

Keynote Lecture III

Active Learning with a Just-In-Time Strategy

Cesare Alippi

Politecnico di Milano, Milan, Italy

Chinese Academy of Sciences, Institute of Automation, Beijing, China

Abstract

Most of machine learning applications assume the stationarity hypothesis for the process generating the data. This amenable assumption is so widely –and implicitly– accepted that sometimes we even forget that it does not generally hold in the practice due to concept drift (i.e., a structural change in the process generating the acquired datastream).

The ability to detect concept drift and react accordingly is hence a major achievement for intelligent learning machines and constitutes one of the hottest research topics. This ability allows the machine for actively tuning the application to maintain high performance, changing online the operational strategy, detecting and isolating possible occurring faults to name a few relevant tasks.

The talk will focus on the active just-in-time approach where changes e.g., induced by faults, time variance in the environment and ageing effects are detected by triggering mechanisms. After change detection the system immediately reacts to mitigate the accuracy loss by tracking the system evolution with a strategy depending on the available information (just-in-time approach).

Biography



Cesare Alippi received the Dr. Ing. degree in electronic engineering (summa cum laude) in 1990 and the Ph.D. degree in computer engineering in 1995, both from Politecnico di Milano, Milan, Italy. He has been a visiting researcher at the University College London, London, U.K., the Massachusetts Institute of Technology, Cambridge, USA, the École Supérieure de Physique et de Chimie Industrielles, France, the University of Lugano, Switzerland, and the Chinese Academy of Sciences, China. He was a research scientist of the Italian National Research Council (1996-98), then Reader and Associate Professor at Politecnico di Milano. Since 2002, he has been a Full Professor in Information Processing

Systems at the same institution. Dr. Alippi is a Fellow of the IEEE, Vice President for Education of the IEEE Computational Intelligent Society, Adcom member of the CIS (2012-2014), Chair of the Awards Committee of the CIS (2012), Associate Editor of the IEEE-TNN (2004-2011), Associate Editor of the IEEE-TIM (2003-2010), Chair of the IEEE CIS NNTC (2008-2010) and chair and member of many other IEEE Committees among which the IEEE Rosenblatt award (2011-2013), the IEEE CIS Research grant sub-committee (2011), the CIS awards Committee (2009-2010) and the CIS Subcommittee for Outstanding Early Career Award (2011). In 2011 he has been awarded Knight of the Order of Merit of the Italian Republic. Among many other conferences, he has been conference chair of IEEE International Joint Conference on Neural Networks, IJCNN12, Brisbane, and will be program chair of IEEE IJCNN14, Beijing. Current research activity addresses adaptation and learning in non-stationary and evolving environments and Intelligent Embedded Systems. He holds 5 patents and has published about 200 papers in international journals and conferences.