S3P-2017 Summer School on Signal Processing

Signal Processing meets Deep Learning - Sept. 4-8, 2017 @ Capri, Italy

IEEE-EURASIP Summer School on Signal Processing (S3P-2017)

FINAL REPORT

Giovanni Poggi and Luisa Verdoliva
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1. Introduction

The 2017 IEEE-EURASIP Summer School on Signal Processing (S3P-2017) was the 5th edition of a successful series organized by the IEEE SPS Italy Chapter, with the sponsorship of both IEEE (Signal Processing Society) and EURASIP. This 5th edition was organized in Capri (I) by Prof. Giovanni Poggi and Prof. Luisa Verdoliva of the University Federico II of Naples (I). The main theme, "Signal Processing meets Deep Learning", was chosen considering the strong and growing interactions between these two fields. Most of the speakers were invited because of their research interest and recent contributions on this topic, and lectures covered both theoretical and applicative aspects, with special emphasis on seeing and understanding deep learning from a signal processing perspective. Eventually, an outstanding set of speakers gathered in the School, coming from such diverse fields as signal, image, and speech processing, computer vision, and machine learning, and contributed to its success.

The School received more than 110 applications, but only 65 participants were eventually selected, based on their CVs, due to logistic constraints. The registration fees included lodging, meals, and social event. Despite the venue (Capri is a top tourist destination) and the timing (high season) the fees were kept extremely low, thanks to the support of IEEE-SPS, EURASIP, and the University Federico II of Naples, and also thanks to the intense effort devoted to the local organization. The final IEEE-SPS feedback questionnaire proved a very high appreciations of the attendees, most of whom marked high interest for a follow-up event.

2. Program

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
9.00–12.30		Mallat	Elad	Vedaldi	Ney	Roli
12.30–14.00		Lunch				
14.00–16.00	Registration	Milanfar	Kokkinos	Social Event	Barni	Exam
16.30–18.30		Dragotti	Poster		Question & Answer	
19.30–	Welcome Party	Dinner	Dinner	Dinner	Farewell Dinner	

The technical program spanned from the 4th to the 8th of September, and included the following lectures

Stephane Mallat (Ecole Normale Superieure, F)
Mathematical Mysteries of Deep Neural Networks

Peyman Milanfar (Google Research, USA)
Regularization by Denoising - A generalized Laplacian framework

Pier Luigi Dragotti (Imperial College London, UK)
Single-Image Super-Resolution: Coupled-dictionary learning vs model-based processing

Michael Elad (Technion, IL)
From Sparse Representations to Deep Learning

Iasonas Kokkinos (Facebook Artificial Intelligence Research and University College London, UK)
Deeplab to UberNet: from task-specific to task-agnostic deep learning in computer vision

Andrea Vedaldi (University of Oxford, UK)
Synthetic visual brains: understanding and visualising modern deep neural networks

Hermann Ney (Aachen University, D)
Speech Recognition and Machine Translation: From Statistical Decision Theory to Deep Neural Networks

Mauro Barni (University of Siena, I)
Ethics and etiquette of publication: some dos and don'ts researchers should be aware of

Fabio Roli (University of Cagliari, I)
Adversarial Machine Learning - Slides

All lectures were recorded and are available on the IEEE SPS Resource Center, and almost all speakers have already made their slides available on the school website, directly or through a link.

Besides the talks, there were a poster session (best poster prize to Jeremias Sulam of Technion), a question and answer session, and the final exam session for accreditation.

3. Local Organization

The local organization was managed by Dr. Francesco Marra of the University Federico II of Naples.

All lectures were given in the main room of the Multimedia Center Mario Cacace of the municipality of Anacapri, equipped with a large video-wall and audio recording facilities. The room ca host no more than 72 people, which was the main reason to limit the number of attendees. The Multimedia Center offers also other facilities, including computer rooms with high-speed Internet access, and a large space in the open, which has been used for the welcome reception, the coffee breaks, and the poster session.

The attendees were hosted in double and triple rooms in several small hotels (Bouganville, Carmencita, Mediterraneo) at a short walking distance from the School venue. Most of the speakers were hosted at the San Michele hotel, also at a short walking distance from the School, or in other hotels of their choice compatible with the School budget.

All lunches were included in the registration fee (Tablita restaurant) as well as the welcome reception buffet and all dinners. The social dinner (Wednesday) was hosted at the top-level Gelsomina restaurant, with a spectacular view on Capri and the gulf of Naples, and the farewell dinner (Thursday) at the top-level Le Zagara restaurant, in a lemon orchard. Most of the dishes were from the Italian tradition.

The social event (Wednesday) was a tour of the island of Capri on small boats, including a visit to the famous blue grotto.

In the final IEEE-SPS feedback questionnaire the overwhelming majority indicated a very high appreciation of the organization.

View of Capri with the "Faraglioni" from mount Solaro.

4. Participants

The School enrolled a total of 65 attendees, 58 students and 7 non-student (post-doc and industrial), coming from institutions scattered in 12 countries, with a slight majority (60%) of Italians. Following the registration policy, a number of new EURASIP members were enrolled, 55 student, and 7 non student. Moreover, according to the final IEEE-SPS feedback questionnaire, 15 attendees joined the IEEE-SPS society just before registering to the School. All attendees participated actively to the lectures and other activities (the conference room was always full to the limit) and all attendees who took the final test passed it easily.

Surname	Name	Institution	Country
Achab	Mastane	Telecom ParisTech	France
Agresti	Gianluca	University of Padova	Italy
Andreini	Paolo	University of Siena	Italy
Arici	Giorgio	University of Brescia	Italy
Azmat	Freeha	Warwick Manufacturing Group	UK
Baghini	Andrea	University of Siena	Italy
Baydoun	Mohamad	University of Genoa	Italy
Bernardini	Alberto	Polytechnic University of Milan	Italy
Bisagno	Niccolò	University of Trento	Italy
Bonechi	Simone	University of Siena	Italy
Bonettini	Nicolò	Polytechnic University of Milan	Italy
Borra	Federico	Polytechnic University of Milan	Italy
Buonanno	Amedeo	University of Campania "Luigi Vanvitelli"	Italy
Cardellicchio	Angelo	Polytechnic University of Bari	Italy
Carlino	Luca	University of Salento	Italy
Ceci	Elena	Sapienza University of Rome	Italy
Chaumont	Marc	LIRMM	France
Chevallier	Louis	Technicolor	France
Cilingir	Hatice Kubra	Boston University	USA
Colangelo	Federico	Roma Tre University	Italy
Coscia	Pasquale	University of Campania "Luigi Vanvitelli"	Italy
Cozzolino	Davide	University Federico II of Naples	Italy
D'Amiano	Luca	University Federico II of Naples	Italy
D'Avino	Dario	University Federico II of Naples	Italy
De Giorgi	Andrea	University of Genoa	Italy
Deng	Xin	Imperial College London	UK
Devaram	Rami Reddy	University of Catania	Italy
Di Gennaro	Giovanni	University of Campania "Luigi Vanvitelli"	Italy
Diment	Aleksandr	Tampere University of Technology	Finland
Dupre la Tour	Tom	Telecom ParisTech	France
Elzanaty	Ahmed	University of Bologna	Italy
Eslahi	Nasser	Tampere University of Technology	Finland
Esposito	Elena	ENEA Portici	Italy
Ghassemi	Sina	Polytechnic University of Turin	Italy
Hine	Gabriel Emile	Roma Tre University	Italy
Huang	Junjie	Imperial College London	UK
Isufi	Elvin	Delft University of Technology	The Netherlands
Kaeppler	Sebastian	Friedrich Alexander University	Germany
Kanoun	Bilel	Parthenope University of Naples	Italy
Koutras	Petros	National Technical University of Athens	Greece
Kuzovkin	Dmitry	IRISA	France
Mandelli	Sara	Polytechnic University of Milan	Italy
Marra	Francesco	University Federico II of Naples	Italy

Mizmizi	Marouan	Polytechnic University of Milan	Italy
Moebel	Emmanuel	INRIA	France
Morando	Matteo	University of Genoa	Italy
Muckenhirn	Hannah	EPFL	Switzerland
Mullan	Patrick	Friedrich Alexander University	Germany
Niknejad	Milad	Instituto de Telecomunicações	Portugal
Nowroozi	Ehsan	University of Siena	Italy
Papyan	Vardan	Technion	Israel
Pham	Duong Hung	Laboratoire Jean Kuntzmann	France
Piciucco	Emanuela	Roma Tre University	Italy
Ponte	Serena	University of Genoa	Italy
Rotondo	Tiziana	University of Catania	Italy
Savardi	Mattia	University of Brescia	Italy
Savelli	Benedetta	University of Cassino and Lazio meridionale	Italy
Schulte	Julia	CI Tech Sensors AG	Switzerland
Sica	Francescopaolo	DLR Munich	Germany
Simou	Effrosyni	EPFL	Switzerland
Sulam	Jeremias	Technion	Israel
Tsiami	Antigoni	National Technical University of Athens	Greece
Venkitaraman	Arun	KTH Royal Institute of Technology	Sweden
Yedroudj	Mehdi	LIRMM	France
Zhuang	Lina	Instituto de Telecomunicações	Portugal

Group picture portraying most of the School attendees, taken at the farewell dinner, September 7, 2017

Results of IEEE feedback questionnaire

All (anonymous) questionnaires have been scanned and are available online at www.grip.unina.it/s3p2017

A synthesis of results and main indications follows.

1. Overall, how satisfied were you with this summer school?

Very satisfied	54	92%
Moderately satisfied	5	8%
Neutral	0	0%
Unsatisfied	0	0%

2. Would you be interested in attending a follow-up summer school next year on a related topic?

Yes	58	98%
No	1	2%

3. Please describe what you liked about this summer school
Most of the students liked the program and the topic of the school. The presence of outstanding experts in the field of Signal Processing and their availability during all the school was one of strengths of the school.
The social event, the location (Capri), the food and the overall organization have been also greatly appreciated.

4. Please describe what you think can be improved.
Some participants would have preferred a denser program, others more time for studying and for reading groups. Others missed a crash course on deep learning as introduction to the specialized lectures.

5. Please use this space to provide any additional comments.
No significant additional comments were provided except for thanks to organization.

Forecast of Financial performance (Euros) as of October 4, 2017 (*)

COSTS (Euro)

Venue	2,074.00
Administrative costs	1,500.00
School kit and material	1,009.70
Speakers' travel and accommodation	12,697.09
Attendees' accommodation	18,015.45
Coffee breaks + social event	5,509.78
Meals	24,850.27
Total Costs	**65,656.29**

INCOMES (Euro)

IEEE-SPS sponsorship	4,690.56	
EURASIP sponsorship	3,000.00	(^)
University Federico II sponsorship	5,000.00	
Registration fees	55,995.33	
Total Incomes	**68,685.89**	

(*) All costs and incomes are after taxes (VAT) when applicable

(^) The EURASIP contribution is computed as 5,000 Euros minus the cost of 55 student and 7 non-student EURASIP memberships