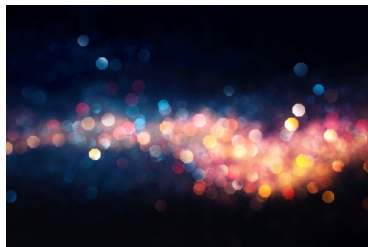




## Research Frontier

### Fuzzy Kernel Alignment With Application to Attribute Reduction of Heterogeneous Data

Fuzzy similarity relation is a function to measure the similarity between two samples. It is widely used to learn knowledge under the framework of fuzzy machine learning. The selection of a suitable fuzzy similarity relation is important for the learning task. It has been pointed out that fuzzy similarity relations can be brought into the framework of kernel functions in machine learning. This fact motivates us to study fuzzy similarity relation selection for fuzzy machine learning utilizing kernel selection methods in machine learning. Kernel alignment is a kernel selection method that is effective and has low computational complexity. In this paper, we present novel methods for fuzzy similarity relation selection based on the kernel alignment, and their use in attribute reduction for heterogeneous data. First, we define an ideal kernel for classification problems, based on which a novel fuzzy kernel alignment model is proposed. Second, we present a method for the fuzzy similarity relation selection based on the minimization of the fuzzy alignment between the defined ideal kernel and a kernel for the learning problem at hand. In order to show the correctness of this selection method, we prove that the lower bound of the classification accuracy of a support vector machine will increase with the decrease of the fuzzy alignment value. Furthermore, we apply the proposed fuzzy similarity relation selection to attribute reduction for heterogeneous data. Finally, we present experimental results to show that the proposed method of fuzzy similarity relation selection based on the fuzzy kernel alignment is effective.



*IEEE Transactions on Fuzzy Systems, July 2019*

### General Video Game AI: A Multitrack Framework for Evaluating Agents, Games, and Content Generation Algorithms

General video game playing aims at designing an agent that is capable of playing multiple video games with no human intervention. In 2014, the General Video Game Artificial Intelligence (GVGAI) competition framework was created and released with the purpose of providing researchers a common open-source and easy-to-use platform for testing their artificial intelligence (AI) methods with potentially infinity of games created using the video game description language (VGDL). The framework has been expanded into several tracks during the last few years to meet the demands of different research directions. The agents are required either to play multiple unknown games with or without access to game simulations, or to design new game levels or rules. This survey paper presents the VGDL, the GVGAI

## CIS Conferences

- ★ [Conference Calendar \(2019-2021\)](#)
- ★ [2019 IEEE International Conference on Data Science and Advanced Analytics \(DSAA\)](#)  
Washington, DC USA  
5-8 Oct. 2019
- ★ [2019 6th International Conference on Behavioral, Economic and Socio-Cultural Computing \(BESC\)](#)  
Beijing, China  
28-30 Oct. 2019
- ★ [2019 Third International Conference on Intelligent Computing in Data Sciences \(ICDS\)](#)  
Marrakech, Morocco  
28-30 Oct. 2019
- ★ [2019 7th International Conference on Robot Intelligence Technology and Applications \(RiTA\)](#)  
Daejeon, South Korea  
1-3 Nov. 2019
- ★ [2019 IEEE Symposium Series on Computational Intelligence \(IEEE SSCI 2019\)](#)

framework, existing tracks, and reviews the wide use of GVGAI framework in research, education, and competitions five years after its birth. A future plan of framework improvements is also described.

*IEEE Transactions on Games*, Sept. 2019



Xiamen, China  
6-9 Dec. 2019

★ 2020 12th International Conference on Agents and Artificial Intelligence (ICAART)

Valletta, Malta  
22-24 Feb. 2020

★ 4th International Conference on Computational Intelligence and Networks (CINE 2020)

Kolkata, India  
27-29 Feb. 2020

★ 2020 IEEE Conference on Evolving and Adaptive Intelligent Systems (EAIS)

Bari, Italy  
27-29 May 2020

★ 2020 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA)

Tunis, Tunisia  
22-24 Jun. 2020

(Submission: 31 Jan 2020)

★ 2020 IEEE World Congress on Computational Intelligence (WCCI)

Glasgow, UK  
19-24 Jul. 2020

(Submission: 15 Jan 2020)

★ 2020 IEEE Conference on Games (CoG)

Higashiosaka, Japan  
24-27 Aug. 2020

★ 2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)

Valparaíso, Chile

## Member Activities

### Women in Computational Intelligence -- IN MEMORIAM

Seven years ago, Evangelia Micheli-Tzanakou, a long-time IEEE volunteer and a member of the IEEE Board of Directors passed away. She was also the first female president of the IEEE Neural Network Society (NNS), which later on became the IEEE Computational Intelligence Society.

Dr. Tzanakou had a prolific career as a Professor and Director of the Computational Intelligence Laboratories in the Department of Biomedical Engineering at Rutgers University, as well as at the University of Medicine and Dentistry of New Jersey. Her professional career was devoted to image and signal processing applied to biomedicine, information processing in the brain, artificial neural networks, biometrics, and computational intelligence.

She was among the founders of the IEEE Biometrics Council and put the significant effort to create the IEEE Certified Biometrics Professional (CBP) program. Dr. Tzanakou serviced as IEEE Director (Division Director, 2005-2006; IEEE Vice President of Educational Activities, 2008); Chair of the Awards Board (2002-2003); and Chair of the Medal of Honor Committee (2004-2006). Also, she was elected Fellow of the New Jersey Academy of Medicine in 1986; Fellow of IEEE in 1992 and Founding Fellow of AIMBE in 1993.

### Joint reception for Young Professionals, Students and Women in Computational Intelligence at IEEE Conference on Games



IEEE CIS organised a joint reception for Young Professionals, Students and Women in Computational Intelligence at IEEE Conference on Games which took place 20-23 August 2019 in London. Many thanks for all who joined it!

## Call for Papers (Journal)

- [IEEE TFS Special Issue on Smart Fuzzy Optimization in Operational Research and Renewable Energy: Modelling, Simulation and Application \(1 Nov\)](#)

## Call for Papers (Conference)

- [The 1st International Conference on Artificial Intelligence and Data Analytics for Air Transportation \(30 Oct\)](#)
- [The 12th International Conference on Advanced Computational Intelligence \(ICACI2020\) \(1 Dec\)](#)

7-10 Sep. 2020

(Submission: 15 Mar 2020)

- ★ [2020 IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology \(CIBCB\)](#)

Viña del Mar, Chile

27-29 Oct. 2020

(Submission: 1 May 2020)

- ★ [2020 IEEE Symposium Series on Computational Intelligence \(IEEE SSCI 2020\)](#)

Canberra, Australia

1-4 Dec. 2020

(Submission: 7 Aug 2020 -- strict deadline)

- ★ [2021 IEEE International Conference on Fuzzy Systems \(FUZZ-IEEE 2021\)](#)

Luxembourg

11-14 July 2021

- ★ [2022 IEEE World Congress on Computational Intelligence \(IEEE WCCI 2022\)](#)

Padua, Italy

11-16 July 2022

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