Andrew and Erna Viterbi
Faculty of Electrical Engineering
Electronics
Computers
Communications

SIPL
SIGNAL & IMAGE PROCESSING LAB

Technion
Israel Institute of Technology

# *SIPL* Newsletter – Issue 11, May 2017

News from the Signal and Image Processing Laboratory
Andrew and Erna Viterbi Faculty of Electrical Engineering, Technion, Haifa, Israel

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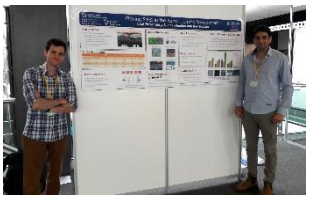
## *SIPL* Activities

**SIPL annual event** will be different and better this year! In this event, the activity of five labs in our department in the areas of signal and image processing, computer vision, control, robotics and learning, will be presented together. More details soon. Save the date – **Tuesday, July 4th**.

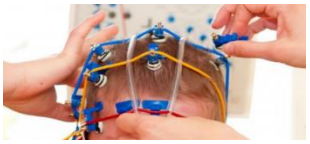


Two *SIPL* students presented a **framework they have developed for testing reinforcement learning methods** at ICRL 2017.


**Project in the spotlight:** Two *SIPL* students have developed a **system that analyzes the user's posture**. A Kinect depth camera is used to detect wrong sitting positions such as leaning backward/forward, leaning sideways, titled-down head, body rotation etc. In a lightweight background application, posture parameters are constantly monitored. When a wrong sitting posture is detected for a prolonged time, the system alerts the user and guides him back to the right posture.

Demos of the two aforementioned projects were presented at IMVC 2017 in Tel-Aviv.

The work of two *SIPL* students who developed a **3D printed robotic prosthesis hand** was described in the January 2017 issue of the IEEE Signal Processing Magazine. Controlling the prosthesis is based on an EMG signal (electrical activity produced by skeletal muscles).



**Project in the spotlight:** Two *SIPL* students have developed an algorithm for **epileptic seizure detection from EEG data**. There is a need to build automated algorithms to identify seizures for accurate evaluation, pre-surgery assessments, and emergency alerts for medical aid. The students used novel kernel-based geometric methods **based on alternating diffusion maps**, a technique developed in the research team of Prof. Ronen Talmon, and showed improved results compared with previous works.

## *SIPL* Alumni

**Prof. Michael (Miki) Elad** is a faculty-member in the Computer-Science department at the Technion. A graduate of our department, has gained his M.Sc. under the supervision of Prof. David Malah (1988) and his D.Sc. under the supervision of Prof. Arie Feuer (1996). During these studies, he has supervised undergraduate projects in SIPL and he cooperates with SIPL ever since. Miki won many research and teaching awards over the years. He has been selected as a Thomson-Reuters Highly Cited Researcher in 2014 and 2016. This list consists of the leading 3000 scientists in various disciplines all around the globe. Only 9 of these are from Israel, and Miki is the only Israeli representing the subfield of "Engineering". Since January 2016 Miki is serving as the Editor-in-Chief of SIAM Journal on Imaging Sciences, one of the top venues for publications in the field of image processing. You can find some **recent thoughts from Miki on deep learning** here.

## Conferences and Events

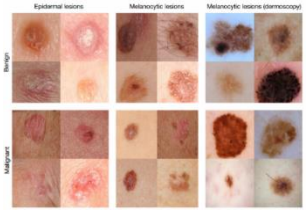
The New-Tech Machine Vision Conference 2017 will take place at the New-Tech Exhibition 2017 on May, 24 in Tel-Aviv.

There are always interesting seminars in the Pixel Club and SP&S seminar.

## Other Signal and Image Processing News (more in our Facebook page)


In an ICML paper, Baidu Research presents Deep Voice, a **text-to-speech system using deep neural networks**.

In a CVPR 2017 paper, Carnegie Mellon researchers **reduced state-of-the-art face detection error by a factor of two** (and is especially good at detecting very small faces). More information can be found here.



In a paper in the journal Nature, Stanford researchers describe a technique based on deep-learning for **recognizing skin cancer that is as good as experts**. More information can be found here.

Researchers from MIT and the Qatar Computing Research Institute have developed an algorithm that can **estimate the body-mass index (BMI) of an individual based on his social media photos**. A paper describing this work can be found here.

Guetzli is a new JPEG encoder from Google that is claimed to **make JPEG files 35% smaller** without reducing perceived quality. More information can be found here and in this paper.

Google is using its RAISR (Rapid and Accurate Image Super-Resolution) **super-resolution algorithm based on deep learning** to save image bandwidth on Android devices. More information can be found here.

In a recent paper, Adobe and Cornell researchers present a technique for **photo style transfer using deep learning**. More information can be found here and here.

A new app from Adobe helps to **make selfies more attractive** by manipulating the camera's distance and angle, transferring style from another image, etc. More information can be found here.

Google released an update to its PhotoScan app that can now **take glare-free pictures of photo prints by using few pictures of the print**. More information can be found here.


Google Quick Draw prompts players to sketch an object in 20 seconds. While the player draws, a deep neural network throws out its best guesses of the subject, stopping mid-sketch if it's correct.

Caffe2

Facebook released Caffe2, a new modular and scalable **deep learning framework** based on Caffe.

*SIPL* recent industry collaborators

AbiliSense, BAT-CALL, CardiacX, CEVA, cMeSafe, dvtel, Elbit Systems, GeoSim, GIVEN IMAGING, harmonic, IBM Research, intel, Linguistech, Prontoly, RAFAEL SMART AND TO THE POINT, Tigaro Wireless, SHOW BOX, Texas Instruments

Comments and suggestions: sipl-newsletter@ee.technion.ac.il