Laboratory of Tirana

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Objectives

Explore AI-Driven Design: Introduce students to AI tools (Midjourney, Runway) to develop speculative, utopic architectural concepts for Tirana.

Bridge Speculation and Realism: Guide students in transforming visionary ideas into grounded architectural forms through Rhino and Grasshopper.

Enhance Environmental Responsiveness: Instruct students on using Ladybug for climate and sustainability analysis, ensuring designs are both imaginative and environmentally optimized.

Encourage Critical Dialogue: Foster critical thinking on sustainable urban revitalization, challenging students to rethink neglected areas of Tirana.

Professional Presentation Skills: Prepare students for professional critiques by presenting their work to a jury of renowned architects, cultivating confidence and articulation in design discourse.

Methodology

The focus of the workshop was to reinterpret the main objectives

The initial phase focuses on unlocking speculative design potential through Midjourney, an AI-driven platform that uses text prompts to generate high-quality, imaginative visuals. Students are introduced to Midjourney's prompt structure and are encouraged to experiment with various architectural and environmental keywords that evoke utopic possibilities for their chosen sites in Tirana. This phase allows students to ideate without the constraints of traditional form-finding, generating visual concepts that explore unconventional architectural forms, atmospheres, and material expressions. These AI-generated images serve as the visual foundation for each student's project, setting a tone that is both speculative and contextually inspired.

Phase 2: Video Animation and Atmosphere Development in Runway

Building upon the static visuals from Midjourney, students then utilize Runway's video animation capabilities to create short atmospheric narratives that encapsulate the essence of their utopic proposals. By animating AI-generated imagery, students bring their speculative concepts to life, exploring temporal dimensions, movement, and the dynamic interaction between architecture and its surroundings. This phase enhances the conceptual

depth, allowing students to envision how their architectural interventions would transform and activate the selected urban spaces. Runway's intuitive interface facilitates creative experimentation, empowering students to craft compelling visual stories that resonate with viewers on an emotive level.

Phase 3: Transition to Rhino and Digital Massing

After defining their speculative visions, students translate these abstract ideas into tangible architectural forms within the Rhino 3D modeling environment. In this phase, students begin by constructing massing models that capture the essential geometry of their concepts. Rhino's precision tools allow them to refine their forms, transforming AI-generated inspirations into scalable, architecturally coherent models. This step bridges the speculative and the practical, grounding imaginative ideas in the spatial and material realities necessary for further environmental and structural analysis.

Phase 4: Parametric and Environmental Optimization in Grasshopper with Ladybug

With massing models in place, students shift to Grasshopper, Rhino's parametric design plugin, to perform environmental optimizations using Ladybug. This phase introduces a data-driven approach, as students conduct solar, radiation, and wind analyses to enhance the sustainability and performance of their designs. Ladybug's simulations provide real-time feedback on factors such as sun exposure, thermal gain, and shadow impacts, allowing students to refine their geometries for optimal environmental responsiveness. This iterative process emphasizes sustainable design principles, challenging students to adapt their forms to minimize energy consumption and maximize comfort within Tirana's specific climatic conditions.

Phase 5: Visual Refinement through Midjourney and LookX with Reference Imagery

Once the parametric optimizations are complete, students return to Midjourney (or utilize LookX) to further develop their visual language, using reference images that enhance materiality, facade articulation, and overall architectural expression. This phase involves a dialogue between the AI tool and the developed Rhino model, where students test new prompts and refine image outputs to align closely with their optimized geometries. By iterating between Midjourney (or LookX) and their Rhino models, students achieve a refined visual coherence, ensuring that their speculative, utopic aesthetics are faithfully represented within the architectural forms they have designed.

Phase 6: Narrative Building and Presentation Preparation in PowerPoint

The final phase centers on synthesizing the design process into a cohesive narrative for presentation to the jury. Students compile a PowerPoint presentation that traces their journey from AI-generated concepts to optimized architectural forms, integrating visual outputs, environmental analyses, and animation stills to convey their vision clearly and convincingly. Emphasis is placed on crafting a narrative that articulates both the imaginative and pragmatic aspects of their proposals, highlighting sustainability strategies, contextual relevance, and the transformative impact of their designs on Tirana's urban landscape. The PowerPoint presentation serves as a narrative scaffold, guiding the jury through the process and objectives of each project in an organized and professional format.

Conclusion

The Laboratory of Tirana workshop highlighted both the potential and challenges of integrating advanced computational tools and AI in architectural education. While students demonstrated a strong aptitude for creative exploration and AI-driven concept generation, the transition to algorithmic analysis and optimization presented notable learning obstacles. Here are the key conclusions:

Challenges in Algorithmic Analysis and Optimization:

For many students, the algorithmic analysis phase in Grasshopper, particularly using Ladybug and Galapagos, posed a steep learning curve. Ladybug's detailed environmental data visualization tools, while powerful, required a nuanced understanding of parametric relationships and climate responsiveness. Additionally, Galapagos optimization demanded a conceptual shift to iterative, data-driven design thinking, which proved challenging for students accustomed to more intuitive, form-based approaches. Despite these difficulties, students gained valuable insights into sustainable design processes and developed a foundational understanding of environmental responsiveness.

Enhanced Creativity through AI Integration:

The workshop's integration of AI tools, such as Midjourney and Runway, provided a powerful catalyst for creativity. These tools allowed students to explore architectural forms, materials, and atmospheres that pushed beyond conventional design language, opening new aesthetic possibilities. The speculative, visually rich concepts generated through AI acted as springboards for creative thinking, instilling students with a sense of ownership and excitement about their projects. This early-phase creative boost carried through to later stages, helping students to maintain a strong vision as they refined their designs in Rhino and Grasshopper.

Increased Confidence in Presentation:

The combination of AI-generated visuals, video animations, and environmental data allowed students to construct compelling narratives for their projects. Despite initial challenges with algorithmic tools, the visually captivating AI outputs gave students a solid foundation to present confidently before a professional jury. By grounding their utopian concepts in rigorous environmental analysis, students were able to demonstrate not only aesthetic appeal but also sustainability-driven rationales, which resonated with the jury. The ability to blend imaginative visuals with analytical data helped students present with clarity and conviction, enhancing the professional quality of their proposals.

Synthesis of Speculative and Pragmatic Design:

The workshop successfully encouraged students to bridge speculative, AI-driven creativity with practical architectural considerations. Although the shift from utopian concepts to environmental optimization was challenging, it allowed

students to balance imaginative freedom with analytical rigor. This synthesis of creativity and data-driven design enabled them to produce proposals that were both visionary and grounded in realistic urban and environmental contexts.

In summary, while students faced difficulties in mastering algorithmic tools and optimization methods, the infusion of AI-driven creativity and the structured methodology of the workshop ultimately empowered them to present confidently. This experience underscored the value of combining speculative AI exploration with computational analysis, equipping students with a toolkit for navigating the complex demands of contemporary architectural design.



Workshop Process Image



Workshop Process Image



Workshop Process Image



Workshop Process Image