

# How Practitioners Perceive Automated Debugging

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1. Are you a professional software engineer?

- ☐ Yes
- ☐ No

2. Are you involved in open source software development efforts?

- ☐ Yes
- ☐ No

3. Which of the following roles best describe your software engineering experience?

- ☐ Software Development
- ☐ Software Testing
- ☐ Project Management
- ☐ Other

4. How many years of experience do you have in software development/testing/project management (decimals OK)?

5. Please describe your English proficiency level?

Very Good

☐

Good

☐

Mediocre

☐

Poor

☐

Very Poor

☐

6. What is your current country of residence?

Afghanistan  
Albania  
Algeria  
Andorra  
Angola  
Antigua and Barbuda  
Argentina  
Armenia  
Australia  
Austria  
Azerbaijan  
Bahamas, The  
Bahrain  
Bangladesh  
Barbados  
Belarus  
Belgium  
Belize  
Benin  
Bhutan  
Bolivia  
Bosnia and Herzegovina  
Botswana  
Brazil  
Brunei  
Bulgaria  
Burkina Faso  
Burundi  
Cambodia  
Cameroon  
Canada  
Cape Verde  
Central African Republic  
Chad

Chile  
China  
Colombia  
Comoros  
Congo, Democratic Republic of the  
Congo, Republic of the  
Costa Rica  
Cote d'Ivoire  
Croatia  
Cuba  
Curacao  
Cyprus  
Czech Republic  
Denmark  
Djibouti  
Dominica  
Dominican Republic  
East Timor (see Timor-Leste)  
Ecuador  
Egypt  
El Salvador  
Equatorial Guinea  
Eritrea  
Estonia  
Ethiopia  
Fiji  
Finland  
France  
Gabon  
Gambia, The  
Georgia  
Germany  
Ghana  
Greece  
Grenada  
Guatemala  
Guinea  
Guinea-Bissau  
Guyana  
Haiti  
Holy See  
Honduras  
Hong Kong  
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Hungary  
Iceland  
India  
Indonesia  
Iran  
Iraq  
Ireland  
Israel  
Italy  
Jamaica  
Japan  
Jordan  
Kazakhstan  
Kenya  
Kiribati  
Kosovo  
Kuwait  
Kyrgyzstan  
Laos  
Latvia  
Lebanon  
Lesotho  
Liberia  
Libya  
Liechtenstein  
Lithuania  
Luxembourg  
Macau  
Macedonia  
Madagascar  
Malawi  
Malaysia  
Maldives  
Mali  
Malta  
Marshall Islands  
Mauritania  
Mauritius  
Mexico  
Micronesia  
Moldova  
Monaco  
Mongolia  
Montenegro

Morocco  
Mozambique  
Myanmar  
Namibia  
Nauru  
Nepal  
Netherlands  
Netherlands Antilles  
New Zealand  
Nicaragua  
Niger  
Nigeria  
North Korea  
Norway  
Oman  
Pakistan  
Palau  
Palestinian Territories  
Panama  
Papua New Guinea  
Paraguay  
Peru  
Philippines  
Poland  
Portugal  
Qatar  
Romania  
Russia  
Rwanda  
Saint Kitts and Nevis  
Saint Lucia  
Saint Vincent and the Grenadines  
Samoa  
San Marino  
Sao Tome and Principe  
Saudi Arabia  
Senegal  
Serbia  
Seychelles  
Sierra Leone  
Singapore  
Slovakia  
Slovenia

Solomon Islands  
Somalia  
South Africa  
South Korea  
South Sudan  
Spain  
Sri Lanka  
Sudan  
Suriname  
Swaziland  
Sweden  
Switzerland  
Syria  
Taiwan  
Tajikistan  
Tanzania  
Thailand  
Timor-Leste  
Togo  
Tonga  
Trinidad and Tobago  
Tunisia  
Turkey  
Turkmenistan  
Tuvalu  
Uganda  
Ukraine  
United Arab Emirates  
United Kingdom  
United States  
Uruguay  
Uzbekistan  
Vanuatu  
Venezuela  
Vietnam  
Yemen  
Zambia  
Zimbabwe  
Other

7. Automated debugging has been an active area of research. An automated debugging approach takes as input a crash or a test case failure and generates a ranked list of suspicious program locations that may contain the root cause of the crash/failure. In your opinion, how important is this piece of research?

- ☐ Essential
- ☐ Worthwhile
- ☐ Unimportant
- ☐ Unwise
- ☐ I don't understand

8. Why do you think this research is unimportant or unwise?

9. When you start debugging, are the following resources available at your disposal?

	All the time	Sometimes	Rarely	Never
Mathematical specification (e.g., temporal logic, Z ) of a program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textual specification of a program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One test case/scenario that causes a failure/crash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multiple test cases/scenarios that cause a failure/crash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A set of successful test cases that do not cause any failure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A textual description of a defect (e.g., a bug report)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. An automated debugging tool pinpoints suspicious program elements. Which of the following **granularity levels** do you prefer?

- ☐ Pinpoint buggy component
- ☐ Pinpoint buggy class
- ☐ Pinpoint buggy method
- ☐ Pinpoint buggy basic block
- ☐ Pinpoint buggy statement



11. An automated debugging tool returns a ranked list of suspicious program locations (at your preferred granularity level) and one of them may contain the bug location. What is the **minimum acceptable level** before you consider the tool to **successfully locate** buggy code? E.g., if you only consider the tool to be successful only if a bug appears in the top 5 elements, please select "Top 5".

- ☐ Top 1
- ☐ Top 5
- ☐ Top 10
- ☐ Top 20
- ☐ Top 50
- ☐ Other

12. How **trustworthy** an automated debugging tool must be before you will consider adoption? E.g., if you want the tool to **successfully locate** bugs (based on your success criterion defined in the previous question) at least 50% of the time, please select "At least 50%".

- ☐ At least 5%
- ☐ At least 20%
- ☐ At least 50%
- ☐ At least 75%
- ☐ At least 90%
- ☐ Other

13. How **scalable** a trustworthy automated debugging tool must be before you will consider adoption?

It should work **at least** for programs of size:

- ☐ 1 - 100 Lines of Code
- ☐ 1 - 1000 Lines of Code
- ☐ 1 - 10,000 Lines of Code
- ☐ 1 - 100,000 Lines of Code
- ☐ 1 - 1000,000 Lines of Code
- ☐ Other

14. How **efficient** a trustworthy and scalable automated debugging tool must be before you will consider adoption? E.g., if you want the tool to produce results **at most** within 1 minute, select "<1 minute".

- ☐ Within a fraction of a second
- ☐ < 1 minute
- ☐ < 30 minutes
- ☐ < 1 hour
- ☐ < a day
- ☐ Other

15. Assume you have an **efficient**, **scalable**, and **trustworthy** automated debugging tool, will you adopt it?

- ☐ Yes
- ☐ No

16. Why won't you adopt an efficient, scalable, and trustworthy automated debugging tool?

17. How agreeable are you with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
An automated debugging tool must provide a rationale why some program locations are marked as suspicious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will *still adopt* an efficient, scalable, and trustworthy automated debugging tool, even if it cannot provide rationales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An automated debugging tool must be integrated well to my favourite IDE.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will *still adopt* a an efficient, scalable, and trustworthy automated debugging tool, even if it is not integrated well to my favorite IDE.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Why the ability to provide rationales is very important in your decision to adopt an automated debugging tool?

19. Why integration to your favourite IDE is very important in your decision to adopt an automated debugging tool?

20. Do you have final suggestions/comments/opinions about automated debugging or this survey?