Evaluation and Usability of Programming Languages and Tools (PLATEAU)

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Abstract

Programming languages exist to enable programmers to develop software effectively. But how *efficiently* programmers can write software depends on the usability of the languages and tools that they develop with. The aim of this workshop is to discuss methods, metrics and techniques for evaluating the usability of languages and language tools. The supposed benefits of such languages and tools cover a large space, including making programs easier to read, write, and maintain; allowing programmers to write more flexible and powerful programs; and restricting programs to make them more safe and secure. We plan to gather the intersection of researchers in the programming language, programming tool, and human-computer interaction communities to share their research and discuss the future of evaluation and usability of programming languages and tools. We are also interested in the input of other members of the programming research community working on related areas, such as refactoring, design patterns, program analysis, program comprehension, software visualization, end-user programming, and other programming language paradigms.

Categories and Subject Descriptors D.3.0 [*Programming Languages*]: Standards; H.1.2 [*User/Machine Systems*]: Human Factors

General Terms Human Factors, Languages

Keywords Evaluation, Programming Languages, Tools, Usability

1. Main Themes and Goals

At the Programming Languages Grand Challenges panel at POPL 2009, Greg Morrisett claimed that one of the great neglected areas in programming languages research is the bridge between programming languages and human-computer interaction: the evaluation of the usability of programming languages and tools. This is evident by the recent research programs of major languages conferences such as POPL, PLDI, OOPSLA, and ECOOP. The object-oriented conferences tend to have at least one or two papers in the areas of corpus analysis or evaluation methodologies, but the authors of the papers seem to avoid using the results of their studies to make conclusions about the languages or tools themselves. Software engineering and human-computer interaction conferences tend to have better support of language usability analysis (CHI 2009 had three tracks that showcase research in this direction), but have limited visibility to the programming languages community.

Following on from our previous workshops at OOPSLA/Onward! 2009 and SPLASH 2010, this workshop aims to fill that void by developing and stimulating discussion of usability and evaluation of programming languages and tools with respect to language design and related areas. We will consider: empirical studies of programming languages; methodologies and philosophies behind language and tool evaluation; software design metrics and their relations to the underlying language; user studies of language features and software engineering tools; visual techniques for understanding programming languages; critical comparisons of programming paradigms, such as object-oriented vs. functional; and tools to support evaluating programming languages. We have two goals:

1. Develop a research community that shares ideas and collaborates on research related to the evaluation and usability of languages and tools.
2. Encourage the languages and tools communities to think more critically about how usability affects the design and adoption of languages and tools.

2. Organizers

- **Craig Anslow** is currently a PhD student in the School of Engineering and Computer Science, Victoria University of Wellington, New Zealand. His PhD topic is *Multi-touch Table User Interfaces for Collaborative Software Visualization* and is supervised by James Noble and Stuart Marshall. His research interests include the evaluation and usability of programming languages and software, software visualization, and multi-touch user intefaces.
- **Shane Markstrum** is currently a Software Engineer at Google in New York, USA. Prior to joining Google he was an Assistant Professor in the Computer Science department at Bucknell University. He received his Ph.D. from the University of California, Los Angeles in 2009. His research interests include domain-specific languages and tools for extensible type systems; and building tool support for non-traditional language constructs.
- **Emerson Murphy-Hill** is currently an Assistant Professor at North Carolina State University, USA. Prior to joining the NCSU faculy he was a postdoctoral researcher at the University of British Columbia in the Software Practices Lab with Gail Murphy. He recieved is Ph.D. from Portland State University in 2009. His research interests include human-computer interaction and software tools.

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3. Program Committee

The following people will form the Program Committee (PC) for the workshop and will help promote the workshop in the programming languages and human-computer interaction communities.

- Craig Anslow - Victoria University of Wellington, New Zealand
- Rob DeLine - Microsoft Research, USA
- Jeff Carver - University of Alabama, USA
- Jonathan Edwards - MIT, USA
- Matthias Hauswirth - University of Lugano, Switzerland
- Donna Malayeri - Microsoft, USA
- Shane Markstrum - Google, USA
- Emerson Murphy-Hill - North Carolina State University, USA
- James Noble - Victoria University of Wellington, New Zealand
- Portia O'Callaghan - MathWorks, USA
- Marian Petre - The Open University, England
- Caitlin Sadowski - University of California Santa Cruz, USA
- Alessandro Warth - Viewpoints Research Institute, USA

4. Anticipated Attendance

We anticipate the following number of attendees:

- Minimum: 10
- Ideal: 25
- Maximum: 40

5. Advertisement

We will advertise this workshop by inviting participants of workshops in the areas of language design, tools, and general usability directly; as well as by emailing related mailing lists, posting on blogs contacting specific people known to be working in this area directly, and through a mailing list our group mailing list. In addition we will maintain a website[1] for presenting position papers and organizational information.

6. Participant Preparation

Workshop participants should submit a paper prior to one month before the workshop. Papers will be made available through the workshop website and participants are encouraged to have read the papers before attending the workshop. Participants are also asked to prepare a presentation to support their position paper. We will accept two tracks of papers: short-form (up to 4 pages) and long-form (up to 10 pages).

In both tracks, we will look for papers that describe work-in-progress or recently completed work based on the themes and goals of the workshop or related topics, report on experiences gained, question accepted wisdom, raise challenging open problems, or propose speculative new approaches. We plan to have the workshop proceedings published in the ACM Digital Library, where short-form papers will be represented by abstract only and long-form papers will be published in full.

7. Activities and Format

This workshop will be run as a full-day workshop at SPLASH and Onward! 2011. We will have an introduction and keynote session in the morning followed by the presentation of workshop papers in three separate sessions. We will prepare a poster for the SPLASH/Onward! Welcome Reception representing the presentations of the papers. Table 1 outlines the schedule of the format of the workshop.

Time	Activity
0830–0900	Introductions
0900–1000	Key Note Presentation: Brad Myers "Inherent vs. Accidental vs. Intentional Difficulties in Programming"
1000–1030	Morning Break
1030–1200	Presentation of workshop papers
1200-1330	Lunch Break
1330–1500	Presentation of workshop papers
1500–1530	Afternoon Break
1530–1700	Presentation of workshop papers
1700–1730	Participant Feedback and Organizers Report

Table 1. Workshop Schedule

8. Post-workshop Activities

We will publish our participant's papers in the ACM Digital Library, as outlined earlier (§6). We aim to continue hosting this workshop in future years.

9. Special Requirements

We require the room to have Internet access, power strips for attendees to plug their laptops into, and a computer projector and screen for attendees to show the presentations of their position papers.

[1] http://ecs.victoria.ac.nz/Events/PLATEAU/