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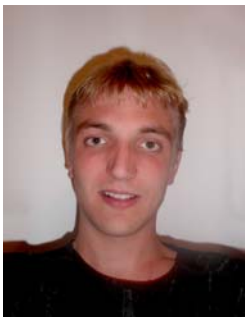
D.O.B 13.05.1981
Single, French.



Education and Qualifications

2005-2006:

- ⇨ Last year of Engineer's Degree at the ENSEEIHT (Master's degree in Computer Science and Applied Mathematics) specialized in new technologies and multimedia;
- ⇨ DEA IIH (Master's degree in Multimedia Technology and Networking).

2004-2005: Placement year:

- ⇨ Six months working for EADS as an Engineer;
- ⇨ Six months in Australia (Brisbane) to improve English knowledge.

2002-2004:

- ⇨ Engineer's Degree at the ENSEEIHT in Toulouse (France) in Computer Science and Applied Mathematics.

1999-2002:

- ⇨ Three years in a Technological and Mathematical class (CPGE) at Lycée Blaise Pascal in Orsay (France);
- ⇨ DEUG SM (Diploma of higher education in physics).

1999:

- ⇨ French equivalent of A' Levels (Mathematics and Science) in Lycée Fustel de Coulanges, Massy (France).

Computer skills and competences

Information Technology:

- ⇨ Analysis and modelling of video sequences/3D model, Compression, scalable coding and distributed source coding, network.

OS:

- ⇨ UNIX => MS Windows 9x/2000/XP/Vista , Linux (Ubuntu, SUSE, Fedora, Mandriva, Debian ...), Solaris.

Network protocols:

- ⇨ UDP, UDP-Lite, IPv4, IPv6, RTSP, RTP/RTCP ...

Languages:

- ⇨ Java, C/C++, SQL (Oracle, MySQL), Assembler (pic and 68k), Caml, FORTRAN, HTML, JSP, Maple, Matlab, OpenGL.

Software:

⇨ Eclipse, Visual C++, SVN, purify, Poseidon for UML, BlueJ, XEmacs, FrontPage, Dreamweaver, gcc, make, 3DSMax, Photoshop, Paint Shop Pro, The Gimp.

API:

⇨ Swing, JOGL, MFC.

Spoken languages:

⇨ French (mother tongue);
⇨ Fluent English: TOEIC: 820 / 990, half a year in Australia, Brisbane.

Work Experience

Since 2006: IRISA/INRIA (computer science and automatic national research institute): software engineer in Temics team

⇨ Analysis/modelling and streaming of video sequences;
⇨ See annex for more details.

2006: IRIT (computer science research institute of Toulouse): 6 month

⇨ Master degrees research training period: streaming/rendering of point based graphics structure.
⇨ gdr-isis workshop to present Octree optimization for point based structure.

2004: EADS (European Aeronautic Defence and Space company) : 7 mouth as a software engineer

⇨ Intranet/Extranet portlet based;
⇨ Meetings organization to define needs;
⇨ Liferay based (Open source solution), J2EE, portlet, JSP, HTML, XML, ORACLE, Dreamweaver+eclipse.

2003: ARTAL : 5 weeks training period as a software engineer to build an Internet web site

⇨ Meetings organization to define needs;
⇨ Development: JSP, HTML, Apache+tomcat, ssh, linux, FontPage+eclipse;
⇨ Standalone java software for website management.

TEMICS activities

The goal of the TEMICS project is the design and development of theoretical frameworks as well as algorithms and practical solutions in the areas of analysis, modelling, coding, communication and watermarking of images and video signals.

TEMICS activities are structured and organized around the following research directions:

Analysis and modelling of video sequences:
The support of advanced interaction functionalities such as video content manipulation, or navigation requires the development of video analysis and modelling algorithms. TEMICS focuses on the design of solutions for segmenting video objects and for extracting and coding their main attributes (shape, motion, illumination ...). In order to support navigation within video scenes, the ability to construct a 3D model of the scene is a key issue. One specific problem addressed is the design of algorithms for 3D modelling from monocular video sequences with optimum trade-off between model reliability and description cost (rate). Finally, the optimal support of the above functionalities in networked multimedia applications requires scalable, compact and transmission noise resilient representations of the models and of their attributes, making use of joint source-channel coding principles (see below).

Compression, scalable coding and distributed source coding:
Scalable video compression is essential to allow for optimal adaptation of compressed video streams to varying network characteristics (e.g. to bandwidth variations) in various applications (e.g. in unicast streaming applications with pre-encoded streams, and in multicast applications). Frame expansions and in particular wavelet-based signal representations are well suited for such scalable signal representations. Special effort is thus dedicated to the study of motion-compensated spatiotemporal expansions making use of complete or over complete transforms, e.g. wavelets, curvelets and contourlets.

Current compression systems exploit correlation on the sender side, via the encoder, e.g. making use of motion-compensated predictive or filtering techniques. This results in asymmetric systems with respectively higher encoder and lower decoder complexities suitable for applications such as digital TV, or retrieval from servers with e.g. mobile devices. However, there are numerous applications such as multi-sensors, multi-camera vision systems, surveillance systems, light-weight video compression systems (extension of MMS-based still image transmission to video) that would benefit from the dual model where correlated signals are coded separately and decoded jointly. This model, at the origin of distributed source coding, finds its foundations in the Slepian-Wolf theorem established in 1973. Even though first theoretical foundations date back to early 70's, it is only recently that concrete solutions, motivated by the above applications, aiming at approaching the theoretic performance bounds have been introduced.

Joint source-channel coding:
The advent of Internet and wireless communications, often characterized by narrow-band, error and/or loss prone, heterogeneous and time-varying channels, is creating challenging problems in the area of source and channel coding. Design principles prevailing so far and stemming from Shannon's source and channel separation theorem must be re-considered. The separation theorem, stating that source and channel optimum performance bounds can be approached as close as desired by designing independently source and channel coding strategies, holds only under asymptotic conditions where both codes are allowed infinite length

and complexity. If the design of the system is heavily constrained in terms of complexity or delay, source and channel coders, designed in isolation, can be largely suboptimal.

The project objective is to develop a theoretical and practical framework setting the foundations for optimal design of image and video transmission systems over heterogeneous, time-varying wired and wireless networks. Many of the theoretical challenges are related to understanding the tradeoffs between rate-distortion performance, delay and complexity for the code design. The issues addressed encompass the design of error-resilient source codes, joint source-channel source codes and multiply descriptive codes, minimizing the impact of channel noise (packet losses, bit errors) on the quality of the reconstructed signal, as well as of turbo or iterative decoding techniques in order to address the trade-off performance-complexity.

Distributed joint source-channel coding:

Distributed joint source-channel coding refers to the problem of sending correlated sources over a common noisy channel without communication between the senders. Note that cooperation among channel and source encoding of one sender is allowed but not between different senders. This problem occurs mostly in network, where the communication between the nodes is not possible or not desired due to its high energy cost (network video camera, sensor network…). A major difference with the joint source-channel case is that the separation between source and channel coding does not always hold.

This depends on the setup. If asymmetric source encoding is performed (one source can be recovered perfectly from the data sent by this source only), then separation holds. Otherwise it depends on the channel. For independent channels, source channel separation holds but for interfering channels, counterexamples can be found where joint source-channel scheme (but still distributed) performs better than the separated scheme. In this area, we design distributed source-channel schemes. The source channel encoder of each sender can either be joint or disjoint depending on the context (since separation holds in some specific cases only).

Data hiding and watermarking:

The distribution and availability of digital multimedia documents on open environments, such as the Internet, has raised challenging issues regarding ownership, user's rights and piracy. With digital technologies, the copying and redistribution of digital data has become trivial and fast, whereas the tracing of illegal distribution is difficult. Consequently, content providers are increasingly reluctant to offer their multimedia content without a minimum level of protection against piracy. The problem of data hiding has thus gained considerable attention in the recent years as a potential solution for a wide range of applications encompassing copyright protection, authentication, and steganography. However, data hiding technology can also be used for enhancing a signal by embedding some meta-data.

The data hiding problem can be formalized as a communication problem: the aim is to embed a given amount of information in a host signal, under a fixed distortion constraint between the original and the watermarked signal, while at the same time allowing reliable recovery of the embedded information subject to a fixed attack distortion. Some applications such as copy protection, copyright enforcement, or steganography also require a security analysis of the privacy of this communication channel hidden in the host signal. Our developments rely on scientific foundations in the areas of signal processing and information theory, such as communication with side information at the transmitter.