Sandro Junior Della Rovere

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ABOUT ME

I am a passionate science and technology enthusiast, holding a BSc in Computer Science from the University of Udine and currently completing an MSc in Data Science and Scientific Computing at the University of Trieste.

My academic path began with a BSc thesis focused on improving industrial processes through Process Mining and Data Analytics. During my MSc, I specialized in Electronic Design Automation, with a focus on automating the floorplanning phase of analog integrated circuit design.

I conducted my MSc thesis at Infineon Technologies in Villach, Austria. Titled *"Enhancing Reinforcement Learning for the Floorplanning of Analog Integrated Circuits with Beam Search"*, this work has been peer-reviewed and accepted for publication at the IEEE SMACD 2025 conference in Istanbul, Turkey.

Looking ahead, I intend to continue this research in a field that remains largely underexplored. My early fascination with electronic devices, combined with the technical expertise I've developed, continues to fuel my motivation to advance this domain.

In the long term, I aim to contribute to the industrial application of Artificial Intelligence, bridging the gap between academic innovation and real-world impact. I am confident that my technical strengths and personal drive will enable me to make a meaningful contribution at this intersection.

EDUCATION AND TRAINING

High School Diploma: Transports and Logistics, Aircraft Construction
I.S.I.S. Arturo Malignani [09/2014 – 06/2019]

Address: Viale Leonardo Da Vinci 10, 33100 Udine (Italy) | **Website:** https://www.malignani.ud.it/ | **Level in EQF:** EQF level 4 | **NQF Level:** 4

Bachelor Degree: Internet of Things, Big Data & Web
Università degli Studi di Udine [09/2019 – 20/10/2022]

Address: Via delle Scienze 206, 33100 Udine (Italy) | **Website:** https://www.uniud.it/ | **Field(s) of study:** Information and Communication Technologies: ● Information and Communication Technologies (ICTs) not further defined | **Final grade:** 101/110 | **Level in EQF:** EQF level 6 | **NQF Level:** 6 | **Thesis:** Business Process Improvement with Data Analytics and Process Mining Techniques

Master Degree: Data Science and Scientific Computing
University of Trieste [01/2023 – 11/07/2025]

City: Trieste | **Country:** Italy | **Website:** https://portale.units.it/ | **Field(s) of study:** Information and Communication Technologies: ● Information and Communication Technologies (ICTs) not further defined ; Natural sciences, mathematics and statistics: ● Mathematics and statistics not further defined | **Level in EQF:** EQF level 7 | **NQF Level:** 7 | **Thesis:** Enhancing Reinforcement Learning for the Floorplanning of Analog Integrated Circuits with Beam Search

WORK EXPERIENCE

🏢 *R.E.S. Robotic & Electronic Solutions Srl* – Manzano, Italy

City: Manzano | **Country:** Italy
Mechanical Parts Assembler

[13/02/2020 – 06/03/2020]

🏢 *Quin S.r.l.* – Udine, Italy

City: Udine | **Country:** Italy
Data Scientist Intern

[20/04/2022 – 30/05/2022]

- Process Mining
- Data Analytics
- Industrial Process Improvement

🏢 *Infineon Technologies* – Villach, Austria

City: Villach | **Country:** Austria
Data Scientist Intern

[14/10/2024 – 31/05/2025]

- Reinforcement Learning
- Analog Integrated Circuit Floorplanning
- Electronic Design Automation
- Research & Development

LANGUAGE SKILLS

Mother tongue(s): Italian | Portuguese

Other language(s):
English
LISTENING B2 **READING** B2 **WRITING** B2
SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Data Scientist

data science / machine learning / deep learning / principles of artificial intelligence / reinforcement learning / data analytics / statistics / industrial research and development / supercomputing / Python (computer programming) / C++ / R

Computer Scientist

computer science / algorithms / programming, software engineering, software development / Internet of Things / operating systems / database / computer programming / object-oriented modelling / C / Java (computer programming) / JavaScript / SQL

Personal, Human, Passions and Hobbies

communication / conduct public presentations / sing / automotive engineering / computer technology / emergent technologies / classical antiquity

VOLUNTEERING

[2014 – 2018] Santa Maria la Longa, 33050, UD, Italy
Salesian Oratory Animator

HOBBIES AND INTERESTS

Choir Singer
Music has played a key role in my extracurricular life since childhood. I began music school at age six and joined my first choir at seven — a passion I continue to pursue today. I also studied violin for six years during elementary and middle school, and I occasionally play the guitar in my free time.

Automotive Enthustiast
I have a deep passion for 1990s Japanese sports cars. During high school, I started learning basic mechanical skills and began working on cars independently. I actively follow automotive technology and history through books and documentaries. One of my long-term goals is to restore and tune a '90s Japanese sports car to its original glory.

Computers & Video Games Enthusiast
Video games have been a constant presence throughout my life and sparked my early interest in computer architecture. By age 13, I had assembled my first desktop PC, and I continue to upgrade it to stay current with new hardware and software developments. This hobby has significantly shaped my technical curiosity and practical skills.

PUBLICATIONS

Enhancing Reinforcement Learning for the Floorplanning of Analog ICs with Beam Search
The layout of analog ICs requires making complex trade-offs, while addressing device physics and variability of the circuits. This makes full automation with learning-based solutions hard to achieve. However, reinforcement learning (RL) has recently reached significant results, particularly in solving the floorplanning problem. This paper presents a hybrid method that combines RL with a beam search (BS) strategy. The BS algorithm enhances the agent's inference process, allowing for the generation of flexible floorplans by accommodating various objective weightings, and addressing congestion without the need for policy retraining or fine-tuning. Moreover, the RL agent's generalization ability stays intact, along with its efficient handling of circuit features and constraints. Experimental results show ~ 5–85% improvement in area, dead space and half-perimeter wire length compared to a standard RL application, along with higher rewards for the agent. Moreover, performance and efficiency align closely with those of existing state-of-the-art techniques.

Authors: S. J. Della Rovere, D. Basso, L. Bortolussi, M. Videnovic-Misic, and H. Habal | **Publisher**: IEEE

in Proc. Int. Conf. Synthesis, Modeling, Analysis and Simulation Methods and Applications to Circuit Design (SMACD), IEEE, Jul. 2025.

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Trieste, 26/06/2025

Sandro Junior Della Rovere