



# Serge BOBBIA

DOCTOR IN COMPUTER SCIENCE AND IMAGE PROCESSING

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32 years old, driver license A,B

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## Work experience

### Gambi-M

RESEARCHER, R&D ENGINEER

Bagnols sur Cèze, FRANCE

Nov. 2019 - Jan. 2022

- Project leader, formation, management of technicians and engineer : 5 to 7 people
- 3D real time reconstruction from color + depth acquisition
- Technical expert to help and solve complex problem on multiple projects
- GPU software development with CUDA / Thrust and formation of engineer on CUDA
- Mechanical design and production of prototype with 3D printing technology

### Laboratoire d'électronique informatique et image (Le2i)

PH.D IN COMPUTER SCIENCE AND IMAGE PROCESSING

Dijon, FRANCE

Oct. 2015 - Oct. 2018

- New method proposition for unsupervised rPPG measurement with implicit living skin tissue segmentation
- New superpixels and temporal superpixels segmentation method with reduced algorithmic complexity for real-time rPPG measurement
- New temporal quality metric for rPPG signals based on HMM (Hidden Markov Models)
- GPU implementation and performance evaluation for superpixels segmentation

### Laboratory Le2i, université of Burgundy

INTERNSHIP IN ENGINEERING ON EMBEDDED DEVICE

Dijon, FRANCE

Feb. 2015 - July 2015

- C++ framework development for resources sharing on multi-process implementation
- Optimization of image processing algorithm for embeddability on low computational power devices

### UTP Laboratory , university of Petronas

INTERNSHIP IN ENGINEERING ON EMBEDDED DEVICE

Perak, MALAYSIA

April 2014 - July 2014

- Development of an Android app. for biomedical application with image processing
- Adaptation and optimization of image processing algorithms for improved performances on Android devices

## Skills

### Programming languages

C / C++, Python, LaTeX, JS, PHP, SQL

Scripts: bash

### Development tools

Git (Git-flow), Azure, Pycharm, Valgrind, Visual Studio

Make, Cmake

### Library / SDK

GNU, POSIX API / Linux Standard Base

Machine Learning (ML): PyTorch, TensorFlow, Keras

HPC CPU: IPP, NEON

HPC GPU: CUDA, Thrust

IHM : QT, DearPyGui

### Languages

French (mother tongue) English fluent. TOEIC 820/990 (2015)

### Linux System Administration

Linux distributions personalization

Real time OS

Virtualization (KVM / Xen))

Data security (cryptsetup, SELinux)

Incremental data synchronization using rsync

### Server administration

Web server (Apache), database SQL

# Education

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## Laboratoire Électronique Informatique et Image (Le2i)

PH.D IN COMPUTER SCIENCE AND IMAGE PROCESSING

*Dijon, FRANCE*

*Oct. 2015 - Oct. 2018*

- **Subject :** Toward the development of a remote photoplethysmographic (rPPG) sensor
- International conferences and publications
- A new method proposition to perform unsupervised rPPG measurement
- Algorithmic complexity reduction for implementation purpose
- GPU implementations and performances evaluations

## ESIREM (École Supérieure d'Ingénieurs de Recherche en Matériaux et Infotronique)

MASTER DEGREE IN ENGINEERING: COMPUTER SCIENCE AND ELECTRONICS FOR EMBEDDED SYSTEM (WITH HONOURS)

*Dijon, FRANCE*

*Sept. 2012 - July 2015*

- Hardware and software specifications for embedded devices
- System administration UNIX / Linux and network administration
- C/C++ programming
- Hardware specification for FPGA platform

## Lycée Jean Baptiste Dumas

PREP CLASS (MATHS SUP/SPE)

*Alès, FRANCE*

*Sept. 2009 - July 2012*

- Training in mathematics and applied physics
- Training in mechanics, electronics and electrical engineering

## Lycée Saint Jean Baptiste de la Salle

HIGH SCHOOL DIPLOMA, ELECTRONIC OPTION, EQUIVALENT TO A LEVELS (WITH HONOURS)

*Avignon, FRANCE*

*Sept. 2006 - July. 2009*

- Design of electronic circuits analogical and numerical
- Micro controller programming

# Honors & Awards

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## INTERNATIONAL

December  
7, 2016

**Intel Best Scientific Paper Award, Track: Biomedical Image Analysis and Applications**, 23rd ICPR paper

*Cancun, Mexico*

# Writing

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## Iterative Boundaries implicit Identification for superpixels Segmentation: a real-time approach

AUTHOR, INTERNATIONAL JOURNAL IEEE ACCESS

*May 2021*

- Real time implementation and benchmark of a real time superpixels segmentation method with reduced complexity

## Unsupervised skin tissue segmentation for remote photoplethysmography

AUTHOR, INTERNATIONAL JOURNAL PATTERN RECOGNITION LETTERS

*Jun 2019*

- In depth study on unsupervised rPPG measurement, signal optimization and public dataset release.

## Real-Time Temporal Superpixels for Unsupervised Remote Photoplethysmography

*Salt Lake City, USA*

AUTHOR, SPEAKER, INTERNATIONAL CONFERENCE CVPR WORKSHOP CVPM

*June 2018*

- Work and results presentation for a new superpixels segmentation method with reduced complexity for real time rPPG measurement.

## Periodic Variance Maximization using Generalized Eigenvalue Decomposition applied to Remote Photoplethysmography estimation

*Salt Lake City, USA*

SECOND AUTHOR, SPEAKER, INTERNATIONAL CONFERENCE CVPR WORKSHOP CVPM

*June 2018*

- Use of the generalized eigen vector decomposition for periodic signal variance maximization for rPPG measurement.

## Remote photoplethysmography based on implicit living skin tissue segmentation

*Cancun, MEXICO*

AUTHOR, SPEAKER, INTERNATIONAL CONFERENCE ICPR

*December 2016*

- A new method for unsupervised rPPG measurement.

## WiseEye: A Platform to Manage and Experiment on Smart Camera Networks

*Dijon, FRANCE*

THIRD AUTHOR, INTERNATIONAL CONFERENCE WASC

*April 2016*

- Description of a sensors network middleware for intelligent building : network dynamic reconfiguration, services management by ontology.

## A new development framework for multi-core processor based smart-camera implementations

AUTHOR, INTERNATIONAL CONFERENCE WASC

*June 2015*

- Software framework for dynamic resources sharing in multi-thread system. Focused on embedded system usage.

## Extra activities

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### Sport

Diving, snorkeling, spearfishing, kitesurf, powerkite  
Motorbike

### Robotic

Artificial intelligence (reinforcement learning, CNN, GAN, ...) and  
genetic algorithms  
3D printed mechanical platforms for robotic