Paolo Fazzini

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Work Experience

Jan 2018 – Present

Research Fellow at CNR-IIA [Bio-Energies Lab]; PHD at CNR-ISTC [Artificial Life and Robotics Lab] and Sapienza University of Rome [Computer Engineering] (Rome, It):

- Vehicle Traffic optimization with Multi-Agent Reinforcement Learning
- Mixed Cooperative/Competitive Behavior analysis of Multi-Agent systems with Reinforcement Learning and Natural Evolution Strategies
- Time Series analysis and forecasting with LSTM-based networks, Sarima and FBProphet
- Vegetation classification with Remote Sensing and Convolutional Neural Nets

Tools [Programming]: Python, C++

Sept 2016 – Dec 2017

Research Engineer at Photonic Designs Ltd (London, UK):

- Fluid dynamic modeling of air-structure interactions

Tools[Modeling]: OpenFoam

Jan 2001 – May 2016

Senior Research Engineer at Imagination Technology (Kings Langley, UK), PowerVR Division. Main activity: algorithm conception and design (patent list at https://patents.justia.com/inventor/paolo-fazzini):

- 2D and 3D graphics
- Digital Video Processing (De-interlacing, Noise Removal, Super Resolution, Y/C separation)
- Digital Image Processing
- Gamut Mapping
- Neural Networks for artifact detection, noise-removal, super-resolution and semantic segmentation
- Efficient bump mapping
- Image compression

Tools: Maple [Symbolic Math], Matlab [Numeric Math], C, C++ [Programming]

Apr 1998 – Dec 2000

Telecommunication Engineer at Viasat srl (Rome, It):

- Designer of Automatic Management for MS Windows processes
- Back-end designer for Differential GPS Satellites Data

Tools[Programming]: C++

Oct 1994 – March 1998

- Front and Back-End Designer at Linea Informatica (Teramo, It)
- Research Engineer at IDEA srl (Pescara, It)
- H/W and S/W designer of state machines at Sea srl (Teramo, It)
- Physics Teacher at the Industrial Technical School of Teramo (Teramo, It)
- Civil Service (Corridonia, It)

Tools[Programming]: Assembler, C++, VB, Java, JavaScript

Education

Sept 1988 – Sept 1994:

Master Degree in Nuclear Engineering with dissertation in Thermo-Fluid-Dynamics: two problems solved with a Finite Element Method (FEM) original code

Tools[Programming]: Fortran77

CV Personal Notes

During my long work experience at Imagination Technologies (Kings Langley, UK), I had the opportunity of cooperating with highly skilled engineers for customers such as Sony, Apple, Nec, Sharp, Microsoft, Amazon, Toshiba, Nokia. Notably:

- I conceived and developed the I2P-GC multi-module (I2P, Frame Rate Detection, Noise Removal, Black/White Level Expander) later implemented in the PowerVR I2P chip and mounted on the TV Sets Sony Bravia Engine 3 TVs -KDL-V5500, KDL-W5500 Europe and Sony Bravia Engine 3 TVs Japan.
- I was in the team of researchers for the PowerVR NNA development, a chip to accelerate neural networks for vision. My specific task dealt with semantic segmentation.

Patents & Publications

The complete list of patents and patent applications is available at:

https://patents.justia.com/inventor/paolo-fazzini

Main Publications:

- Sentinel-2 Remote Sensed Image Classification with Patchwise Trained ConvNets for Grassland Habitat Discrimination
- Traffic Signal Control with Communicative Deep Reinforcement Learning Agents: a Case Study
- Effects of Smart Traffic Signal Control on Air Quality

Main Skills and Inclinations

- Mathematics, theory speculation and analysis
- Lateral thinking
- Programming (mainly C, C++, Python)

Other Past Activities

- Co-Writer and Solo-Developer of *Belpaese Homecoming*, video-game on Play Store and Steam
- Physics, Mathematics and System Theory private tutor (undergraduate level)

Hobbies	Languages	Work References

• Sport Climbing	• Italian
	    (native)
	• English
	    (fluent)
	• French
	    (school level)
		• CNR-IIA: F. Petracchini petracchini_at_iia_dot_cnr_dot_it
		• CNR-ISTC: S. Nolfi
		    stefano_dot_nolfi_at_istc_dot_cnr_dot_it
		• Photonic Designs
		    P. Leaback info_at_photonicdesigns_dot_com
		• Imagination Technologies
		    C. Dikici cagatay_dot_dikici_at_imgtec_dot_com
		    P. Leaback info_at_photonicdesigns_dot_com