



HAL
open science

UIs Automatically Optimized for Your Smartphone

Hermann Kaindl

► **To cite this version:**

Hermann Kaindl. UIs Automatically Optimized for Your Smartphone. 13th International Conference on Human-Computer Interaction (INTERACT), Sep 2011, Lisbon, Portugal. pp.712-713, 10.1007/978-3-642-23768-3_128 . hal-01597002

HAL Id: hal-01597002

<https://inria.hal.science/hal-01597002>

Submitted on 28 Sep 2017

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

UIs Automatically Optimized for Your Smartphone

Hermann Kaindl¹

¹ Vienna University of Technology
Gußhausstr. 27-29, A-1040 Vienna, Austria
kaindl@ict.tuwien.ac.at

Abstract. Graphical user interfaces (UIs) for PCs will most likely not fit relatively small screens of devices like today's *Smartphones*. Providing dedicated UIs for several devices manually, however, is costly and takes time. Therefore, we have developed an approach to (semi-)automatic generation of UIs for various devices. A designer defines classes of dialogues in a device-independent discourse model. Such a discourse model can be also viewed as specifying classes of scenarios, i.e., use cases. It refers to a *domain model* that specifies the domain-of-discourse of the dialogues between user and *application*. From such models, we can generate UIs (semi-)automatically. Recently, we included in this generation process *automatic optimization* based on heuristic search. In effect, this tutorial shows that and how user interfaces can be automatically optimized for your Smartphone.

Keywords: (Semi-)automatic generation of user interfaces, automatic optimization for small devices, Smartphones.

1 Tutorial goals

The main goals are to show that usable *user interfaces* (UIs) can be generated (semi-)automatically, in particular through *automatic optimization* based on heuristic search. This approach is particularly useful for optimizing UIs for relatively small screens like those of current *Smartphones*. Just based on a simple device specification of the Smartphone, the UI is specifically optimized for it. Such UIs can be generated fully automatically and optimally fit the given device, so that they are ready for real-world use, e.g., on Smartphones.

2 Key Learning Outcomes

In this tutorial, participants learn about modeling discourses using a new approach inspired by human-human communication. They will know how modeling discourses and generating user interfaces can be approached systematically. They will also see how techniques from heuristic search can be used for optimizing automatically generated user interfaces for small devices like today's Smartphones.

3 CV of the Presenter

Hermann Kaindl is the director of the Institute of Computer Technology at the Vienna Univ. of Technology. He joined this institute in early 2003 as a full professor. Prior to moving to academia, he was a senior consultant with the division of program and systems engineering at Siemens AG Austria. There he has gained more than 24 years of industrial experience in software development and human-computer interaction. He has published four books and more than a hundred papers in refereed journals, books and conference proceedings. He is a *Senior Member* of the IEEE, a *Distinguished Scientist* member of the ACM, a member of the INCOSE and the AAAI, and is on the executive board of the Austrian Society for Artificial Intelligence.

References

1. Bogdan, C., Falb, J., Kaindl, H., Kavaldjian, S., Popp, R., Horacek, H., Arnautovic, E., and Szep, A., Generating an Abstract User Interface from a Discourse Model Inspired by Human Communication. In *Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS-41)*, Big Island, HI, USA, 2007, IEEE Computer Society Press.
2. Bogdan, C., Kaindl, H., Falb, J., and Popp, R., Modeling of interaction design by end users through discourse modeling, In *Proceedings of the 2008 ACM International Conference on Intelligent User Interfaces (IUI'08)*. Maspalomas, Gran Canaria, Spain, 2008. ACM Press.
3. Falb, J., Kaindl, H., Horacek, H., Bogdan, C., Popp, R., and Arnautovic, E., A discourse model for interaction design based on theories of human communication. In *CHI'06 Extended Abstracts on Human Factors in Computing Systems*, New York, NY, USA, 2006. ACM Press, pages 754–759.
4. Falb, J., Kavaldjian, S., Popp, R., Raneburger, D., Arnautovic, E., and Kaindl, H., Fully Automatic User Interface Generation from Discourse Models. In *Proceedings of the 2009 ACM International Conference on Intelligent User Interfaces (IUI'09)*, ACM. Sanibel Island, Florida, USA, 2009. ACM Press . Tool demo paper.
5. Falb, J., Popp, R., Röck, T., Jelinek, H., Arnautovic, E., and Kaindl, H., UI Prototyping for Multiple Devices Through Specifying Interaction Design. In: *Human-Computer Interaction — INTERACT 2007, Proceedings of the 11th IFIP TC 13 International Conference, Part I, LNCS 4662*, Springer, 2007, pp. 136–149.
6. Kaindl, H., A Design Process Based on a Model Combining Scenarios with Goals and Functions. *IEEE Transactions on Systems, Man, and Cybernetics (SMC) Part A*, **30**, 2000, 537– 551.
7. Kaindl, H. and Jezek, R. (2002) From Usage Scenarios to User Interface Elements in a Few Steps. *Proceedings of the Fourth International Conference on Computer-Aided Design of User Interfaces (CADUI'2002)*, Valenciennes, France, May, pp. 91–102. Kluwer Academic Publishers, Dordrecht, The Netherlands.
8. Kavaldjian, S., Bogdan, C., Falb, J., and Kaindl, H., Transforming Discourse Models to Structural User Interface Models, *Models in Software Engineering, MoDELS 2007 Workshops*, LNCS 5002, Springer-Verlag, Berlin-Heidelberg (selected from *MDDAUI'07 Workshop papers*), 2008, pp. 77–88.
9. Raneburger, D., Popp, R., Kavaldjian, S., Kaindl, H., and Falb, J., Optimized GUI Generation for Small Screens, *Model-Driven Development of Advanced User Interfaces*, LNCS, Springer-Verlag, Berlin-Heidelberg (selected from *MDDAUI'10 Workshop papers*), 2011.