

## IEEE – CIS

### XIII Summer School on Computer Intelligence (EVIC 2017)

Held in Valparaiso, Chile

The IEEE-CIS Latin-American Summer School on Computer Intelligence year 2017 was hosted by the School of Biomedical Engineering of the Universidad de Valparaíso, in the port city of Valparaiso, Chile. The Summer School is locally known as EVIC, which is an acronym for the name in Spanish. The EVIC is jointly organized by the Chilean Chapter of the IEEE Computational Intelligence Society and the hosting university. It was held in 3 days, December 13<sup>th</sup> to 15<sup>th</sup>, 2017. The aim of EVIC is to show state-of-the-art research and developments in Computational Intelligence (Neural Networks, Fuzzy Logic, and Evolutionary Computation, etc.), and also to spread the knowledge about Computer Intelligence by explaining the basics of its models, algorithms, and their applications in many different areas (see more at [www.evic.cl](http://www.evic.cl)). There were 7 plenary talks at EVIC 2017, delivered by distinguished international and national speakers and 10 tutorials presented by faculty members and professionals from different institutions. We also had a student poster competition with a record total of 37 presentations. There was also a round table, where Chilean entrepreneurs, and members of public and academic institutions, shared their experience and vision on local applications of computer intelligence,

The program detail was as follows:

#### Plenary Talks:

P01: “Computational Intelligence for Brain Computer Interface”, by Prof. Chin-Teng Lin, PhD., Faculty of Engineering & IT, School of Software, University of Technology Sydney, Australia, and IEEE Distinguished Lecturer

P02: “Artificial Intelligence: A Revolution”, by Pablo Zegers, Ph.D., former Professor at U. Andes for 15 years, entrepreneur in Artificial Intelligence: Sortbox, Webdox ([www.webdox.cl](http://www.webdox.cl)) and Anastasia ([www.anastasia.ai](http://www.anastasia.ai)), Chile.

P03: “Spatio temporal Models for the Analysis of Environmental Data”, by Prof. Orietta Nicolis, Ph.D., Associate Professor, Head of the Doctoral Program, Institute for Statistics, Universidad de Valparaiso, Chile.

- P04: “Computational Intelligence in Medicine and Biology”, by Prof. Paulo Lisboa, PhD., Department of Applied Mathematics, John Moores Liverpool University, UK.
- P05: “The Brain as a Hybrid Dynamical System”, by Prof. Wael El-Deredy, Ph.D. School of Biomedical Engineering, Universidad de Valparaiso, and Advanced Center for Electrical and Electronics Engineering, Chile.
- P06: “Brain Computer Interface (BCI) The Next-Generation Human Computer Interface for Wearable Devices”, by Prof. Chin-Teng Lin, PhD., Faculty of Engineering & IT, School of Software, University of Technology Sydney, Australia, and IEEE Distinguished Lecturer.
- P07: “Computer Intelligence, Big Data and Deep Learning: Applications to Astronomy”, by Prof. Pablo Estevez, PhD. Dept. of Electrical Engineering, Universidad de Chile, Chile, and President of the IEEE Computational Intelligence Society.

#### Tutorials:

- T01: “Feature Selection for Support Vector Machines: An Application in Credit Scoring”, by Prof. Sebastián Maldonado, Ph.D., Universidad de los Andes, Chile.
- T02: “Human Decision Making Models based on Reinforcement Learning”, by Prof. Alejandro Weinstein, Ph.D., School of Biomedical Engineering, Universidad de Valparaiso, and Advanced Center for Electrical and Electronics Engineering, Chile.
- T03: “Applications of Computational Intelligence in Latin American Retail: Pricing and Recommendations”, by Luis Aburto, Ph.D.(c), Entrepreneur in predictive modeling, founder of Penta Analytics, and part-time Professor at the Industrial Engineering Department, Universidad de Chile, Chile.
- T04: “Reinforcement Learning: Fundamentals and Applications in Robotics”, by Dr-Ing. Miguel Solis, Center for Innovation and Robotics and Universidad Andrés Bello, Viña del Mar, Chile.
- T05: “Dynamic Data Mining - The Potential of Computational Intelligence to Update Data Mining Models”, by Prof. Richard Weber, Industrial Engineering Department, and

Head of the Graduate School at the Faculty of Physical and Mathematical Sciences, Universidad de Chile, Chile.

T06: “Cerebral Auto Regulation Blood Flow System Modeling with Computational Intelligence”, by Prof. Felipe Bello, Department of Informatics Engineering, Universidad de Santiago, Chile.

T07: “Identifying Influential Users on Social Networks: Methods and Applications”, by Prof. Fabián Riquelme Ph.D., School of Informatics Engineering, Universidad de Valparaiso, and Scenic Artist in Colectivo Insinú, Chile.

T08: “Artificial Intelligence & Machine Learning: An Illustrative Introduction”, by Felipe Tobar Ph.D., Research Fellow, Center for Mathematical Modeling; Adjunct Lecturer, Dep. Mathematical Engineering, Universidad de Chile, Chile.

T09: “Astroinformatics and Computational Intelligence”, by Mauricio Araya, Ph.D., Informatics Department, Universidad Técnica Federico Santa María, Valparaíso, Chile.

T10: “Modeling for Non- Linear Dynamic Systems using Computational Intelligence Tools”, by Prof. Gonzalo Acuña, Dep. Informatics Engineering, Universidad de Santiago, Chile.

#### Poster competition:

Authors of the posters included students and their advisors from 13 Chilean universities, and universities from Brazil, Peru, Mexico, USA, France and India, making a total of a record setting 37 presentations accepted to the competition. The first author had to be a student, and each poster had to be presented in English by a student. All winners got certificates; the first prize included also a cash prize of the equivalent of US\$ 200. The jury was composed by Professors Paulo Lisboa (President), Claudio Held, Sebastián Maldonado, Miguel Solis, Gonzalo Acuña, and Steren Chabert. The coordinator was Prof. Alejandro Veloz. Given the number of entries, the jury divided itself in two, to hear all presentations. Then, a selected set of posters was chosen for the final round, and these students had to present a second time for the whole jury. The competition results showed a tie in the second place:

1st Place: Alejandro Cuevas, Alejandro Veragua and Felipe Tobar: “Framework for Processing Large Data in Bioacoustic: The Blue-Whale Case Study”. Universidad de Chile

2nd Place: Oscar Cartagena, Diego Muñoz-Carpintero and Doris Sáez: “A Robust Predictive Control Strategy for Building HVAC Systems Using Interval Fuzzy Models”. Universidad de Chile

2nd Place: Lerko Araya-Hernández, Jorge F. Silva, Axel Osses and Felipe Tobar: “Hierarchical vs. Non-Hierarchical Priors for a Gaussian Mixture Model in Radio Astronomy”. University of Chile

3rd Place: Alexandra K. Medrano-Roldan, Francisco Lopez-Orozco, Ugo Ballenghein and Thierry Baccino: “Towards a computational cognitive model for predicting eye movements while a text with referential change is processed”. Universidad Autónoma de Ciudad Juárez, Mexico / University of Paris 8, France.

Round table: Computational Intelligence in Chile. The participants were:

- 1) Pablo Zegers, Ph.D. former Professor at U. Andes for 15 years, entrepreneur in Artificial Intelligence: Sortbox, Webdox ([www.webdox.cl](http://www.webdox.cl)) and Anastasia ([www.anastasia.ai](http://www.anastasia.ai)).
- 2) Rodrigo Alfaro, Ph.D. Professor at the Schools of Computer Engineering and Industrial Engineering of the PUCV. Mentor at and member of the Strategic Board of Chrysalis, the Business Incubator of the PUCV. Founding partner of Analitic S.A.
- 3) Rafael Meneses, M.Sc.; CEO and founding partner of ZEKE ([www.zeke.cl](http://www.zeke.cl)); founder of Zambeca ([www.zambeca.cl](http://www.zambeca.cl)), former member of the board at Chiletec ([www.chiletec.org](http://www.chiletec.org))
- 4) Cristian Oyanedel. Head of the Transfer and Licensing Office, Universidad de Valparaíso (2015 - 2017). Regional Head of the Development Program CORFO - FEDEFRUTA. (2008 - 2015).
- 5) Francisco Plaza: Strategic advisor to the Executive Directorate at the Fisheries Development Institute, Chile (IFOP), particularly in the area of Knowledge Discovery from Data (KDD), applying Statistics, Data Mining, etc.

- 6) María José Escobar, Ph.D. Professor at the Dep. of Electronics, Federico Santa María Technical University and Associate Researcher at the Advanced Center for Electrical and Electronic Engineering (AC3E)

Moderator: Prof. Alejandro Weinstein, Ph.D., School of Biomedical Engineering, Universidad de Valparaíso, and Advanced Center for Electrical and Electronics Engineering, Chile.

EVIC 2017 was attended by over 140 people, mostly undergrad and graduate students from about 20 different institutions, mostly universities. Several students benefited from travel and registration grants. EVIC was also attended by faculty members and industry professionals. This time it was co-organized by the Biomedical Engineering School (Escuela de Ingeniería Civil Biomédica) of Universidad de Valparaíso, who did an excellent work, in their brand-new campus located near the port in the city of Valparaíso, with the multi-colored scenery of the hills of Valparaíso and the beautiful Pacific Ocean in the background.

The Organizing committee of the EVIC included:

- 1) General Chair: Prof. Rodrigo Salas, Universidad de Valparaíso
- 2) General Co-Chair: Prof. Carolina Saavedra, Universidad de Valparaíso
- 3) IEEE CIS Chilean Chapter Chair: Prof. Claudio Held, Universidad de Chile
- 4) Honorary Chair: Prof. Pablo Estévez, IEEE CIS President
- 5) IEEE CIS Chilean Chapter Co-Chair: Prof. Pablo Zegers
- 6) Tutorials Chair: Prof. Steren Chabert, Universidad de Valparaíso
- 7) Poster Competition Chair: Prof. Alejandro Veloz, Universidad de Valparaíso
- 8) Scholarships Chair: Prof. Doris Saez, Universidad de Chile
- 9) Publicity Chair: Prof. Millaray Curilem, Universidad de la Frontera
- 10) Director of the School of Biomedical Engineering (hosting institution): Prof. Pablo Roncagliolo.



Poster of the XIII Latin-American Summer School on Computational Intelligence, held at Universidad de Valparaíso, on December 13th to 15th, 2017.



Dr. Paulo Lisboa's plenary talk about "Computational Intelligence in Medicine and Biology", at EVIC 2017.



Dr. Pablo Zegers, delivering his plenary talk about “Artificial Intelligence: A Revolution” at EVIC 2017.



Dr. Orietta Nicolis delivering her plenary talk: “Spatio temporal Models for the Analysis of Environmental Data”, at EVIC 2017.

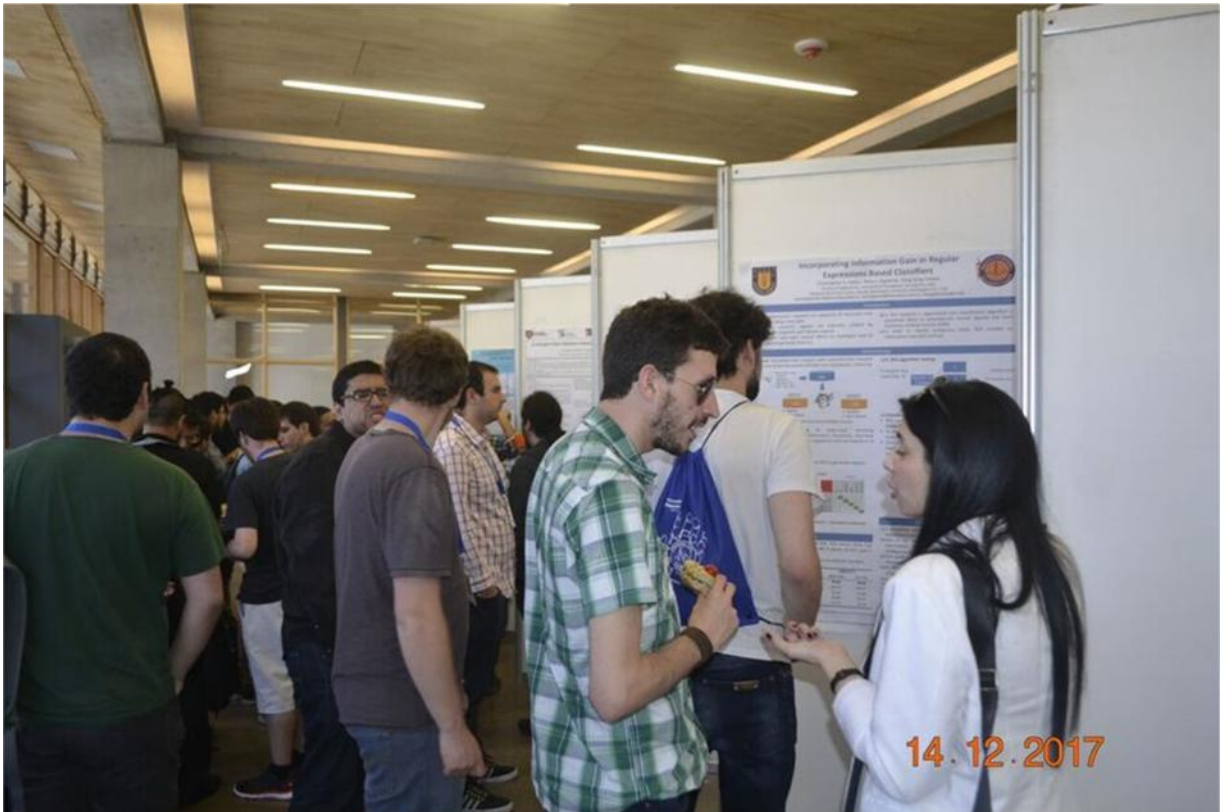


Plenary talk by Dr. Wael El-Deredy: "The Brain as a Hybrid Dynamical System", at EVIC 2017



Dr. Chin-Teng Lin, DL IEEE CIS, receives a memory for his distinguished contribution at EVIC 2017 from one of the student participants.





Attendees and participants at the poster presentation, EVIC 2017, at Universidad de Valparaiso



Poster competition: Dr. Chin-Teng Lin, DLP, presenting the first prize to Alejandro Tobar, from Universidad de Chile. In the back: Dr. Paulo Lisboa (President of the jury), Dr. Claudio Held and Dr. Rodrigo Salas (General Chair of EVIC 2017).



Poster competition: Prof. Carolina Saavedra (General Co-Chair of EVIC 2017), presenting the third prize to Alexandra K. Medrano-Roldan, from Universidad Autónoma de Ciudad Juárez, Mexico. In the back: Dr. Paulo Lisboa (President of the jury), Dr. Claudio Held and Dr. Rodrigo Salas, General Chair of EVIC 2017.



Group picture with several of EVIC 2017 participants. It was taken at the terrace where the poster competition prizes were handed out, and also where the coffee breaks took place. We were happy not only with outcome of the school, but also with the weather. At the left, far in the back, you may distinguish the four masts of the Esmeralda, the school ship of the Chilean Navy, at the port.