Goran Ivančić

goran.ivancic@fer.hr
goran.ivancic@net.doba.si

Education

Faculty of Electrical Engineering and Computing Zagreb, Croatia
Bachelor of Computer Engineering 2024 - 2028 *(expected)*

- GPA: 4.62/5.00
- Research focus: Computational mechanisms in neural networks and cybersecurity.
- Relevant coursework: Mathematical Analysis, Computer Architecture, Information Theory, Competitive Cybersecurity Skills

DOBA Faculty Maribor, Slovenia
Bachelor of Applied Psychology 2024 - 2028 *(expected)*

- GPA: 9.00/10.00
- Research focus: Spatial cognition and local neural dynamics.
- Relevant coursework: Clinical Psychology, Cognitive and Neuroscience, Decision-Making Cognition

Publications & Conferences

1. **Goran Ivančić**. Moore Machine architecture implemented purely on a multi-layer Hopfield network: a different perspective of sequential memory in humans, 2025. *Sixth International Conference of Mathematics of Neuroscience and AI*
2. **Goran Ivančić**. Biological Neural Machines – Creating a Computer on Biologically Restrained Neural Networks, 2025. *IRCN and Chen Institute Joint Course on Neuro-inspired Computation*

Projects

Impact of Dendritic Structures on Neural Processing
University of Zagreb, Columbia University 2025.05 - Present

- Analysis of dendritic morphology to understand complex cognitive functions at the single-neuron level.
- Focus on biophysical parameters enabling local signal integration and nonlinear transformations.

Neural Computer Architecture
University of Zagreb, Beijing Normal University 2025.02 - Present

- Implementation of basic cognitive mechanisms in a technically feasible system with a focus on usability.
- Inspired by biological networks – e.g. synaptic plasticity and *content-addressable memory*.

FPGA as an External Linux Computer
Independent Project 2025.05 - Present

- Adaptation of the ULX3S FPGA board to run a lightweight Linux OS via soft-core processor.
- Integration with external devices such as ESP32 and 7-segment displays for enhanced interaction.

Development of Open-Source Low-Cost EEG System
Independent Project 2025.06 - Present

Understanding Spatial Cognition and Information Transfer Among Humans
Independent Project 2024.07 - Present

Work Experience

Višnjan Astronomical Society – VSA Program | Mentor 2025.08
- Preparation of educational STEM materials with a focus on programming and astronomy.
- Conducting workshops and project-based activities with children.

Speedcubing Croatia | System Administrator 2025.01 - Present
- Development and maintenance of the organization's website.
- Development and administration of the CMS platform used by the organization.

Faculty of Electrical Engineering and Computing | Lab Demonstrator 2024.10 - 2025.02
- Assisted students during lab exercises in the course *Digital Logic*.
- Learned and applied VHDL and FPGA technologies.

mStart Ltd. | Documentation Archivist 2024.07 - 2025.08
- Handling and preparing documentation for archival.
- Error checking and verification of documentation.

Zlatni zmaj | Volunteer Tutor 2022 - 2024
- Tutored children in completing school assignments.

Awards

- **Fifth place**, Cybersecurity competition (Conference challenge) 2025.06
- **Fourth place**, Hackultet – National Cybersecurity Competition 2025.05
- Top 5% of high school graduates in Croatia (math and physics), 1st prize – Informatics, First Lego League – Judges' Award

Skills & Interests

Languages: Croatian (native), English (C1), German (A1), Japanese (N4 - A2)

Programming: `Python`, `C/C++`, `MATLAB`, `HTML/CSS/JS`, `Java`

Creative hobbies: Writing, Dungeons & Dragons, Drawing

Research interests: Local neural dynamics, Spatial cognition, Computer architecture, Cryptography