

Image Sensor and Camera Technology 20-21-22 June 2017 in Spa

Aphesa organizes an additional session of the image sensor and camera technology training course in Spa, Belgium this June. The training sessions are organized over three days and split over several courses, it is possible to subscribe for a single course, multiple courses or the full session.

The courses are introductory to mid-level, with some advanced topics, and are designed for engineers who are new to the field of imaging or non-engineering personnel who needs a more in-depth understanding of the technology or engineers familiar with some elements of machine vision but not the whole picture. It is also a good refresher course for experienced engineers. Each course is accompanied by a question and answer session and an open discussion session. Some courses include exercises. There are PDF notes for each course available on a pen drive.

The courses in Spa are organized at a downtown venue between Tuesday June 20th and Thursday 22th. A introductory session for less technical people is organized on Monday June 19th at the same location (see separate flyer).

The course sessions or a customized course session can be organized in company for a special price and an unlimited number of attendees.

Venue

Radisson BLU Palace Hotel, Spa, Belgium

Free WiFi in the training room and the hotel, on-site restaurant and many restaurants within walking distance, underground parking available, special price for rooms and many other hotels within walking distance, special price to access the thermal baths, famous formula one race track of Spa-Francorchamps at short driving distance, several museums and attractions within walking distance. About 1/2h driving from Aphesa office and from the city of Liège.
Train connexions to Spa from Liège central station.



Course schedule

- Day 1:
 - 9:00 AM to 9:15 AM: Welcome and registration.
 - 9:15 AM to 9:30 AM: Course introduction and Aphesa presentation
 - 9:30 AM to 12:30PM and 1:30PM to 2:45PM: Introduction to imaging (light, light spectrum, light sources, scene, behavior of light, basic radiometry and photometry, lighting techniques, polarization, filters, lasers, optical basics, depth of field, field of view, focus, MTF, some advanced optical questions, CCD and CMOS image sensors, image sensor market evolution, camera basics, industrial cameras, color issues, multispectral and hyperspectral imaging, camera interfaces, photography and imaging terms, lens standards, camera interface standards, examples of embedded algorithms and calibrations) – course code: IMAG, including a short break, course level introductory to mid-level.
 - 2:45PM to 3:30PM: Production of CMOS image sensors (design flow, image sensor production process, image sensor packaging, back-side illumination, wafer scale packaging, butting, stitching) – course code: PROD, course level introductory to mid-level
 - 3:30PM to 5:30PM: Introduction to CMOS image sensors (part 1) (photodiodes, pinning, SPAD, pixels, 3T, 4T and 5T pixel operation, rolling vs global shutter, arrays, image sensor design, readout circuits, ADC circuits, architectures, spatial and temporal noise sources and noise compensation, color filters, microlenses, light pipes, dark current, defect pixels, ageing, temperature effects, high temperature imaging, radiation damage, stacked image sensors), including a short break – course code: CMOS, course level mid-level to advanced.
- Day 2:
 - 9:00AM to 10:30AM: End of CMOS course (part 2).
 - 10:30AM to 10:45AM: break
 - 10:45AM to 11:15AM: Introduction to high speed and real time imaging – course code: HSRT, course level introductory to mid-level.
 - 11:15AM to 12:15PM: Introduction to 3D imaging – course code: 3DIM, course level introductory to mid-level.
 - 1:15AM to 3:15PM: Introduction to software based (multiple exposure) high dynamic range imaging, including algorithms and artifacts and introduction to specific CMOS image sensors for HDR imaging, including control methods, pixel designs and artifacts – course code: HDR1, mid-level to advanced.
 - 3:15PM to 3:30PM: Introduction to infrared imaging – course code: IRIM, course level introductory.
 - 3:30PM to 3:45PM: break.
 - 3:45PM to 5:30PM: Introduction to the EMVA1288 standard – course code: EMVA, course level introductory to mid-level.
- Day 3:
 - 9:00AM to 12:15PM: Introduction to image processing, including a short break – course code: PROC, course level mid-level.
 - 12:15PM to 12:30PM: Introduction to human vision.
 - 1:30PM to 2:15PM: Special considerations related to mobile imaging – course

- code: MOBI, course level introductory.
- 2:15PM to 3:00PM: Open discussions and additional questions, opportunity for hands-on training on some cameras or lenses.
 - 3:00PM to 4:30PM: Test to assess your knowledge level.
 - 4:30PM to 5:00PM: Open discussions and additional questions, opportunity for hands-on training on some cameras or lenses. Additional hands-on training opportunity is available on the Friday at Aphesa on request.

The attendees will receive a certificate of attendance and a certificate of test results

Prices

Course code	Price, before June 1 st	Price, after June 1 st
IMAG	270 euro	300 euro
CMOS	265 euro	290 euro
PROD	50 euro	60 euro
HSRT	25 euro	30 euro
HDRI	140 euro	160 euro
3DIM	60 euro	70 euro
EMVA	80 euro	100 euro
IRIM	10 euro	15 euro
MOBI	30 euro	35 euro
PROC	195 euro	225 euro

Special price for the full session: 975 euro (ordered before June 1st) or 1150 euro (ordered after June 1st).

Reductions are offered for attendance to multiple courses (-10% on the total price for more than two course) or multiple members of a company attending the same courses (-10% for the second member, -30% for any additional member), or previous attendees (-10%).

Cancellation policy: 50 euro (or 50% of course price if less than 50 euro) if more than four weeks before the courses, 50% if less than four weeks but more than one week before the courses, 100% otherwise.

Payment terms: 30 days net, invoiced at the time of booking, net 10 after June 10th.

The full course session of three days will not run or will be reorganized over only one or two days if more than one third of the time does not have the required minimum number of attendees. The minimum number of attendees is 4 and the maximum is limited to 9.

Registration

Contact info@aphesa.com or one of our authorized distributors if you intend to attend one or more training sessions, mentioning the course code and the number of attendees from the same company. Aphesa will then provide a quotation for the desired training package. The final decision to organize or cancel courses will be made six weeks before the scheduled training date. Contacting us for a quotation or for more information does not engage yourself to buy a course.

About Aphesa

Founded in 2008, Aphesa provides consulting and development services in the field of imaging. Our company has designed multiple customer specific cameras for use in industrial, medical and oil&gas applications and has provided consulting services for the design of many other image sensors, cameras and systems. Our experience includes GigE-Vision, USB, CameraLink cameras and line scan or area scan sensors in color or monochrome. Our experience also includes high temperature designs, multispectral imaging, high dynamic range imaging, high-speed imaging, embedded image processing and many other topics. Aphesa is also specialized in image sensor and camera testing and has developed EMVA1288 compliant test equipments as well as other specific test equipments for laboratory or production use; the EMVA1288 measurements are also offered as a service.

More information about Aphesa: <http://www.aphesa.com>

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