

The Future of Automated Program Repair

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Part #1: History

In one paper: Automatically Finding Patches Using Genetic Programming, ICSE'09

Part #2: Achievements

In one paper: Nopol: Automatic Repair of Conditional Statement Bugs in Java Programs, TSE'16

Part #3: Challenges

In one paper: Automatic Repair of Real Bugs in Java: A Large-Scale Experiment on the Defects4J Dataset, EMSE'17

Part #4: Future

In one paper: How to Design a Program Repair Bot? Insights from the Repairnator Project, ICSE'18

Conclusion

- Automatic repair is a new mindset
- The search space can be made tractable
- Overfitting is the major challenge
- We're about to interact with program repair bots