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CALL FOR PAPERS

AI EDAM Special Issue, November 2015, Vol. 29, No. 4
Generative and Evolutionary Design Exploration

Guest Editors: Rudi Stouffs & Yaqub Rafiq

Generative and evolutionary design exploration intends to reflect on the interaction between design exploration and evolutionary design optimization.

Expert designers in architecture and engineering typically display a strategy of exploring design alternatives, albeit a relatively small number. Expert architects' strategy in problem solving has been denoted *breadth first*, *depth next*, in comparison to novices, who typically display less breadth of exploration. Engineers' strategy is markedly different, but design alternatives play a role that is as important, if not more so. When designers typically consider a very small number of alternatives in their work, this can be explained by cognitive limits, opening the door for computational support of design exploration. In particular, it has been argued that exploration is a *compelling* model for designer action and that designers benefit from tools that amplify their abilities to represent goals and problems spaces and to search for designs.

Generative and evolutionary methods have proven to be strong catalysts for design exploration, and design optimization has served as a means to assist in this exploration. There has recently been a marked move toward using optimization to aid exploration. Optimization is rarely intended to yield an optimal solution per se. Instead, it assists in gaining insight in the solution space, thereby reducing the size of the solution space for exploration, possibly focusing attention toward the Pareto boundary. Even at the Pareto boundary there are a large number of solutions worthy of further exploration. Together, exploration and optimization lead to a better understanding of the complexities of design issues and help designers in their decision-making process, especially with multiple-objectives problems, which is the nature of many design problems. As such, the focus of attention in generative and evolutionary design is shifting from the techniques themselves, and their direct application, to the way we are using these techniques to assist and improve the design and engineering process.

We can frame generative and evolutionary design from the point of view of a "conversation," which is not uncommon for generative design, although it is for optimization. This type of conversation is between the designer (or design team) and the computer, and it is digitally enhanced. Thus, the aim is less on optimization and more on exploration: the results from optimization are about changing one's way of thinking more than choosing a single design and then realizing it. We can then ask the question of how these types of conversations can unfold. How do they start and where do they end? What do we do with thousands of similar solutions?

We invite submissions that address generative and evolutionary design exploration and contribute to the discussion of the interaction between design exploration and evolutionary design optimization.

Information about the format and style required for *AI EDAM* papers can be found at http://aiedam.usc.edu/index.php/Authors/ForAuthors

Note that all inquiries and submissions for Special Issues go to the Guest Editors, **not** to the Editor in Chief.

Important Dates

Intent to submit (Title & Abstract):	As soon as possible
Submission deadline for full papers:	September 15, 2014
Reviews due:	December 15, 2014
Notification and reviews due to authors:	January 15, 2015
Revised papers due from authors:	March 16, 2015

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