

Key strengths and research interests

My background gives me two main perspectives. As computer science engineer I keep myself up-to-date with technology (tools, techniques, and concepts), I demonstrate ideas with rapid prototyping, and I enjoy working in a team. As research scientist, I am keen on exploring new concepts, I have an inclination for mining, analysing, and presenting data, and I also like to work independently on problems. During my career I have worked on a number of different areas of computer science and applications. More recently I have focused on digital health and remote patient monitoring. I have successfully applied my skills of data management, system integration, signal processing, and machine learning to design usable and scalable remote monitoring systems to improve patient management.

Research experience

Post Doc Research Assistant (June 2012 – present) – Institute of Biomedical Engineering – University of Oxford (Oxford, UK)

My research aims at the use of mobile-Health solutions to support patients suffering from chronic conditions. I have designed and developed a customisable, scalable client-server platform that allows engineers and clinicians to set up mobile-Health interventions in a very short time. The mobile-Health systems created by this platform collect data from patients (through a series of health sensors and questionnaires) and from electronic health record systems (within the NHS network). They create reports for clinicians and patients and generate fully personalised, automatic alerts. To achieve high usability and compliance rates I learned to follow a user-centred design approach. I rely on information obtained actively and unobtrusively by the users; actively, by organising interviews, co-design workshops, and questionnaires; unobtrusively, by using app analytics and statistics. My work is currently used in a randomised controlled trial, has been used in a one-year pilot study, and in a six months cohort study.

Research assistant (July 2008 - April 2009) – Eurecom (Sophia Antipolis, France)

I designed and implemented an IP-based network of surveillance cameras to evaluate video surveillance algorithms. One of the outcomes was a video surveillance database that helped the department to produce several papers on the topics of people tracking, people re-identification, crowd density estimation, and privacy filters.

Industrial experience

Research assistant, Internship (April 2007 - September 2007) – Panasonic San Jose Laboratory (CA, USA)

I created a working prototype of a Smart Camera (MetaCam) that integrated information shared via a ubiquitous sensor network (the cricket indoor location system developed at MIT) with a series of picture of people wearing the location device. The system created a correspondence between the meta-data from the sensor network, the EXIF information stored by the camera, and the faces detected in the pictures. The result was a series of labels to 'tag' automatically the people present in each picture.

Final bachelor internship (April 2005 - July 2005) – Motorola (Turin, Italy)

I designed and implemented a program to automatically monitor cell phone software development from various sources, and to collect statistics on the features implemented and the ones remaining. I gained valuable skills in gathering and homogenising multiple sources of information into valuable statistics and I enriched my experience by managing my own project in all its phases, from design, to implementation and testing.

Education

PhD in Signal Analysis and Biometrics (April 2009 – April 2012) – Multimedia department – Eurecom Institute (Sophia Antipolis, France)

Studied applicability of Biometrics in Video Analysis

Dissertation: "Soft Biometrics and Body Anthropometry for Smart Monitoring"

I focussed on the new concept of Soft Biometrics, biometric descriptors with low discriminative power (e.g. weight, height, skin colour, hair colour) but that, when combined as bag of features, might provide enough information to identify an individual. I have designed algorithms (neural networks, support vector machines) to estimate height, weight, and gender from anthropometric data (based on NHANES US National program, ~30000 subjects). I applied my algorithm to data extracted from 2D as well as 3D images to use soft biometric traits to re-identify subjects. Under my initiative we have established collaborations with an aero-spatial research institution (Center for Space and Human Robotics, IIT, Turin) and a company (PrimeSense) to demonstrate that 3D sensing technology represents the main tool for soft biometric collection and analysis.

Master of Research in Multimedia (2006 – 2007) – Ecole Doctorale STIC (Sophia Antipolis, France)

Mandatory master to become a PhD student in France.

Master in Computer Science Engineering (2005 – 2008) – Double degree: Polytechnic University of Turin (Turin, Italy) and Eurecom Institute (Sophia Antipolis, France)

Industrial placement: Panasonic San Jose Laboratory (CA, USA)

Final report: "MetaCam: Object recognition exploiting computer vision and ubiquitous sensors networks"

The work described in the dissertation was the result of my work as research assistant at Panasonic. Further details are described under industrial experience.

Bachelor in Computer Science Engineering (2002 – 2005) – Polytechnic University of Turin (Turin, Italy)

Industrial placement: Motorola (Turin, Italy)

My 3-year project work was done as intern at Motorola. Further details are described under industrial experience.

Research projects

- **OxFAB** (2014 – present)
A group of 5-10,000 weight conscious adults will be enrolled and followed via the Internet with the aim of better understanding weight loss behaviour. I manage the full system design and development and support the project management.
- **Snap-HT** (2014 – present)
Automated text messaging will assist hundreds of women in deciding when to adjust medication using a system derived from the TASMINE studies. I supervise the project from a technical standpoint; I support the technical project management.
- **Treat-GDM** (2014 – present)
A randomised pilot trial to compare remote blood glucose monitoring with standard clinical care in the gestational diabetic population. Now in a clinical practice implementation phase in several Oxfordshire hospitals assisted by AHSN.
- **EDGE** (2012 – present)
Wellcome Trust and Department of Health. Management of chronic illness, based on mobile communications technology.
- **SUPPORT-HF** (2013 – 2014)
End-to-end patient centred affordable and sustainable system for proactive heart failure management.
- **VideoSense** (2011 – 2012)
European network of excellence. Empower young researchers and to promote senior researchers' knowledge, in the scientific field of 'Ethically-guided and Privacy-respecting Video Analytics'.
- **VideoID** (2008 – 2011)
French national project. Video surveillance for people recognition and tracking in public environments.
- **ActiBio** (2008 – 2011)
European project. Research and develop Soft biometrics, completely new concept in biometric authentication.
- **Biorafale** (2010)
French national project. Providing solutions for processing, detection, and identification in non-controlled context.

List of publications

www.velardo.org/myWork/index.html#publications

Technical skills

OS Linux (admin), Windows (advanced user), MacOS (admin)

Programming C / C++ (libraries used in the past: OpenCV, OpenNI, PointCloudLibrary, Qt), Java (Android development), experience with Python, (My)SQL, UML, C#, Swift for iOS (basic), learned the principles of Scala through Coursera (97.4%)

Scientific tools Matlab (Image and Signal Processing), experiences with Scipy and NumPy

Web development HTML, CSS, PHP, Javascript (jQuery, Angular), NodeJS

Languages

Italian	English	French	Spanish	Persian
Native	Fluent	Fluent	Preliminary	Elementary
	+9 years international English experience	6 years experience in France	Self taught	Self taught

Awards and acknowledgements

- "Top student" tuition fees facilitation – (from 2002 to 2008) Polytechnic University of Turin
- Best Student Demonstration Award for "Real Time Extraction of Body Soft Biometric for Telemedicine" during the GTTI Thematic Meeting on Multimedia Signal Processing 2012 at Courmayeur (Italy), March, 19-21

Social interests

- Active member of the Oxford University Italian Society (2012–now)
- Director of the EURECOM's Multimedia Library (2009–2012)
- Director and founder of the AOP – SecondoPiano club (2005–now)
- Playing guitar, swimming, practicing self-improvement and meditation