Advancements of Artificial Intelligence Using Deep Learning algorithms

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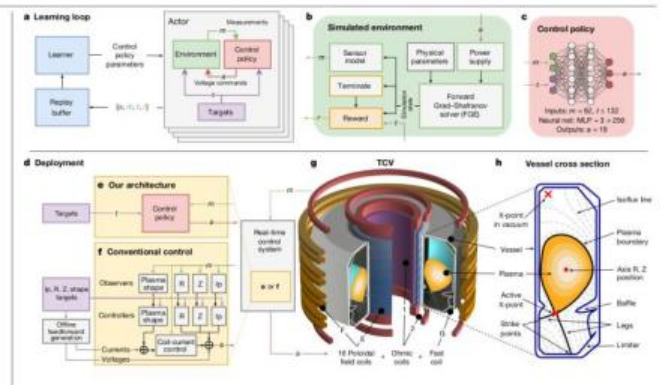
Enrico Ferraro, Liceo Classico Dante Alighieri

Sandro Magri' , FreeNet ST.

Abstract (300 word limit)

We will describe in more detail some of the Deep Learning algorithms. We choose to show how they can be applied to two important projects. One is to show how it is possible to use Artificial Intelligence (AI) for developing Hi-Tech agriculture. The project consists in developing a hydroponic greenhouse which consumes the minimum of water for the plants using particular concentrations of foods and planning an optimal distribution of water and food in time. The other project is about controlled fusion a central question for developing green energy without using radioactivity materials. The recent results at Jet are encouraging because the high temperature plasma for fusion has been obtained for a significant time. This the condition for developing a energy plant. The result has been obtained using AI and a particular deep learning algorithm, reinforced algorithm.

We will describe this algorithm.



Publications (minimum 5)

1. B. Tirozzi et al. (2003) Linear and non linear post-processing of numeric forecasted temperatures, Nonlinear Processes in Geophysics10, 1-11

2. B.Tirozzi, D. Bianchi, E. Ferraro (2007), Introduction to computational neurobiology and clustering, World Scientific, Series on Advances in Mathematics for Applied Sciences, V. 7

3. L. Pastur, M.Shcherbina,B. Tirozzi, (1994), The replica symmetric solution without replica trick for the Hopfield model. J. of Statistical Physics, 74, N. 516, DOI:10.1007/BF02188221

4.J. Feng, M. Shcherbina,B. Tirozzi (2009) Stability of the dynamics of an asymmetric neural network, Comm.on Pure and applied analysis, V. 8, N.1, DOI 10.3 934/cpaa.2009.8.1

5. J. Degrave et al. (2022)Magnetic control of tokamak plasmas through deep reinforcement learning, Nature, v602, 414

Photograph



Biography (150 word limit)

Full Professor of Mathematical Physics Department of Physics, U. of Rome, retired since 2015. Research: 200 publications (Google scholar). Topics Elementary Particle Physics, Statistical Mechanics, Dynamical Systems, Disordered Systems Renormalization Group, Neural Networks, Neurobiology, Asymptotic methods,fluidynamics, typhoons, tsunami.Plasma Physics.

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Notes/Comments: