Matthieu Maitre

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Work authorization: US permanent resident, French citizen

OBJECTIVE

Seeking a full-time R&D position related to computer vision or video compression for January 2008

EDUCATION

2003 – present Doctor of Philosophy (**Ph.D.**) candidate, University of Illinois (**UIUC**) GPA: 3.9/4.0
Department of Electrical and Computer Engineering (**ECE**) *Urbana-Champaign (USA)*
Advisor: **Minh N. Do**

Relevant Courses

3D computer vision	Optimization	Control system
Information theory	Markov chains	Electromagnetic/acoustic waves

Expected graduation date: December 2007

2001 – 2002 Master of Science (**M.S.**), **UIUC** GPA: 3.9/4.0
Department of **ECE** *Urbana-Champaign (USA)*
Advisor: **Yoshihisa Shinagawa**

Relevant Courses

Pattern recognition	Image processing	Random processes
Computer vision	Digital signal processing	Biomedical instruments

1999 – 2002 Diplôme d'ingénieur (equivalent to a **M.S.**), Ecole Nationale Supérieure de Télécommunication (**ENST**) *Paris (France)*

Relevant Courses

Signal and image processing	Computer science	Management & Economy
Mathematics	Physics	

WORK EXPERIENCE

2002 – present **Research Assistant**, **UIUC** *Urbana-Champaign, IL (USA)*

- Created a wavelet-based codec for scalable 3D-TV with rate-distortion optimized estimation of depth maps and automatic bitrate allocation. Designed and built a multi-camera experimental setup.
- Developed an image-analysis software for 3D geometry scanning using a laser and low-cost webcams (joint project with **NCSA** and **Caterpillar**).
- Developed an image-analysis software for passive 3D scene reconstruction using low-cost webcams (joint project with **NCSA** and **Caterpillar**).
- Created an image-analysis software for passive 3D scene reconstruction from wide-baseline views.
- Developed an algorithm for video motion analysis using motion layers and Markov random fields.

Fall 2007 **Teaching Assistant**, **UIUC** *Urbana-Champaign, IL (USA)*

- Advised students, prepared and graded homeworks for the class "Wavelets in Signal Processing."

Summer 2007 **Temporary Technical Employee**, **Siemens Corporate Research** *Princeton, NJ (USA)*

- Designed and implemented several medical image-processing algorithms. Created a fast algorithm for high-dynamic-range compression with artifact correction. Performed experiments on dual-energy image reconstruction with moving tissues.

Summer 2006 **Research Assistant**, Institut National de Recherche en Informatique et Automatique (**INRIA**) *Rennes (France)*

- Generalized the video codec developed during the previous internship to handle videos with generic 2D motions. Developed a frame interpolation algorithm based on robust multiscale point matching and dense optical flow estimation regularized by a Gauss Markov random field.

Summer 2005 **Research Assistant**, **INRIA** *Rennes (France)*

- Designed and implemented a video codec aimed at computationally-limited devices with low-end cameras. Extended 3D scene-reconstruction techniques in the context of distributed source coding to improve the rate-distortion performances.

Summer 2000 **Network Management Assistant**, **MAN Technologie** *Augsburg (Germany)*

- Created MS Access databases interfaced with MS Excel and Visio using Visual Basic for Application. Set up a TFTP server and configured switches.

2000 **Teacher**, **Objectif Maths** *Paris (France)*

- Taught mathematics and physics to high-school students.

PUBLICATIONS

Journals

M. Maitre, Y. Shinagawa and M. N. Do, *Joint Estimation and Encoding of Scalable Depth-Image-Based Representations for Free-Viewpoint Rendering*, IEEE Trans. on Image Processing, 2007 (submitted)

M. Maitre, C. Guillemot and L. Morin, *3-D Model-Based Frame Interpolation for Distributed Video Coding of Static Scenes*, IEEE Trans. on Image Processing, 16(5), 2007

G. Guetat, M. Maitre, S-L. Lai, Y. Shinagawa and T. Lee, *Automatic 3D Greyscale Volume Matching and Shape Analysis*, IEEE Trans. on Information Technology in Biomedicine, 10(2), 2006

Conferences

M. Maitre, Y. Chen and F. Tong, *High-Dynamic-Range Compression using a Fast Multiscale Optimization*, IEEE Int. Conf. on Acoustics, Speech, and Signal Processing, 2008 (to be submitted)

M. Maitre, Y. Shinagawa and M. N. Do, *Rate-Distortion Optimal Depth Maps in the Wavelet Domain*, IEEE Int. Conf. on Image Processing, San Antonio, 2007

M. Maitre, C. Guillemot and L. Morin, *3D scene modeling for Distributed Video Coding*, IEEE Int. Conf. on Image Processing, Atlanta, 2006

Research reports

Y. Chen, M. Maitre and F. Tong, *High-Dynamic-Range Compression using a Fast Mean-Field Gradient Remapping with Artifact Correction*, Siemens Corporate Research Tech. Rep., 2007

M. Maitre, C. Guillemot and L. Morin, *Reliable Optical-Flow Estimation for Distributed Video Coding*, Irisa Res. Rep., 2007

M. Maitre, V. Kindratenko and Y. Shinagawa, *Passive 3D scene reconstruction technique*, NCSA Tech. Rep., 2005

M. Maitre, V. Kindratenko and Y. Shinagawa, *Laser-assisted 3D scene reconstruction technique*, NCSA Tech. Rep., 2005

M. Maitre, *Detecting occlusions by image matching*, Master Thesis, UIUC, 2002

COMPUTER SKILLS

Languages	C/C++, Java, Python, Perl, HTML, VRML, PHP, Ada, LISP, VBA, LaTeX
Libraries	OpenGL, DirectShow, MFC, wxWidgets, Point Grey FlyCapture
Software	Scientific calculus (Matlab, Mathematica, Maple), Database (MS Access)
OS	MS Windows, Linux, Unix System V

LANGUAGES

English	Fluent	German	Middle level
French	Native speaker	Polish	Beginner

REFERENCES

Minh N. Do, Assistant Professor of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign

Volodymyr Kindratenko, Senior Research Scientist
National Center for Supercomputing Applications

Christine Guillemot, Research Director
Institut National de Recherche en Informatique et Automatique