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Current Position

Postdoctoral Researcher (09/2007 - Present)
School of Computer and Communication Sciences
Ecole Polytechnique Fédérale de Lausanne (EPFL)
Head of Lab: Prof. Sabine Süsstrunk

Education

University of East Anglia, Norwich, U.K.
Ph.D. in Computer Science, 2007
Thesis title: Estimating, Detecting and Removing Illumination in Images
Advisor: Prof. Graham D. Finlayson

Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
M.Sc. (Dipl. Eng.) in Communications Systems, 2003
Thesis title: Salient Regions for Automatic Color Correction and Image Content Description
Academic Advisor: Prof. Sabine Süsstrunk
Industrial Advisor: Dr. Michael Schroeder.

Industrial Experience

03/2003 - 08/2003   **Scientific Consultant**, Genista Corp. (now a part of Symmetricom), Tokyo, Japan
Development of a standalone Image Quality of Service software including referenced and non-referenced metrics. (Software used: C++)

09/2002 - 03/2003   **Intern**, Gretag Imaging AG, Regensdorf, Switzerland
MSc. Project on image classification for local colour correction. The algorithm was implemented in Gretag's mini-labs for the printing of customers' images. (Software used: Matlab and Perl. Resulting publications: [J1] and [C4]).

04/2001 - 10/2001   **Intern**, Fujifilm Ltd., Minami-Ashigara, Japan
Development of an algorithm to measure perceived image sharpness and graininess. The algorithm was used to match perceived image characteristics between silver-halide original prints and digital reprints. (Software used: Matlab and C++. Resulting publications: [C2] and Japanese Patent nb. 3920112).

02/2000 - 03/2001   **Software Engineer**, Colorplaza, Vevey, Switzerland
Development of a web portal for the upload of digital images. Installation and maintenance of web, mail and file servers (Software used: Javascript, PHP, Perl, mySQL).

Academic Experience

09/2008 - present	**Supervisor**, IC Doctoral School Project. Currently supervising two first-year Ph.D. students (Lex Schaul and Neda Salamati) for their mandatory research project within the faculty's doctoral school program at EPFL. Both Lex and Neda have now submitted their first papers ([PC3] and [C15]), pertaining to these projects.
09/2007 - 03/2008	**Co-Supervisor**, MSc. Thesis. Benoit Rat, EPFL, Switzerland. Served as Benoit's supervisor at EPFL during his masters' thesis undertaken at University of Granada, Spain (supervisor in Granada, Prof. Jesùs Chamorro Martinez).
09/2006 - 11/2006	**Visiting Scientist**, Simon Fraser University, Vancouver, Canada. Collaborative visit of Prof. Mark S. Drew (see [C10]).
09/2001 - present	**Supervisor** of a number of Bachelor (1) and Masters (2) program semester projects (work charge for the students: 18hrs/week). All the projects are designed to be incorporated into our lab's current research, resulting in contributions in publications (e.g., in [C12] and [PC4]).
09/2003 - 03/2007	**Teaching Assistant**, Computer Vision (MSc course) and Mathematics for Biology (BSc course). University of East Anglia, Norwich, U.K.
09/2000 - 03/2003	**Teaching Assistant**, Digital Photography, Stochastic Processes, Calculus. EPFL, Lausanne, Switzerland.

Grants, Patents, and Awards

Co-PI. "Near-infrared imaging for computational photography and computer vision"
Swiss National Science Foundation Grant. 366,000CHF (320,000USD). (PI: Prof. S. Süsstrunk). 2009.

Co-Inventor. "Detecting Illumination in Images"
International Patent Application 07824480.3 (Co-Inventors, G. D. Finlayson and M. S. Drew). 2007

Co-Inventor. "Illuminant Estimation"
International Patent Application 07824481.1 (Co-Inventor, G. D. Finlayson). 2007

Co-Inventor. "Image reproducing method and device"
Japanese Patent ♯ 3920112 (Co-Inventor, M Kagaya). 2003

M.E.R.L. Best Student Paper Award
IS&T/SID 16th Color Imaging Conference, Portland, 2008

Professional Activities

Area Co-Chair: Color and Multispectral Imaging (with Prof. S. Süsstrunk, EPFL)
IEEE International Conference on Image Processing, Cairo, Egypt, 2009.
IEEE International Conference on Image Processing, San Antonio, 2008.
Technical Program Committee Member
IEEE Color and Reflectance in Imaging and Computer Vision Workshop, In conjunction with ICCV 2009, Kyoto, Japan.
IS&T/SID 17th Color Imaging Conference, Albuquerque, 2009.
IS&T/SID 3rd European Conference on Color in Graphics, Imaging, and Vision, Leeds, U.K., 2006
Reviewer (current and past)
Journals: IEEE Tr. on PAMI, Forensic Science International, Journal of the Optical Society of America A.
Conferences: ICCV, ECCV, CVPR, CGIV, CIC, ICIP

Member of the IS&T and IEEE.

Languages

French	Native
English	Native-like, spoken and written.
German	Fluently spoken and written (general language). Good knowledge (technical language).

Publications

Journal

[J4]   C. Fredembach, F. Estrada, and S. Süsstrunk, "Memory colour segmentation and classification using class-specific eigenregions," accepted for publication, *Journal of the Society for Information Display*, 2009.

[J3]   C. Fredembach and G. D. Finlayson, "Bright-Chromagenic Algorithm for Illuminant Estimation," *Journal of Imaging Science and Technology*, Vol. 52, July 2008.
`http://ivrg.epfl.ch/~fredemba/papers/FF_JIST08.pdf`

[J2]   C. Fredembach and G. D. Finlayson, "The 1.5D Sieve," *Pattern Recognition Letters*, Vol. 29, May 2008.
`http://ivrg.epfl.ch/~fredemba/papers/FF_PatRec08.pdf`

[J1]   C. Fredembach, M. Schröder, and S. Süsstrunk, "Eigenregions for Image Classification" *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 26, December 2004.
`http://ivrg.epfl.ch/~fredemba/papers/FSS_PAMI04.pdf`

Reviewed Conference Proceedings

[C16]   C. Fredembach, N. Barbuscia and S. Süsstrunk, "Realistic skin smoothing", *Accepted to the IS&T/SID 17th Color Imaging Conference*, Albuquerque, November 2009

[C15]   N. Salamati, C. Fredembach and S. Süsstrunk, "Material classification using NIR and visible images", *Accepted to the IS&T/SID 17th Color Imaging Conference*, Albuquerque, November 2009

[C14]   C. Fredembach and S. Süsstrunk, "Illuminant estimation and detection using near infrared", *Proc. SPIE Conference on Digital Photography V*, San Jose, January 2009.

[C13]   C. Fredembach, F. Estrada and S. Süsstrunk, Segmenting memory colours", *Proc. IS&T/SID 16th Color Imaging Conference*, Portland, November 2008.

[C12]   C. Fredembach and S. Süsstrunk, "Colouring the near infrared", *Proc. IS&T/SID 16th Color Imaging Conference*, Portland, November 2008. (M.E.R.L. Best Student Paper Award).
`http://ivrg.epfl.ch/~fredemba/papers/FS_CIC08.pdf`

[C11]   C. Fredembach and G. D. Finlayson, "The bright-chromagenic algorithm for illuminant estimation", *Proc. IS&T/SID 15th Color Imaging Conference*, Albuquerque, November 2007.

[C10]   G. D. Finlayson, C. Fredembach and M.S. Drew, "Detecting Illumination in Images", *Proc. IEEE International Conference on Computer Vision*, Rio de Janeiro, Brazil, September 2007.
`http://ivrg.epfl.ch/~fredemba/papers/FFD_ICCV07.pdf`

[C9]   C. Fredembach and G. D. Finlayson, "The 1.5D Sieve", *Proc. of the IEE Conference on Visual Media Production*, London, U.K., November 2006.

[C8]   C. Fredembach and G. D. Finlayson, "Simple Shadow Removal", *Proc. of the 18th International Conference on Pattern Recognition*, Hong Kong, August 2006.
`http://ivrg.epfl.ch/~fredemba/papers/FFICPR06.pdf`

Publications (continued)

[C7]   C. Fredembach and G. D. Finlayson, "Path-based colour image segmentation", *Proc of the 3rd IS&T European Conference on Color in Graphics Imaging and Vision*, Leeds, U.K., August 2006.

[C6]   C. Fredembach and G. D. Finlayson, "Hamiltonian path-based shadow removal", *Proc. of the 16th British Machine Vision Conference*, Oxford, U.K., September 2005.
`http://ivrg.epfl.ch/~fredemba/papers/FFBMVC05.pdf`

[C5]   C. Fredembach and G. D. Finlayson, "Path-based shadow removal", *Proc. of the 10th AIC General Meeting*, Granada, Spain, May 2005.

[C4]   C. Fredembach and G. D. Finlayson, "Fast Re-Integration of Shadow Free Images", *Proc. IS&T/SID 12th Color Imaging Conference*, Scottsdale, November 2004.

[C3]   C. Fredembach, M. Schröder and S. Süsstrunk, 'Region-based image classification for automatic color correction", *Proc. IS&T/SID 11th Color Imaging Conference*, Scottsdale, November 2003.

[C2]   M. Kagaya and C. Fredembach, "The Management of Sharpness and Graininess Among Digital Images", *Proc. International Congress on Imaging Science*, Tokyo, Japan, May 2002.

[C1]   S. Süsstrunk, C. Fredembach, J. Holm and G.D. Finlayson, "White-Point Independant RGB Primaries for Color Image Encoding" , *Proc. International Congress on Imaging Science*, Tokyo, Japan, May 2002.

Under Review

[PC1]   C. Fredembach, Y. M. Lu and S. Süsstrunk, "A camera for the simultaneous capture of visible and near-infrared images", *Submitted to the IEEE International Conference on Image Processing*, 2009.

[PC2]   Y. M. Lu, C. Fredembach and S. Süsstrunk, "Designing color filter arrays for the joint capture of visible and near-infrared images", *Submitted to the IEEE International Conference on Image Processing*, 2009.

[PC3]   L. Schaul, C. Fredembach and S. Süsstrunk, "Color image dehazing using the near-infrared", *Submitted to the IEEE International Conference on Image Processing*, 2009.

References

References available upon request.