architecture summer school BL

18-22/08/2015

faculty of architecture, civil engineering and geodesy
/second unversity campus banja luka/

Igor Mitrić

Igor Mitrić is an architect and researcher with current residence in Vienna. Igor strives to model trough scripting as second language. In his designs he derives systems from nature, mathematics, physics and biology. His main principle is »form follows energy«. He strongly believes in 4 elements »water, fire, earth and air«. He is committed to architecture that couldn't been built, designed, and even dreamt of before 21 century. Igor enjoys mythology, utopia, colours and sounds, life and music, mathematics and geometry, mechanics and nature, algorithms and codes.

He is currently employed by architectural office »DI Wolfgang Wildauer« as BIM coordinator and project manager. He is currently enrolled in PHD studies at Institute for Building and Energy at Technical University of Graz. Under the title »Bio-mimicry As A Tool For Designing An Adaptive Building Skins« he is researching natural principles for design strategies in the building envelope.

During his academic work, he developed Solar Tool, set of GH3D scripts for maximizing solar radiation on any surface and minimizing shading impact on its surroundings for a given set of sun vectors trough simulation and evolutionary solver. Previously he cooperated with "Architekturbüro Arch. DI Marcus Schulz", as parametric energy and façade designer, where he implemented coding into built structures. Previously employed at »Balloon Wohofsky Architects" at residential building projects, he worked on variety of topics such as density, solar radiation, daylight, adaptive façades, patterns in nature, etc. Furthermore, he is also a constant team member of the architectural animation and visualization firm »Blick 3D«. Igor graduated at Technical University Graz at Faculty of Architecture and with his project »Skyroller« was nominated for best master thesis in the class.

Marko Koljančić

Marko Koljančić is an architect and technical artist currently living in Banja Luka, Bosnia and Herzegovina. He works on research and development, education and implementation of BIM (Building Information Systems). Have strong passion for film and technical side of visual effects, and consider himself as computer graphics enthusiast with architecture and design background. Also passionate about mathematics and scripting tools for artistic math driven effects and models.

He uses Python and CVEX (Vector Expression Language), and visual programming technologies (Houdini, Grasshopper, Dynamo) for development, and love to share and receive knowledge.

Marko is enrolled in Master Degree studies at University of Banja Luka, College for Architecture and Civil Engineering.

Currently he works in company INOVA as BIM specialist, Autodesk Technical Support and head of ATC (Autodesk Training Center) and ACC (Autodesk Certification Center). Technology and art are his passion for last 12 years.

Boško Marušić

Boško Marušić is an architect and researcher with current residence in Graz. He is currently employed by architectural office » Schulz Architektur Graz« as Senior Architect and Designer. He won awards at many prestigious competition as for bridge design "Concrete Student Trophy 2009" , wellness resort "Narzissen Bad Aussee", hotel complex "Pavoreal"...

He believes in poetry of smooth line.

He showed interest in many different fields: Engineering, Architecture, Product and Transportation Design, Gaming and Interface Design. He holds a Master in Architecture from Technical University of Graz. He is also enrolled in second Master studies at Industrial design FH Joanneum Graz , with focus on Transportation Design.

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www.aggfbl.org/summerschool2015
www.grasshopper3d.com/events

UNIVERSITY OF BANJA LUKA
FACULTY OF ARCHITECTURE, CIVIL ENGINEERING AND GEODESY

In URBAN PLANNING and aesthetic sense of architecture, the envelope of a building is a straight division between outside and inside and often takes a roll of a pure architectural expression. The FACADE itself is often just a canvas for architect and his creative drawings. In a functional sense, the building envelope protects building interior from WIND, RAIN AND SUNLIGHT. The building envelope become more the outer skin of structure and takes complex climate-regulating functions, as thermal insulation, daylight, transparency, natural ventilation, interaction with environment, shading, texturing etc.

In line with increasing awareness about our non-renewable resources, polluting and increasingly costly energy production, the building envelope is pushed to the new roles and requirements, such as energy production, self-cleaning systems, water storage, cellular transportation and bio-filtration of air and water, self-shading systems or ADAPTATION to changing environmental demands.

What is the role of LOCAL CLIMATE in building design? How does inputs buildings shape? Which PARAMETERS influence buildings shape!? Sun, wind, daylight, visibility...? How to define this parameters and simulate them? How to SIMULATE AND EVALUATE FORM? How to work with Evolutionary Solver inside GRASSHOPPER3D?

How to evaluate end data and choose the fittest geometry? How to optimize geometry to increase overall energy efficiency of project!?How to develop a GH3D scripts for different adaptive systems and implement them on BUILDINGS SKINS.

After successfully completing the workshop, students will gain a basic knowledge of ENERGY OPTIMIZATION in building design process. Working on a plot of chosen city, students will design energy optimized HYPERBUILDING with density of 10, 000 habitants per square kilometre. Comparing evolution of different URBAN STRUCTURES, students will understand process and importance of energy optimized building envelope in initial phase of design process. In addition to that, they will be introduced with form finding process with EVOLUTIONARY ALGORITHM combined with advanced SIMULATION methods.

Evolutionary Algorithm in Energy Design

with Igor Mitrić

Rhinoceros 5 + Grasshopper 3D & Sub-Plugins

***required grasshopper plugins: Elk, LadyBug + Honeybee, Mesh edit (Uto tools), Mesh+, Weaverbird, Human, TT Toolbox, Lunchbox, Horster tools, Heteroptera**

Adaptive skins

with Marko Koljančić

Rhinoceros 5 + Grasshopper 3D & Sub-Plugins

Arch Visualisation

with Boško Marušić

Cinema4D R16 + Plug-Ins/PSD compositing

Timeline

	TUESDAY/18.8.2015	WEDNESDAY/19.8.2015	THURSDAY/20.8.2015	FRIDAY/21.8.2015	SATURDAY/22.08.2015
9.00 - 13.00	EVOLUTIONARY ALGORITHM IN ENERGY DESIGN Part 1	EVOLUTIONARY ALGORITHM IN ENERGY DESIGN Part 3	EVOLUTIONARY ALGORITHM IN ENERGY DESIGN Part 5	ADAPTIVE SKINS part 2	LAYOUT Input lecture by **Boško Marušić**
14.30 - 17.00	EVOLUTIONARY ALGORITHM IN ENERGY DESIGN Part 2	EVOLUTIONARY ALGORITHM IN ENERGY DESIGN Part 4	ADAPTIVE SKINS part 1	ADAPTIVE SKINS part 3	Visualization, Storytelling...
	with **Igor Mitrić**	with **Igor Mitrić**	with **Marko Koljančić**	with **Marko Koljančić**	Graphs & Data, Print.....
17.15 - 19.00	ART OF PRESENTATION	MODELLING (Cinema4D)	RENDERING (Cinema4D)	COMPOSITING	PRESENTATION 19:00
	with **Boško Marušić**	with **Boško Marušić**	with **Boško Marušić**	with **Boško Marušić**	

CINEMA 4D®
Rhinoceros
grasshopper