XII Summer School on Computer Intelligence (EVIC 2016) in Santiago, Chile

The XII Summer School on Computational Intelligence (Called EVIC, which is an acronym for the name in Spanish) was held at Universidad de los Andes, Santiago, Chile for 3 days, December 14th to 16th, 2016. The EVIC is jointly organized by the Chilean Chapter of the IEEE Computational Intelligence Society and the hosting university. This time it was co-organized by the School of Engineering and Applied Sciences of the Universidad de los Andes, who did an excellent work, in the beautiful setting of their campus located in Santiago, at the foothills of the Andes. The Summer School is dedicated to show state-of-the-art research and developments in Computational Intelligence (Neural Networks, Fuzzy Logic, and Evolutionary Computation), and also to spread the knowledge about Computer Intelligence by explaining the basics of its models, algorithms, and their application to signal processing, pattern recognition, biomedical engineering, astronomy, data mining, business intelligence, power systems, among others (see more about present and past EVICs at www.evic.cl).

EVIC 2016 was attended by 138 people, mostly undergrad and graduate students from a number of different universities in the country. 46 students benefited from registration grants, and 20 students from outside the city benefited from travel aids. These student aids were sponsored by the Complex Engineering Systems Millennium Scientific Institute. EVIC was also attended by faculty members and industry professionals. All in all, registration fees paid by attendees covered about 42% of the total cost of EVIC 2016, the rest was financed by local institutions and IEEE-CIS. The organizers successfully managed a balanced budget.

The Summer School included 7 plenary talks given by outstanding international and national experts and 17 tutorials presented by faculty members and professionals from different institutions. There was a student poster competition with 20 presentations. There was also a round table, where five entrepreneurial experiences were shared, among them of four young Chilean startup creators, all based on computer intelligence.

The members of the Organizing Committee of EVIC 2016 were:
- General Chair: Pablo Zegers, Universidad de los Andes
- Honorary Chair: Pablo Estévez, Universidad de Chile
- General Co-Chair: José Delpiano, Universidad de los Andes
- Program Chair: Gonzalo Acuña, Universidad de Santiago de Chile
- Program Co-Chair: Richard Weber, Universidad de Chile
- Tutorials Chair: Claudio Held, Universidad de Chile
- Publicity Chair: Doris Sáez, Universidad de Chile
- Publicity Co-Chair: Millaray Curilem, Universidad de la Frontera
- Poster Competition Chair: Sebastián Maldonado, Universidad de los Andes

The program detail was as follows:

<u>Plenary talks:</u>
P1: "Computer vision in the industry", by Domingo Mery, Ph.D., Pontificia Universidad Católica, Santiago, Chile

P2: "Neural approaches to dimensionality reduction with emphasis on redundancy control", by Nikhil Pal, Ph.D., Indian Statistical Institute, Calcutta, India
P3: "Reinforcement learning", by Javier Ruiz del Solar, Ph.D., Universidad de Chile
P4: "Computational intelligence for bioinformatics with emphasis on protein folding and synergistic networks", by Nikhil Pal, Ph.D., Indian Statistical Institute, Calcutta, India
P5: "Deep Learning", by Pablo Zegers, Ph.D., Universidad de los Andes, Santiago, Chile
P6: "Astronomy and computational intelligence", by Pablo Estévez, Ph.D., Universidad de Chile, Santiago, Chile
P7: "Big data and analytics", by Cristián Bravo, Ph.D., University of Southampton, Southampton, United Kingdom

The talk of P5 was a different one than planned, because the international invited speaker of it had a personal problem and was unable to attend.

Tutorials:
T01: "Business Analytics applied to social networks", by Richard Weber, Ph.D., Universidad de Chile, Chile
T02: "Managing Very Large and Highly Multidimensional Data Collections Mining Ad-Hoc Metrics and Related Statistics", by Jean-Charles Lamirel, MSc., LORIA, France
T03: "Real Time Analytics", by Cristián Figueroa, MSc., SAS and Universidad de Chile, Chile
T04: "Model Based Fault Detection and Diagnosis", by Rodrigo Carrasco, Ph.D., Universidad Adolfo Ibáñez, Chile
T05: "Natural Language Processing", by Pablo Zegers, Ph.D., Universidad de los Andes, Santiago, Chile
T06: "Bayesian Inference in Neuroscience", by Wael El-Deredy, Ph.D., University of Manchester, UK
T07: "Knowledge extraction from online social networks: real-time event analysis", by Bárbara Poblete, Ph.D., Universidad de Chile, Chile
T08: "Modeling air pollution using artificial neural networks", by Patricio Pérez, Ph.D., Universidad de Santiago, Chile
T09: "Data Science for Astronomy", by Karim Pichara, Ph.D., Pontificia Universidad Católica, Chile
T10: "Information Theory and Semi-Supervised Learning in Astronomy", Pablo Huijse, Ph.D., Universidad de Chile, Chile
T11: "Computer Vision   Multiple View Geometry in a Computer Vision Pipeline", by Christian Pieringer, Ph.D., Pontificia Universidad Católica, Chile
T12: "CNN in Computer Vision", by José Delpiano, Ph.D., Universidad de los Andes, Chile
T13: "Attribute Selection with SVMs", by Cristián Bravo, Ph.D., University of Southampton, Southampton, United Kingdom
T14: "Analysis and applications of dynamic artificial neural networks", by Daniel Sbarbaro, Ph.D., Universidad de Concepción, Chile
T15: "Fundaments of Decision Trees", by Leonardo Causa, MSc., Universidad de Chile, Chile
T16: "Fundaments of Reinforcement Learning", by Leonardo Leottau, Ph.D., Universidad de Chile, Chile
T17: "Fundaments of Fuzzy Logic", by Claudio Held, Ph.D., Universidad de Chile, Chile

Poster competition:

The poster competition in computational intelligence was open for undergraduate and graduate students, to present their research or thesis work. The posters were previously pre-selected based on an extended abstract, written in English. The student had to be the first author and had to present the poster orally to the jury at the EVIC. The first place got a certificate and a cash prize of US$ 200. The second and third places also received recognition certificates. 20 posters were selected for presentation. The first place was awarded to Juan Pavez Allende, of Universidad Federico Santa María, Valparaiso, for his project: "Building a Medical Symptoms Checker using Memory Networks". The second and third places were for students with the Center for Mathematical Modeling, Universidad de Chile, Santiago. Gonzalo Rios Tobar (Mathematical Engineering) got the second place for his project: "Box-Cox Gaussian Processes", and Alejandro Veragua and Alejandro Cuevas (Electrical Engineering), the third place for their project "Blue whale's call detection using unsupervised learning with temporal and spectral features".

Round table:

The round table with entrepreneurs of local start-ups applying computer intelligence in its core business included:
1) Company: Webdox. Entrepreneur: José Manuel Jiménez (lawyer)
2) Company: Toth. Entrepreneur: Andrés Valdivieso (M.D.)
3) Company: Penta Analytics. Entrepreneur: Luis Aburto (Industrial Engineer)
4) Company: Metricarts. Entrepreneur: Patricio Cofré (Industrial Engineer)

Another member of the panel was Prof. Iván Díaz-Molina, of Universidad de los Andes, who is a member of the board of a fifth CI start up. Prof. Pablo Zegers moderated the round table.

Particular innovations of this version of EVIC were:

1) The time for each tutorial was reduced to 90 minutes each. The number of tutorial was enlarged. In previous versions of EVIC there were less tutorials lasting 180 minutes, with a mid-time break. Longer tutorials allow for deeper topic explanation, but left attendees who wanted to change topic in-between unsatisfied. This change was positively assessed by the organizers.
2) Apart of the coffee breaks, and a reception, a light lunch was offered for all attendees, thanks to efforts of the organization to get the additional financing.
3) A roundtable with young entrepreneurs whose enterprises use CI in the core business

Universidad de los Andes, in Santiago de Chile, venue of EVIC 2016, held December 14th to 16th, 2016.
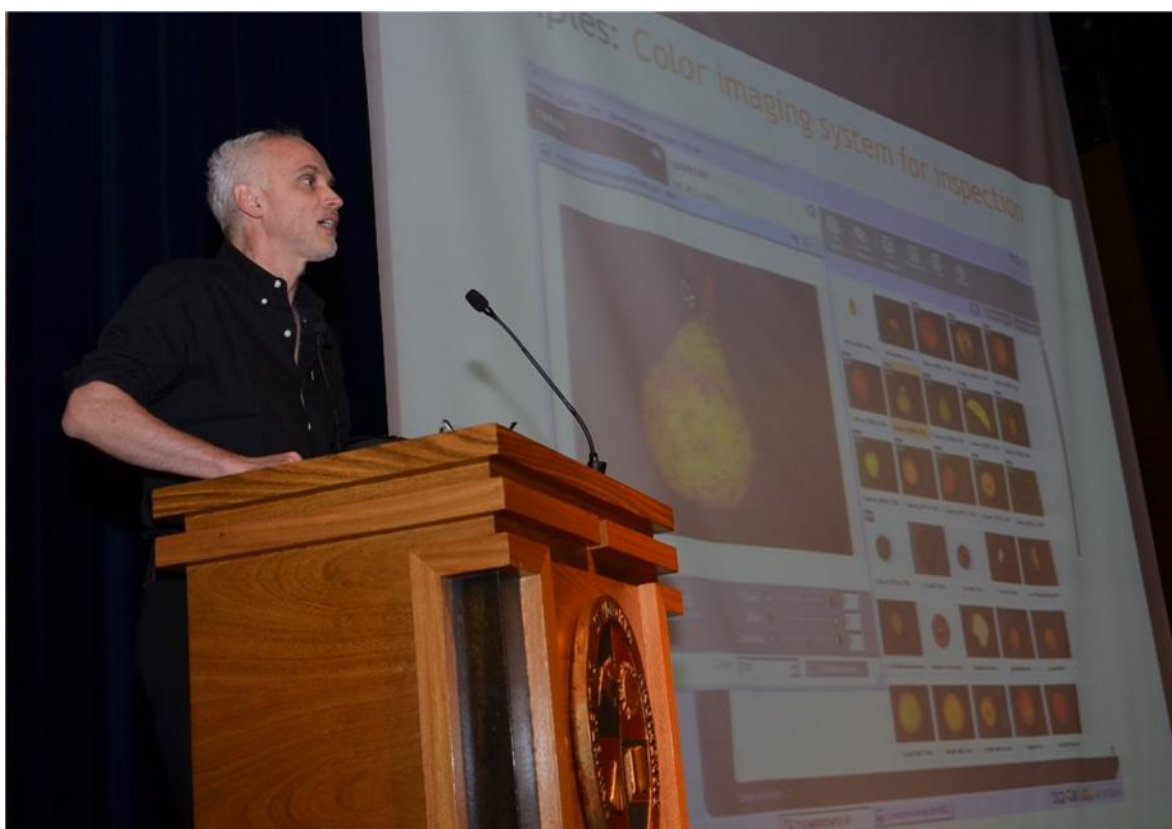
Dr. Domingo Mery, delivering his plenary talk at the Grand Hall, Universidad de los Andes, at EVIC 2016.

EVIC 2016 was well attended, including undergrad and graduate students, professors and professionals in electrical, computer and industrial engineering, and other related fields.

Dr. Nikhil Pal, delivering his plenary talk at the Grand Hall, Universidad de los Andes, at EVIC 2016.

Attendees of EVIC 2016 in the Grand Hall, Universidad de los Andes


Attendees of EVIC 2016 in a plenary talk in the Grand Hall, Universidad de los Andes

Dr. Pablo Zegers (left), professor at Universidad de los Andes, and General Chair of EVIC 2016, and Dr. Nikhil Pal (right), professor at the Indian Statistical Institute in Calcutta and Distinguished Lecturer IEEE-CIS.

Left to right: Dr..Domingo Mery, professor at Pontificia Universidad Católica, Dr. Doris Sáez, professor at Universidad de Chile and Publicity Chair at EVIC 2016, and Dr. Pablo Zegers, professor at Universidad de los Andes, and General Chair at EVIC 2016.
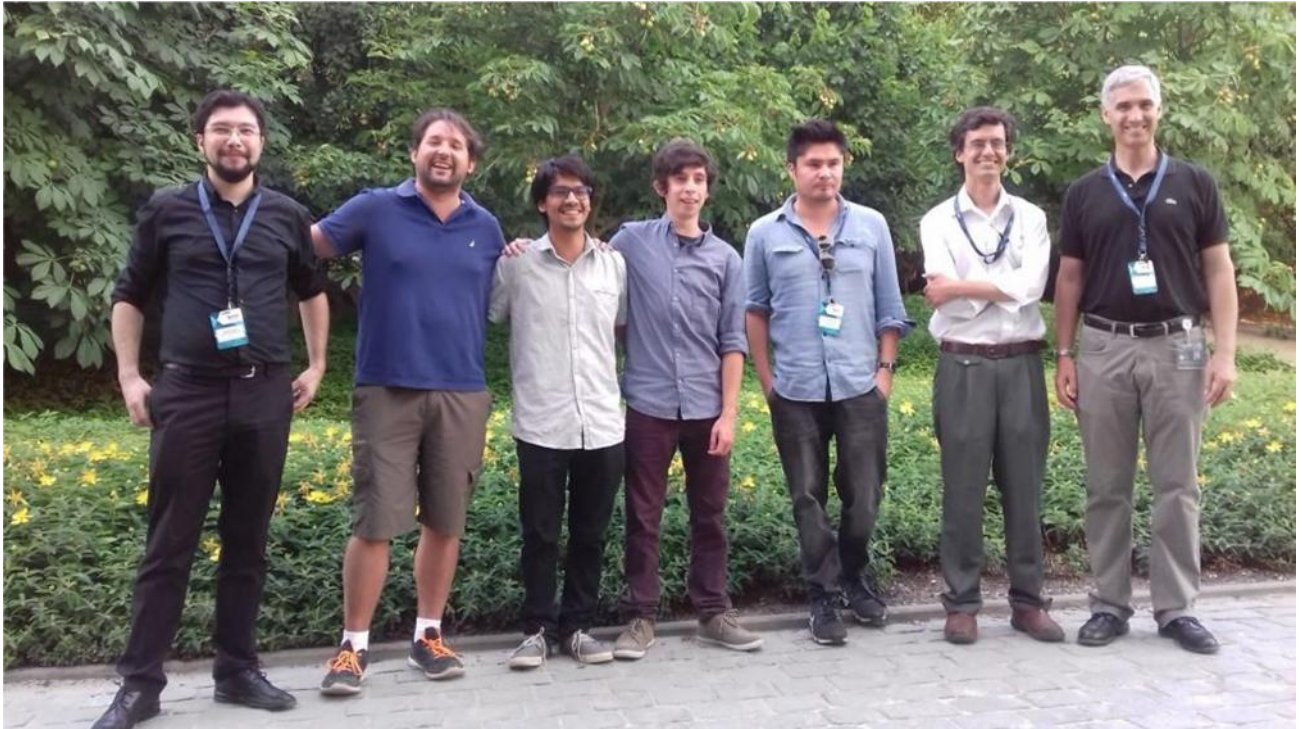
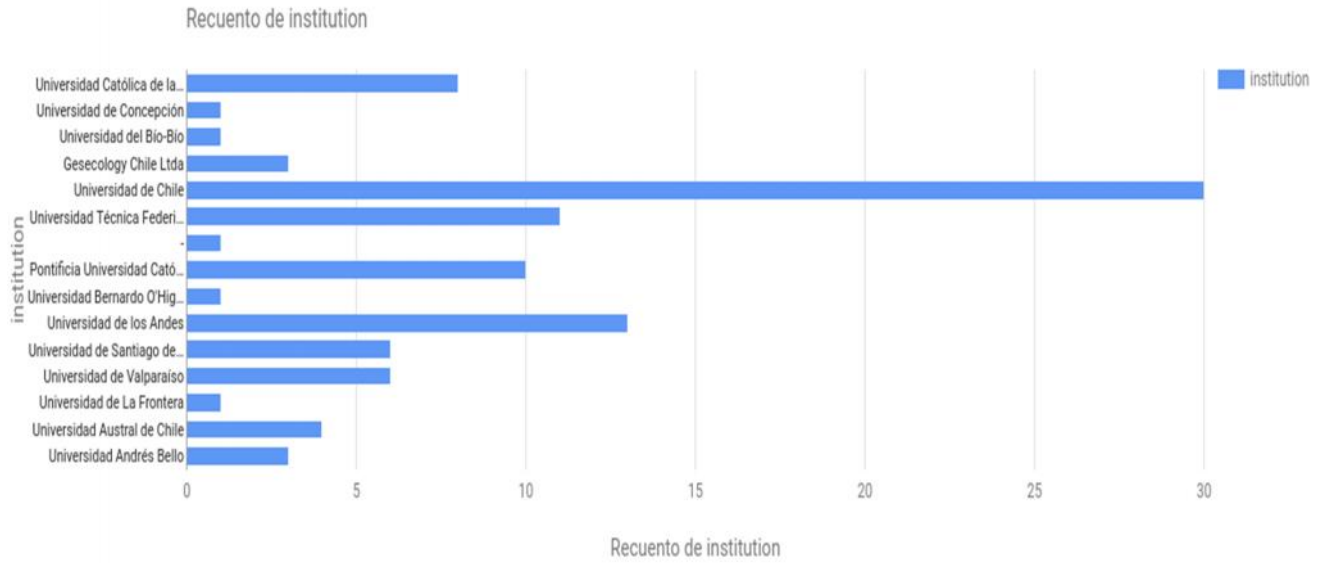Winners of the poster competition with members of the jury and organizers.

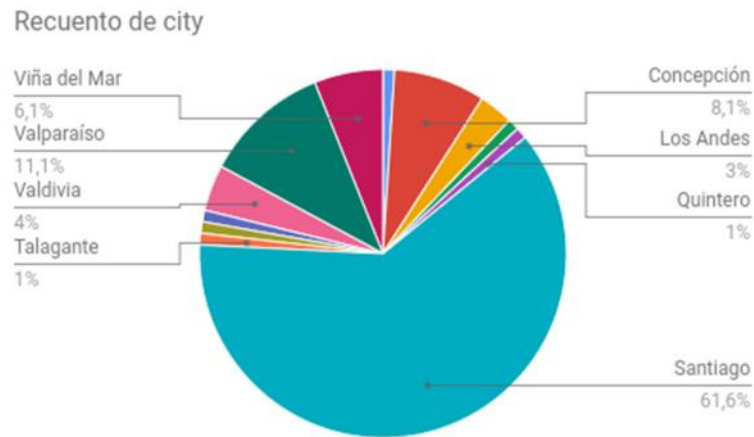Students participating at EVIC 2016

Round table with entrepreneurs of startups having computer intelligence as part of their core business.

Segmentation of attendees of EVIC 2016 by institution, according to on-line registration

Segmentation of attendees of EVIC 2016 by city of origin, according to on-line registration