EASST

Proceedings of the
Second International Workshop on
Bidirectional Transformations
(BX 2013)

Preface

3 pages

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The Second International Workshop on Bidirectional Transformations (BX13) was held on Sunday March 17th, 2013. It was in Rome, Italy, in conjunction with ETAPS 2013, the European Joint Conferences on Theory and Practice of Software. We thank the ETAPS organisers, especially Paolo Bottoni, for their helpfulness, and the ECEASST team, especially Gabriele Taentzer, for help on the proceedings side.

This workshop was the second in a series dedicated to bringing together researchers from four different specialisations of computer sciences:

- Programming Languages (PL)

- Graph Transformation (GT)

- Software Engineering (SE)

- Database Systems (DB)

Each of these fields has, on at least one occasion, set out to solve a software artifact problem that can be thought of as bidirectional. The setting for a bidirectional problem is a collection of (concrete or virtual) artifacts, whose states must somehow be synchronised according to an appropriate set of correctness criteria. The mechanism by which one synchronises the artifacts is a bidirectional transformation.

For example, in the PL field, a key concept in the bidirectional field is the lens [FGM$^+$07]. A lens is (roughly) a pair of functions f and g between two domains S and T where f and g are in some way inverses of one another: f describes how to populate an instance of domain T from an instance of S, and g describes how to propagate changes to that T state back to S, taking into account the previous state of S. Based on the domains in question, e.g. databases, strings, or tree structures, one can construct a domain-specific language of lenses that operate on instances of those domains; thanks to the formal properties of those lenses, the resulting language instances can be proven to preserve data and data synchronisation. Each of the other three fields has similar tools for dealing with similar situations.

Until recently, unfortunately, the research from these four fields existed almost in isolation. Their terminology and jargon differ enough that communication about basic concepts like "model" and "co-evolution" becomes difficult. Their solutions to bidirectional problems rely on different theoretical principles based on different formal languages. Their respective corpuses of literature rarely cite each other.

This would not matter if the bidirectional problems in each field were largely disjoint. However, there are a number of bidirectional scenarios that more than one, if not all, of the fields have attempted to solve, with overlapping capabilities and requirements. Object-relational mapping, for instance, is one such scenario that all four disciplines have attempted to address at least in part.

Representatives from the four fields decided to begin meeting to see if some common ground could be had in the form of better citation, common theory, unified research goals, or at least more communication with and awareness of each other. The first such meeting was held in

Tokyo in December 2008 [CFH⁺09], and a follow-up meeting was held at Dagstuhl in January 2011 [HSST11b, HSST11a]. A third meeting is scheduled in Banff, Canada in December 2013. The Bx series of workshops, beginning with Bx'12 [HV12] colocated with ETAPS 2012, has spun off from that series of meetings to provide a venue to publish work in bidirectional transformations. While ongoing work on individual research projects is accepted at the workshops, especially welcome are reports that attempt to bridge the gap between different projects, such as benchmarks, comparison studies, and theoretical comparisons.

This year's workshop saw nine presentations spanning the PL, GT, and SE disciplines. True to the charter of the workshop to serve as a communication medium rather than yet another place to publish, large portions of the workshop time were set aside for discussion. Presentation slots were divided into three groups; in addition to the usual sets of questions asked at the end of each presentation, at the end of each group, that group's presenters were provided an additional question session similar to a panel discussion. That format allowed the presenters more of an opportunity to answer similar questions and to engage in discourse with each other.

The final segment of the workshop was held for a special kind of panel discussion called a "fishbowl", where the participants themselves form a panel. Five members of the audience start the panel, but are rotated out in LIFO order as new participants come up. Participation is encouraged because only panel members are allowed to speak. The group spent some time brainstorming discussion topics as a whole, and then sent the action to the rotating panel.

The fishbowl panel spent most of the time discussing what the nature of benchmarking Bx might be. Benchmarking would establish a way to set common expectations in a common language between disciplines. It turns out that several of the participants are in the process of forming, as part of a larger research grant (led by one of us, Stevens), a corpus of bidirectional scenarios, and much of the discussion provided insights as to how that corpus could be built.

We were happy to receive enough submissions to give us a programme of high standard. All papers were reviewed by at least three members of the programme committee, and there was a careful and productive discussion process. We hope that authors of both accepted and rejected papers will have found the reviews helpful, and are grateful to the PC members and to the authors for their work. The versions of the papers in this volume have been revised following the workshop.

The Bx workshop series continues next year associated with the database venue EDBT/ICDT 2014 in Athens, Greece. The Bx series of events is guided by the Bx steering committee; for more information, see the Bx community wiki at http://bx-community.wikidot.com/.

In 2013, the programme committee was:

- Benjamin Braatz (University of Luxembourg, Luxembourg)

- Anthony Cleve (University of Namur, Belgium)

- Carlo Curino (Massachusetts Institute of Technology, USA)

- Davide Di Ruscio (University of L'Aquila, Italy)

- Zinovy Diskin (McMaster University/University of Waterloo, Canada)

- Claudia Ermel (Technische Universitt Berlin, Germany)

- Nate Foster (Cornell University, USA)

- Ulrike Golas (Zuse-Institute Berlin, Germany)

- Frank Hermann (University of Luxembourg, Luxembourg)

- Soichiro Hidaka (National Institute of Informatics, Japan)

- Mike Johnson (Macquarie University, Australia)

- Fernando Orejas (Technical University of Catalonia, Spain)

- Jorge Perez (Universidad de Chile, Chile)

- Benjamin Pierce (University of Pennsylvania, USA)

- Dan Suciu (University of Washington, USA)

- Janis Voigtländer (University of Bonn, Germany)

and the chairs were ourselves,

Perdita Stevens (University of Edinburgh, UK) and James Terwilliger (Microsoft, USA).

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