

NATASHA BAJC

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RESEARCH INTERESTS

Computational design methodologies • AI-driven spatial analysis • Human-centered design technologies • Biometric sensing in built environments • Machine learning for experience optimization • Extended reality (AR/VR/MR/XR), especially for spatial analytics • Real-time analytics for occupancy behavior • Data-driven design • Generative design systems

EDUCATION

Master of Computer Science | candidate

University of Southern California (USC) Engineers and Scientists Group | Affective Computing (Emotion AI) Focus

Selected Courses: Affective Computing, Multimodal Machine Learning for HCI, Machine Learning for Data Science, Robotics.

Executive Education | 2012 Harvard Business School with Harvard Graduate School of Design (GSD) Program: Foundations of Real Estate

Master of Architecture | 1997–1999 Southern California Institute of Architecture (SCI-Arc) Specialization: Algorithmic Design

Master of Engineering in Architecture and Urbanism | 1988–1995 University of Belgrade

TECHNICAL COMPETENCIES & RESEARCH METHODS

Computational Design & Modeling:

- Parametric modeling, generative systems, Grasshopper, BIM.
- 3D modeling, rendering, and digital fabrication.

AI & Machine Learning:

- Multiagent systems, Affective Computing, predictive modeling.
- Machine learning algorithm development for spatial analysis.
- Neural networks for pattern recognition in environmental data.

Data Collection & Analytics:

- IoT sensor networks and biometric data collection.
- Real-time analytics and data visualization.
- User behavior tracking and spatial analytics.
- Data mining and statistical analysis.

Extended Reality (XR) Technologies:

- AR/VR/MR/XR development for spatial simulation.
- Virtual prototyping and user testing environments.
- Immersive experience design.
- Digital twin development for built environments.

Research Methodologies:

- Quantitative and qualitative spatial analysis.
- User experience research and ethnographic studies.
- Design-based research and practice-led inquiry.

ACADEMIC APPOINTMENTS**INSTRUCTOR, INTERIOR DESIGN AND ARCHITECTURE DESIGN Pasadena City College | 2015–Present**

- **Courses:** Interior Design Space Planning & Materials (Studio), Visual Communications (Grasshopper and XR), Architectural Design Fundamentals (Studio), Introduction to Architecture, Architectural Portfolio Preparation, Architectural History (prehistory to contemporary).
- Integrate computational design tools and digital fabrication methods into curriculum.
- Mentor students in technology-driven design research and portfolio development.

GRADUATE RESEARCH INSTRUCTOR University of California, Los Angeles (UCLA) | 2015–2016

- **Course:** M.Arch II Graduate Research Studio (Technology Seminar – XR centered).
- Led graduate-level research on computational methodologies in architectural design and supervised thesis projects.

INTERIOR DESIGN STUDIO INSTRUCTOR Woodbury University | 2014–2015

- **Course:** Design Visual Studio and Design Studio.
- Developed curriculum emphasizing human-centered development of interior design through the application of computational thinking and digital design tools.

GRADUATE RESEARCH STUDIO INSTRUCTOR University of Belgrade | 2009–2010

- **Course:** Master's 5th Year Final Studio.
- Focused the studio on generative computational algorithms and advanced digital technologies, guiding advanced research projects in architectural and interior design.

COMMERCIAL, STARTUP & RESEARCH TECHNOLOGY LEADERSHIP

Founder, CEO & Chief Strategist | Nexus Hestia Technology <http://nexushestia.com/> | January 2024–Present

- **Strategic Vision:** Spearheading the development of personalized AI ecosystems for enterprise applications, bridging the gap between high-performance architectural infrastructure and intelligent data-driven workflows.
- **Chief Strategist Role:** Leading the architecture of advanced data gathering and behavioral analytics frameworks to provide tailored, predictive enterprise solutions that optimize both spatial efficiency and human performance.
- **Innovation:** Directing R&D into large-scale data analytics and personalized AI to redefine professional environments, ensuring technological resilience and data-centric habitability.

Founder & Design-Technology Director | menance Institute <https://menance.institute/> | June 2018–Present

- **Research Focus:** Built environment influence on occupant experience through biometric sensing and behavioral analytics.
- Pioneered integration of data mining, synthetic space simulation (AR/VR/MR/XR), and IoT sensing technologies for spatial analysis.

Co-Founder & Chief Experience Officer | Volynt Inc. <https://volynt.com> | June 2020–Present

- **Research Focus:** AI-driven infection risk management and spatial health optimization.
- Developed an award-winning AI platform integrating bio-sensor networks for real-time environmental health monitoring in smart buildings.

Co-Founder & Design-Science Director | Zetta AI with Genius Loci September 2019–Present

- **Research Focus:** Real-time analytics and behavioral prediction in commercial interiors.
- Developed a proprietary personality data protection platform for ethical collection of real-time user behavior data.

PROFESSIONAL ARCHITECTURE AND INTERIOR DESIGN PRACTICE

Co-Founder & Design Director | Code Design Studio September 2012–September 2018

- Led an award-winning immersive digital experience design studio specializing in algorithmic and data-driven hospitality design.
- **Key Projects:** JW Marriott Weihai, China | Caesars Palace Las Vegas.

Design Director | Urbis Design 2009–2012

- Expanded architectural design practice to 50+ employees, specializing in large-scale mixed-use developments.
- **Key Projects:** Portomontenegro Development | Crowne Plaza Belgrade.

CEO | Urbis Inc. 1999–2009

- Pioneered distributed team organization with 75+ employees across 3 international offices.
- **Key Projects:** Disneyland Tokyo | Venetian Las Vegas.

PUBLICATIONS & PRESENTATIONS

Selected Publications:

- *Spaceness vs. Placeness: A Phenomenological Study of Urban Block 45 in New Belgrade*, 2025.
- *AI in Architecture: Are Artificial Intelligence Generators Useful in Architecture?*, 2024.
- "Future of Hotel Design," *Sleeper Magazine*, 2014.
- Weekly column in *Politika*, 2010–2012.

Selected Talks:

- TEDx Belgrade, 2011.
- MIPIM Real Estate Conference and Expo, Cannes, France, 2012.
- Keynote Speech, REBEC Conference.

EXHIBITIONS & CREATIVE RESEARCH

- **10 international biennale of art Beijing 2026: " the loop of being"**
<https://theloopofbeing.vercel.app/>
- **Venice Architecture Biennale, Hong Kong Pavilion (2018):** "Library of the World" – Generative Design Speculation.
- **Lerata Interactive Design Biennial (2016 & 2011):** "Interactive Ceiling" and "Mind Maps."
- **Architecture Design Museum (2013):** "Dance with Me" Interactive installation.

AWARDS & RECOGNITION

- **Radical Innovation in Hospitality Award (2014):** "Hotel 2020."
- **European Hotel Design Award (2013):** "Tomorrow's Hotel."