Raúl **Aznar**

M. Sc Autonomous Systems · Machine Learning Researcher

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Summary

Machine Learning researcher with focus on deep learning and reinforcement learning solutions. More than 3 years of experience working in research institutions. Highly interested in machine learning, multi-agent systems, reinforcement learning and robotics. Previous experience with high technology machines and customer focus scope since graduating with an Industrial Electronics and Automatics Engineering degree in 2016. A communicative, encouraging team player who presents ideas effectively and can assist others in the latest procedures. Skilled in Python and in many different programming languages. High adaptability to new environments, as well as calm and determination in critical decisions.

Education

Aalto University — *Helsinki, Finland*
Master in Autonomous Systems: Robotics and Artificial Intelligence — *Jul. 2020 - Jul. 2022*
- Double degree program: Technical mayor and Innovation & Entrepreneurship minor

KTH Royal Institute of Technology (Kungliga Tekniska Högskolan) — *Stockholm, Sweden*
Master in Autonomous Systems — *Aug. 2019 - Jun. 2020*
- Double degree program: Technical mayor and Innovation & Entrepreneurship minor

STU (Slovenská technická univerzita v Bratislave) — *Bratislava, Slovakia*
Bachelor in Industrial Electronics and Automatic Control Engineering — *Sep. 2015 - Jan. 2016*
- Bachelor thesis: Design and implementation of a modular robot

UPC (Universidad Politecnica de Cataluña) — *Barcelona, Spain*
Bachelor in Industrial Electronics and Automatic Control Engineering — *Sep. 2011 - Jan. 2016*
- 4 years bachelor program

Projects

Machine Learning & Validation Department, IIS Fraunhofer — *Nurnberg, Germany*
Research Paper — *Oct. 2021 - Sep. 2022*
- Sport Scene Searching, Rating & Solving using AI. (Spinfortec. 2022).

Intelligent Robotics Department, Aalto University — *Helsinki, Finland*
Research Project — *Sep. 2020 - Dec. 2020*
- Scene Representation Learning for Decision-Making with RL in Autonomous Driving Systems using Graph Neural Networks.

Electronic Systems Department, KTH Royal Institute of Technology — *Stockholm, Sweden*
Project Development — *Jan. 2020 - Apr. 2020*
- Design and implementation of a Smart Tennis Racket using Artificial Neural Networks and Piezoresistive sensors.

Experience

Fraunhofer IIS — *Nürnberg, Germany*
Machine Learning Researcher — *Sep. 2021 - Jun. 2023*
- Main responsible for the topic: "Risk Estimation Using Offline Reinforcement Learning in the Football Domain"
- Performed comparison study of algorithm and dataset impact to obtain an offline safety critic in the football domain
- Proposed "OfSaCRE" a novel approach that reduce the number of constraint violations an agent commits by more than 50% using offline data.
- Creation of a gym compatible environment for using RL in process engineering, enabling flowsheet automation

Aalto University — *Espoo, Finland*
Reinforcement Learning Intern — *Sep. 2020 - Aug. 2021*
- Engineered ZeDapt: adapting autonomous robots to joint damages in real-time using RL and supervised learning, surpassing prior methods.
- Adaption of the work "Safe sim-to-real robot learning using repertoire based prior" to include multiple constraints
- Improved by 80% the average reward under worst scenarios in the 'Robotic Damage Adaptation" project compared with PPO baseline
- Analysis of the impact of graph neural networks for safe reinforcement learning in autonomous driving

Makino Gmbh — *Kircheim u. Teck, Germany & Atsugi, Japan*
Application Engineer — *Jan. 2017 - Jul. 2019*
- Responsible person in Europe for Software/Network related features in the EDM Machines.
- Design customized automation ideas for EDM machinery (Industry 4.0)

Remasold S.L, Reparación de Maquinaria de Soldadura — *Barcelona, Spain*
Electronic Technician — *Jun. 2013 - Dec. 2016*
- Repair of PCB boards and welding machinery, both mechanically and electronically.
- Direct relationship with suppliers and customers.

Skills

Soft skills Adaptability, Teamwork, Critical Thinking, Problem-Solving, Willingness to learn, Empathy
Programming Python, C++, Javascript, Pandas, Tensorflow, Pytorch, Numpy, HTML, CSS, SQL, R, Office
Languages Spanish: Native, Catalan: Native, English: C1, German: B2