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Faculty of Engineering and  
Information Technology

**Abstract book for the  
19th MIKLÓS IVÁNYI  
INTERNATIONAL  
PHD & DLA SYMPOSIUM**

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19th MIKLÓS IVÁNYI  
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ARCHITECTURAL, ENGINEERING AND  
INFORMATION SCIENCES

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**Prof. Dr. Péter IVÁNYI**

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## Paper 1

# Enriching Architectural Education with Extracurricular Activities - the Case of the Geometry Adventure Workshop

**M. Devetaković, J. Ivanović, D. Djordjević, N. Popović**

*Faculty of Architecture, University of Belgrade, Serbia*

**Keywords:** Grasshopper, workshop, geometric models


In this study, we present and analyse the case of the Workshop titled “A Geometric Adventure in the World of Grasshopper”, realised in September 2023, at the University of Belgrade, Faculty of Architecture, within the manifestation called “The Week with Architecture”. The content of the Workshop has been derived from the elective course “Parametric Modelling”, offered to the first year master students.

After briefly explaining the teaching context in which the Workshop occurred, we present the content structure divided into four working days, three of which dedicated to introducing various programming techniques in the Rhino software and its well-known plug-in Grasshopper, and the fourth day left for the Workshop exhibition completing. Aimed at introducing programming beginners into basic techniques of algorithmic creation of architectural form, this Workshop started with an in-house developed Grasshopper definition producing various 2D geometric patterns. Based on this simple definition the students learned the fundamental elements of the visual algorithmic systems. As a result of first day they produced a range of different geometric patterns based on the p1 symmetry repetition of circles and polygons on a predefined rectangular grid. The second day of the Workshop was dedicated to the geometry of spatial curves, and required from the participating students considerably more programming understanding and an additional research of the field. The third Workshop day was characterized by an integration of the techniques of the first and the second Workshop day. In this final programming exercise the participants had to use the geometric grid, in terms of distribution of a chosen spatial curve.

This teaching activity resulted in excellent geometric models created by participating students, exhibited in the form of prints, the last day of the Workshop. All the Workshop communication and information exchange was supported and saved in the specially created TEAMS learning environment. A catalogue of student submissions is in the process of creation. The Workshop influenced the teaching of the Elective course “Parametric modelling” in terms of introducing new topics and rearranging selected teaching activities.


**Geometric Adventure  
in the World of Grasshopper**

University of Belgrade - Faculty of Architecture  
The Week with Architecture 2023.



**About the Workshop**

This is the workshop of geometric form digital modeling, using the Rhino 3D and Grasshopper software. The aim of the workshop is expanding the basic knowledge and skills of parametric modeling and understanding the concepts of versatility, control and automation in the process of geometry creation. Through this kind of digital modeling, it is also aimed at stimulating creative thinking and innovation, allowing the students to develop new ideas and concepts for their future designs.



**Faculty of Architecture**  
University of Belgrade

**CTM**  
Center for Teaching Methods

**Workshop:** **prof. dr. Vukobratović, and prof. dr. Dejan Jovanović,**  
**assist. prof. dr. Zvezdana Čuković, and prof. dr. Zvezdana Čuković**  
**Organization:** **and. Anđela Dragičević, DĐM**

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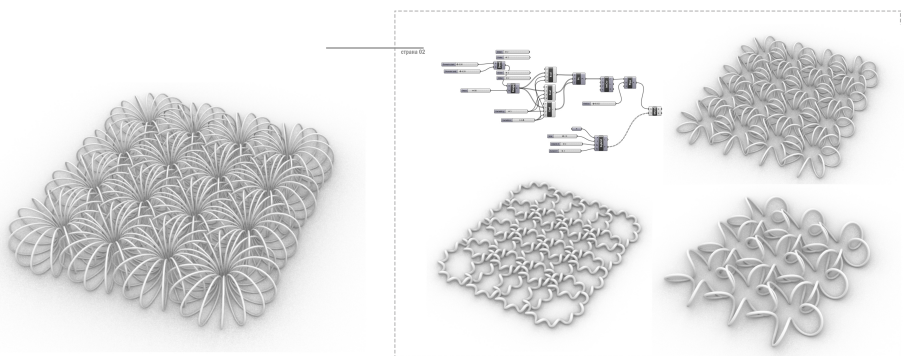


Figure 1.1: A Geometric Adventure in the World of Grasshopper – Teachers' preparations