the list. To alleviate the above issue, we build an oracle that could predict whether the output of a fault localization tool can be trusted or not. If the output is not likely to be trusted, developers do not need to spend time going through the list of most suspicious program elements one by one. Rather, other conventional means of debugging could be performed. To construct the oracle, we extract the values of a number of features that are potentially related to the effectiveness of fault localization. Building upon advances in machine learning, we process these feature values to learn a discriminative model that is able to predict the effectiveness of a fault localization tool output. In this work, we consider an output of a fault localization tool to be effective if the root cause appears in the top 10 most suspicious program elements. We have evaluated our proposed oracle on 200 faulty versions of Space, NanoXML, XML-Security, and the 7 programs in Siemens test suite. Our experiments demonstrate that we could predict the effectiveness of 9 fault localization tools with a precision, recall, and F-measure (harmonic mean of precision and recall) of up to 74.38 %, 90.00 % and 81.45 %, respectively. The numbers indicate that many ineffective fault localization instances are identified correctly, while only few effective ones are identified wrongly.	Controlled Experiments
18	Gabriele Bavota, Gerardo Canfora, Massimiliano Di Penta, Rocco Oliveto, and Sebastiano Panichella. 2015. How the Apache community upgrades dependencies: an evolutionary study. Empirical Softw. Engg. 20, 5 (October 2015), 1275–1317. https://doi.org/10.1007/s10664-014-9325-9	Case Studies
19	Mohammad Gharehyazie, Daryl Posnett, Bogdan Vasilescu, and Vladimir Filkov. 2015. Developer initiation and social interactions in OSS: A case study of the Apache Software Foundation. Empirical Softw. Engg. 20, 5 (October 2015), 1318–1353. https://doi.org/10.1007/s10664-014-9332-x	Case Studies

INDEX	CITATION	METHOD
20	Yuan Tian, David Lo, Xin Xia, and Chengnian Sun. 2015. Automated prediction of bug report priority using multi-factor analysis. Empirical Softw. Engg. 20, 5 (October 2015), 1354–1383. https://doi.org/10.1007/s10664-014-9331-y	Controlled Experiments
21	Mika V. Mäntylä, Bram Adams, Foutse Khomh, Emelie Engström, and Kai Petersen. 2015. On rapid releases and software testing: a case study and a semi-systematic literature review. Empirical Softw. Engg. 20, 5 (October 2015), 1384–1425. https://doi.org/10.1007/s10664-014-9338-4	Systematic Literature Reviews
22	Barbara Russo, Giancarlo Succi, and Witold Pedrycz. 2015. Mining system logs to learn error predictors: a case study of a telemetry system. Empirical Softw. Engg. 20, 4 (August 2015), 879–927. https://doi.org/10.1007/s10664-014-9303-2	Controlled Experiments
23	Nicholas Digiuseppe and James A. Jones. 2015. Fault density, fault types, and spectra-based fault localization. Empirical Softw. Engg. 20, 4 (August 2015), 928–967. https://doi.org/10.1007/s10664-014-9304-1	Action Research
24	Kai Petersen, Cigdem Gencel, Negin Asghari, and Stefanie Betz. 2015. An elicitation instrument for operationalising GQM+Strategies (GQM+S-EI). Empirical Softw. Engg. 20, 4 (August 2015), 968–1005. https://doi.org/10.1007/s10664-014-9306-z	Controlled Experiments
25	Viviane Santos, Alfredo Goldman, and Cleidson R. B. De Souza. 2015. Fostering effective inter-team knowledge sharing in agile software development. Empirical Softw. Engg. 20, 4 (August 2015), 1006–1051. https://doi.org/10.1007/s10664-014-9307-y	Case Studies
26	Gabriele Bavota, Abdallah Qusef, Rocco Oliveto, Andrea Lucia, and Dave Binkley. 2015. Are test smells really harmful? An empirical study. Empirical Softw. Engg. 20, 4 (August 2015), 1052–1094. https://doi.org/10.1007/s10664-014-9313-0	Action Research
27	Jiachen Yang, Keisuke Hotta, Yoshiki Higo, Hiroshi Igaki, and Shinji Kusumoto. 2015. Classification model for code clones based on machine learning. Empirical Softw. Engg. 20, 4 (August 2015), 1095–1125. https://doi.org/10.1007/s10664-014-9316-x	Controlled Experiments
28	Wei Wu, Adrien Serveaux, Yann-Gaël Guéhéneuc, and Giuliano Antoniol. 2015. The impact of imperfect change rules on framework API evolution identification: an empirical study. Empirical Softw. Engg. 20, 4 (August 2015), 1126–1158. https://doi.org/10.1007/s10664-014-9317-9	Action Research
29	Janet Siegmund and Jana Schumann. 2015. Confounding parameters on program comprehension: a literature survey. Empirical Softw. Engg. 20, 4 (August 2015), 1159–1192. https://doi.org/10.1007/s10664-014-9318-8	Systematic Literature Reviews

INDEX	CITATION	METHOD
30	José Sagrado, Isabel M. Águila, and Francisco J. Orellana. 2015. Multi-objective ant colony optimization for requirements selection. Empirical Softw. Engg. 20, 3 (June 2015), 577–610. https://doi.org/10.1007/s10664-013-9287-3	Controlled Experiments
31	Gordon Fraser and Andrea Arcuri. 2015. 1600 faults in 100 projects: automatically finding faults while achieving high coverage with EvoSuite. Empirical Softw. Engg. 20, 3 (June 2015), 611–639. https://doi.org/10.1007/s10664-013-9288-2	Controlled Experiments
32	Ronald Jabangwe, Jürgen Börstler, Darja Smite, and Claes Wohlin. 2015. Empirical evidence on the link between object-oriented measures and external quality attributes: a systematic literature review. Empirical Softw. Engg. 20, 3 (June 2015), 640–693. https://doi.org/10.1007/s10664-013-9291-7	Systematic Literature Reviews
33	Emil Alégroth, Robert Feldt, and Lisa Ryrholm. 2015. Visual GUI testing in practice: challenges, problemsand limitations. Empirical Softw. Engg. 20, 3 (June 2015), 694–744.	Case Studies
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50	Completeness is one of the main quality attributes of requirements specifications. If functional requirements are expressed as use cases, one can be interested in event completeness. A use case is event complete if it contains description of all the events that can happen when executing the use case. Missing events in any use case can lead to higher project costs. Thus, the question arises of what is a good method of identification of events in use cases and what accuracy and review speed one can expect from it. The goal of this study was to check if (1) HAZOP-based event identification is more effective thanad hocreview and (2) what is the review speed of these two approaches. Two controlled experiments were conducted in order to evaluatead hocapproach and H4U method to event identification. The first experiment included 18 students, while the second experiment was conducted with the help of 82 professionals. In both cases, accuracy and review speed of the investigated methods were measured and analyzed. Moreover, the usage of HAZOP keywords was analyzed. In both experiments, a benchmark specification based on use cases was used. The first experiment with students showed that a HAZOP-based review is more effective in event identification thanad hocreview and this result is statistically significant. However, the reviewing speed of HAZOP-based reviews is lower. The second experiment with professionals confirmed these results. These experiments showed also that event completeness is hard to achieve. It on average ranged from 0.15 to 0.26. HAZOP-based identification of events in use cases is an useful alternative toad hocreviews. It can achieve higher event completeness at the cost of an increase in effort.	Action Research
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