Josselin Gautier

Contact Information

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Research Interests

Human Visual Perception and Attention: fixational eye movements, visual attention, clinical application, depth cue integration, modeling, bio-inspiration
stereoscopy, image and video coding, view synthesis, machine learning and data-mining

Education

The University of Rennes 1, France

Ph.D., Computer Science, December 2012

- Thesis Topic: *A Dynamic Visual Attention Model for 2D and 3D conditions; Depth Coding and Inpainting-based Synthesis for Multiview Videos*
- Adviser: Assistant Professor Olivier Le Meur and Professor Christine Guillemot
- Area of Study: Human Vision, Computer Vision and Video Coding

B.S., Electrical and Industrial Informatics, June 2004

- Electronic specialization: emphasis on automatism, analogue and digital electronic

The University of Nantes Polytech'Nantes Graduate School, France

M.S., Electronic Systems and Computer Engineering, August 2007

- 2^{nd} year Internship in South China University of Technology, Guangzhou, China
- 3^{rd} year Internship: *Fingerprinting solution in a MPEG-2 encoder (see p.3)*
- Industrial Project: *Design of a Gameboy cartridge integrating a MP3 chipset manufactured by Atmel. Teamleader of group of 4 students.*
- Adviser: Professor Patrick Le Callet
- Area of Study: Project Management, Hardware Board Design, Watermarking

Journal Publications

[1] Gautier, J. and O. Le Meur. A Time-Dependent Saliency Model Combining Center and Depth Biases for 2D and 3D Viewing Conditions. In: *Cognitive Computation, Springer*. June 2012, Volume 4, Issue 2, pp 141-156.

Conference Publications

[2] Gautier J., O. Le Meur and C. Guillemot. Efficient depth map compression based on lossless edge coding and diffusion. In: *IEEE Picture Coding Symposium (PCS)*, 2012, p 81-84.

[3] Le Meur O., J. Gautier and C. Guillemot. Examplar-based inpainting based on local geometry. In: *2011 18th IEEE International Conference on Image Processing (ICIP)*, p 3401-3404.

[4] Gautier J., O. Le Meur and C. Guillemot. Depth-based image completion for view synthesis. In: *3DTV Conference: The True Vision-Capture, Transmission and Display of 3D Video (3DTV-CON), IEEE*, 2011,p 1-4.

Paper in Submission

[5] Gautier J., H. Bedell, J. Siderov and S.J. Waugh. Monocular microsaccades are visual-task related.

Paper in Preparation

[6] Gautier J. and O. Le Meur. Deployment of the visual fixations over tri-dimensional spatial layout.

Recent Posters

[7] Gautier J., Izzuddin Hairol, S.J. Waugh and John Siderov. Microsaccades are monocular and might compensate for foveal non-uniformity within the visual field. In *European Conference on Visual Perception (ECVP)*, Belgrade, 2014.

[8] Gautier J.,O. Le Meur and S.J. Waugh. Saccade direction and surface orientation: effect of scene context. In *Vision Science Society symposium*, St Petersburg USA, 2014.

Book Chapter

[9] Morin L., Le Meur O., Guillemot C., Jantet V. and Gautier J. Vidéo et TVHD 3D... de la capture à la diffusion. Principe, tendances et perspectives. Chapter: Synthèse de Vue Intermédiaires.

Student Advising

Wolinski David.
Postgraduate master student in Computer Science, University of Rennes 1.
Graph-based segmentation of a 2D+Z scene for Freeviewpoint Rendering. 2011.

Andam Younesse.
Postgraduate master student in Computer Science, University of La Rochelle.
Saliency-based image pruning for efficient image compression. 2010.

Teaching Experience

Anglia Ruskin University, Cambridge, United Kingdom

Lecturer **October 2014 to January 2015**

- Lectures in Vision Science for B. of Optometry undergraduate students
- Eye Movements, Eye Tracking and Monitoring, Data Analysis
- Responsible for laboratories about Eye Movements and applications.

The University of Rennes 1, Bretagne, France

Instructor **October 2011 to January 2012**

- Responsible for weekly 2-hour lecture and 3-hour laboratory.
- Gave theoretic and practical computer programming lessons to first-year physics-chemistry students.
- Provided support and meaning to student on basic programming.
- Graded weekly assignment on Mathematica programming and drafting.

Teaching Assistant **December 2010 to March 2011**

- Instructor for MA 2nd year Digital Coding speciality of Computing and Communication Engineer Master
  - Responsible for supervision of 3-hour laboratory on predictive image coding and transform coding.
  - Students developed, compiled their C code (in ssh under linux) and provided a laboratory paper report.
  - Materials at `http://www.irisa.fr/temics/staff/gautier/diic/`
- Instructor for MA 2nd year, Video, Image and Audio speciality of Master of Computing Methods and Information Technology
  - Responsible for supervision of 3-hour laboratory.
  - Students used Matlab and various coding applications for image and audio manipulation, spatial and frequential filtering, transforming, etc.
  - Authored materials at `http://www.irisa.fr/temics/staff/gautier/mitic/`
- Teaching assistant for law students: certificate of computing (c2i)
  - Responsible for lecture in lecture hall. New educational methods were tested: hundred of students had to answer (with remote controllers) to a multiple choice questions integrated in a presentation slideshow. Vote were interactively counted, displayed and enabled a better interaction and understanding of the key-points to work on.

Teaching Assistant **December 2009 to March 2011**

- Responsible for lecture and supervision laboratory for 2nd year medical students: certificate of computing (c2i).
- Weekly lessons on computer basics: hardware, software, internet, online privacy, ethics.
- Students used common open-source productivity applications to realize case study presentations or websites thanks to spreadsheet calculations and web medical reliable sources.

Teaching Trainings **from January 2010 to June 2012**

- Participated in trainings about student pedagogy in learning situation
  - knowledge of student population,
  - reflections about teaching practices and evaluations,
  - analysis of evaluation practices: case study; analysis of teaching practices
- Psychology of the emotions in a learning context.
- Body and voice as appropriate tools for teaching in situation
- University structure, university resources etc.

Professional Service

Referee Service

- *IEEE Transactions on Visualization and Computer Graphics*
- *Image Communication (Elsevier Ed.)*
- *Journal of Electronic Imaging (SPIE and IS&T)* and *Visual Communications and Image Processing* conference

Professional Experience

Electronic Data Systems, (EDS) Chantepie, France

Study Engineer for Alcatel **September 2008 to September 2009**

- Performed final verification tests for voice mail services for Alcatel products.
- Designed and performed validation tests for various studio audio recordings.

Sagem Mobile R&D, Ningbo, China

Test Engineer **December 2007 to May 2008**

- Managed and developed hardware and software test systems for mobile phone production lines.
- Proposed new methods for stereo audio tests on 2G mobile.
- Operational support between french and chinese R&D test teams.

Orange Labs Anticipation, Multimedia & Innovation Service, Beijing, China

Engineer Trainee **February 2007 to August 2007**

- Developed a watermarking-based fingerprinting method for video tracing included in a secured video platform prototype.
- Participated to the specification proposals in this sino-french context.

Foreign study experience

Internship at South China University of Technology, Guangzhou, China **June 2007 to August 2007**

- Three months studies in a multicultural environment
- Report about the electromagnetic theory

Higher National Certificate (HNC), Glyndŵr University Wrexham, Wales, UK **July 2003 & July 2004**

- Two months studies on Glyndŵr University Summer School
- HNC in Electrical/Electronic Technology

Software and Hardware and Skills

MATLAB skill set:

- Linear algebra, Fourier transforms, Image transforms, polynomials, statistics, N-dimensional filters, visualization
- Toolboxes: image, statistics, psychotoolbox, filter design, signal processing,

Computer Programming:

- C, C+ +, Java, MATLAB, Python, SPSS and Mathematica, R(beginner) and others

Embedded and Real-time Systems:

- Software and hardware development (VxWorks, RT Linux) with several MCU and DSP platforms (e.g., Motorola MCU's, Texas Instruments DSP's, Atmel MCU's)

Instrumentation, Control, Data Acquisition, Test, and Measurement:

- Simulink, LabVIEW and other National Instruments control and data acquisition hardware and software (e.g., MIO, SMIO, DSA, DMM, and others), Hewlett-Packard and Agilent bench-top equipment

Version Control and Software Configuration Management:

- VCS (SVN)

Information/Internet Technology:

- Networking (UDP, TCP, DNS, Dynamic routing), Services (POP, IMAP, SMTP)

Productivity Applications:

- TEX (LATEX, BIBTEX, TiKZ, PgfPlots)
- most common productivity packages (for Windows, OS X, and Linux platforms)

Operating Systems:

- Microsoft Windows family, Apple OS X, Linux, Solaris, and other UNIX variants

Analog and Digital Electronics:

- Bipolar and FET implementations of continuous and switched amplifiers, modulators, converters, and filters
- Computer-Aided Design Tools: Cadence OrCAD, NI Multisim, SPICE

References Available to Contact

Dr. Harold E. Bedell (@: hbedell@optometry.uh.edu; phone: +1 713-743-1930)

- Professor of Vision Sciences, College of Optometry, University of Houston
  - ◇ 4800 Calhoun Rd. Houston, TX, 77004, United States
  - ⋆ *Dr. Bedell supervises my postdoc in the Vision and Hearing department*

Dr. Olivier Le Meur (@: olemeur@irisa.fr; phone: +33 2 99 84 72 28)

- Associate Professor, IRISA, University of Rennes 1
  - ◇ IRISA, Campus de Beaulieu, 35042 Rennes, France
  - ⋆ *Dr. Le Meur was my PhD thesis supervisor.*

Dr. Patrick Le Callet (@: patrick.lecallet@univ-nantes.fr; phone: +33 2 40 68 30 47)

- Professor, Visual perception understanding, Video and S-3D Quality Assessment, IRCCYN/IVC
  - ◇ Polytech'Nantes/Université de Nantes, rue Christian Pauc, La Chantrerie BP 50609 44306, Nantes Cedex 3, France
  - ⋆ *Dr. Le Callet was my engineer degree adviser and collaborate as P.I. on National Research Agency Persée project.*

More Information

More information, demos and academic resources can be found can be found at `http://www.josselingautier.com`