2 page CV: Mark Harman

Summary: Mark founded the field of Search Based Software Engineering (SBSE) in 2001. SBSE is now a key foundation of Software Engineering research and practice. His work directly impacts over 3.96 Billion people and 200 million companies worldwide. He also founded the fields of Genetic Improvement (GI) and App Store Analysis.

Bibliometrics: H-index on Google Scholar: 103 (more than 43,000 citations). Mark is the world's most cited researcher in both Software Testing and Program Analysis.

Supervision: 33 PhD dissertations (23 as first supervisor; 10 as second supervisor).

Recent Awards and Honours

2020: Elected a Fellow of the Royal Academy of Engineering
2019: IEEE Harlan Mills Award
2019: ACM SIGSOFT Outstanding Research Award
ERC Advanced Fellowship Award
2016: GECCO human competitive results (HUMIES) Gold Medal

Recent Conference Keynotes

Over 60 keynotes including the leading international conferences in Software Engineering, Programming Languages and Evolutionary Computing. For example:-
International Conference on Automated Software Engineering (ASE 2022)
International Conference on Software Engineering (ICSE 2019)
International Symposium on Principles of Programming Languages (POPL 2019)
International Symposium on Software Testing and Analysis (ISSTA 2019)
International Conference on Software Testing (ICST 2015)
International Conference on Genetic and Evolutionary Computing (GECCO 2013)
International Conference on Automated Software Engineering (ASE 2012)

Leadership

Program chair for leading conferences including:-
International Conference on Software Engineering (ICSE 2018)
International Conference on Foundations of Software Engineering (FSE 2015)
International Symposium on Software Testing and Analysis (ISSTA 2013)
International Conference on Software Testing (ICST 2011)
Current or former Associate Editor of:-
IEEE Transactions on Evolutionary Computing
IEEE Transactions on Software Engineering
ACM Transactions on Software Engineering and Methodology
Empirical Software Engineering Journal

Media Coverage

Mark's work has been covered by over 100 media outlets, including Ars Technia, The BBC, CNET, The Daily Telegraph, Engadget, Fossbytes, Hacker News, The Independent, MIT Technology Review, Newsweek, The Register, SiliconANGLE, SlashDot, Startup World, The Next Web, The Verge, TechCrunch, VentureBeat, Wheaton Business Journal, WIRED, and ZDNet.

Industrial Impact

2017–2024: Following the acquisition by Meta of the startup he launched in 2016 to spin out his research, Mark's work has been deployed extensively at Meta, where it has directly impacted over 3.98 Billion people and 200 Million Companies, all of which rely on Meta's products for reliable and consistent communications, networking and social interaction. Meta's products including Facebook, Messenger, WhatsApp, and Instagram have been consistently tested and improved using Mark's research work, which he has continued to research and develop while at Meta.

2001–2017: As well as Meta, Mark's research work was also used by many other companies, including Google Microsoft and DaimlerChrysler.

Research Publications

Mark has made research contributions across the spectrum from pure theoretical computer science through to practical software engineering, with 6 papers in the Theoretical Computer Science journal (TCS), and 3 in Formal Aspects of Computing, through to more than 30 in each of IEEE Transactions on Software Engineering (TSE) and the International Conference on Software Engineering (ICSE). DBLP contains more details.

Top 10 papers:-

1. Sapienz: Multi-objective automated testing for android applications. ISSTA 2016. Impacted over 3Bn people and 600 cites so far.
2. Search-based software engineering, I&ST 2001. Founded the field of SBSE has over 1000 cites. Research work on going over 40 countries.
3. Search algorithms for regression test case prioritization. IEEE TSE 2007. Leading paper on SBSE with 1000 cites.
4. App store mining and analysis: MSR for app stores. MSR 2012 Founded the field of App store analysis. Over 400 cites.
5. An analysis and survey of the development of mutation testing. IEEE TSE 2010: Foundational work on the topic with over 2000 cites.
6. Large language models for software engineering: Survey and open problems. ICSE 2023. Most recent work. Already with over 60 cites in 5 months.
7. Machine learning testing: Survey, landscapes and horizons: IEEE TSE 2020. Over 800 cites set scene the field.
8. Pareto efficient multi-objective test case selection. ISSTA 2007. Establish multi objective paradigm. over 500 cites.
9. A theoretical and empirical study of search-based testing: Local, global, and hybrid search. IEEE TSE 2009. Combined theory and practice. Over 500 cites.
10. Software module clustering as a multi-objective search problem. IEEE TSE 2010. Over 400 cites.

Surveys are listed above, only for fields where Mark was the founder a recognised leader. Mark's Google Scholar page has full publication and citation details.