Pavel Korshunov

CURRICULUM VITAE

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Research Expertise

Privacy protection and media security: visual privacy filters, secure and reversible media protection, subjective and crowdsourcing assessment of privacy, privacy metrics, contextual privacy and security;

Multimedia signal processing: video streaming and transcoding, HEVC, detection and tracking algorithms, HDR imaging and compression, UHD TV, 3D TV;

Has about **50 publications**, including one best paper award and 3 top 10% paper awards

Education

École Polytechnique Fédérale de Lausanne (EPFL),   **May 2011–Present**
Multimedia Signal Processing Group
Research fellow or postdoc
Advisor: Professor Touradj Ebrahimi

National University of Singapore (NUS),   **Aug 2003–Apr 2011**
School of Computing
Ph.D. in Computer Science
Advisor: Associate Professor Wei Tsang Ooi

St. Petersburg State University (SPbSU),   **Sep 1997–Jul 2002**
Mathematical-Mechanical faculty
Specialist (eq. to Masters degree) in Mathematics with major in Computer Science
Advisor: Assistant Professor Dmitriy Koznov

School №308 with emphasis on Mathematics,   **Sep 1991–Jun 1997**
St. Petersburg, Russia
Graduated with distinction (Silver Medal)

Selected Publications

Using False Colors to Protect Visual Privacy of Sensitive Content
S. Ciftci, P. Korshunov, A. O. Akyuz, and T. Ebrahimi
SPIE Human Vision and Electronic Imaging, San Francisco, California, USA, Feb 2015.

The Impact of Ultra High Definition on Visual Attention
H. Nemoto, P. Hanhart, P. Korshunov, and T. Ebrahimi
ACM International Conference on Multimedia (ACM MM), Orlando, USA, Nov 2014.

A Context-dependent JPEG Backward-compatible HDR Image Compression
P. Korshunov and T. Ebrahimi
Optical Engineering journal, vol. 52, num. 10, Sep 2013.

Using Face Morphing to Protect Privacy
P. Korshunov and T. Ebrahimi
IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS), Poland, Aug 2013.

Crowdsourcing Approach for Evaluation of Privacy Filters in Video Surveillance
P. Korshunov, S. Cai, and T. Ebrahimi
ACM multimedia workshop on Crowdsourcing for Multimedia (CrowdMM), Japan, 2012.

Video Quality for Face Detection, Recognition and Tracking
P. Korshunov and W. T. Ooi
ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM),
Nicolas D. Georganas Best Paper Award of 2011.

Critical Video Quality for Distributed Automated Video Surveillance
P. Korshunov and W. T. Ooi
ACM International Conference on Multimedia (ACM MM), Singapore, Nov, 2005.

Research Experience	**De-Id — COST Action IC1206**	Postdoc project

De-Id — COST Action IC1206 — Postdoc project
Switzerland — **Oct 2014–Present**
Proposed architecture for region-based secure protection of images in social networks. Designed the dataset of HDR images and is studying the privacy intrusiveness of HDR. Project's website: http://www.cost.eu/COST_Actions/ict/Actions/IC1206.

JPEG standardization — Postdoc project
Switzerland — **Sep 2012–Present**
A co-author of JPEG XT compression standard for HDR images. Contributor to JPEG XT compression, JPEG XT verification tests, and JPEG privacy working groups.

VideoSense — EC funded NoE project — Postdoc project
Switzerland — **May 2011–Apr 2015**
Coordinated EPFL efforts in the project, dealt with privacy and ethical issues in video surveillance systems, and contributed to the development of visual privacy filters (scrambling, warping, morphing, and false colors), evaluation methodologies (subjective, objective, and crowdsourcing), and evaluation datasets (HD, UHD, HDR, and mini-drones). Project's website: http://videosense.eu/.

Qualinet — COST Action IC1003 — Postdoc project
Switzerland — **Apr 2012–Nov 2014**
Conducted crowdsourcing evaluations of privacy, aesthetic appeal, and JPEG XT compression; JPEG XT objective and subjective tests; subjective evaluations of HDR video. Project's website: http://www.qualinet.eu/.

Video Quality for Video Analysis — Ph.D. project
Singapore — **Sep 2004–Apr 2011**
Demonstrated the possibility to reduce the bitrate of streaming video when the observers are video analysis algorithms (face detection, recognition, and tracking). Proposed framework for estimating video quality for video analysis algorithms.

Software Reuse — Internship at NUS
Singapore — **Feb 2002–May 2002, Jan 2003–Jun 2003**
Applied XVCL to Java Buffer library and proposed a hierarchical model for GUI-reuse.

Working Experience

Dolby, Inc. — Consultant
Switzerland — **May 2015–Present**
Evaluating the performance of Dolby's 'Pulsar', the professional HDR monitor prototype. Company's website: http://www.dolby.com/.

iCelero — Team leader
Switzerland — **May 2011–Sep 2011**
Managed a team of three and developed a prototype of H.264 video transcoder on the server, re-encoding video stream on-the-fly based on the feedback received from the client. Company's website: http://www.icelero.com/.

MindNeurons, NHG — Consultant
Singapore — **Aug 2010–Apr 2011**
Managed and developed a CMS and social networking portal for Tan Tock Seng Hospital (TTSH) with 2000 users (nurses) based on Ektron CMS. The work included system development, communication with users and CMS developers, and finalizing the portal.

FX Palo Alto Laboratory   Ph.D. internship
Palo Alto, CA, USA   **Jun 2007–Dec 2007**

Developed a web-based video presentations capturing system based on four PTZ cameras, four panoramic cameras, three projectors, and NCast presentation recorder.
Recorded talk: http://www.youtube.com/watch?v=absdgWfgA0g.

LANIT–TERCOM Corp.   Software Developer, part-time/full-time
St. Petersburg, Russia   **Jan 2000–Jul 2001/Jul 2002–Dec 2002**

As a member of a team, developed and maintained CASE-tool REAL, visual modeling UML-based tool. Designed and developed (two people) Workflow Processes Editor integrated into REAL. Company's website: http://www.lanit-tercom.com/.

System Development Experience	

Live Video Manipulation Tool   Ph.D. project
Singapore   **Sep 2006–Jan 2007**

Developed an extension to Plasma, a scripting language and a tool for manipulation and spatial arrangement of multiple live and stored video streams.

Video Surveillance Prototype   Ph.D. project
Singapore   **Jan 2005–Jun 2010**

Implemented a prototype demonstrating that large bandwidth savings can be achieved when video is streamed to be processed by video analysis algorithms. Project URL: http://nemesys.comp.nus.edu.sg/projects/davis/.

XVCL editor   Internship at NUS
Singapore   **Jul 2001–Dec 2001**

Developed Java-based graphical viewer and editor for XVCL reuse language.
XVCL project URL: http://xvcl.comp.nus.edu.sg/.

Teaching Experience

EPFL   Responsible assistant, part-time
Lausanne   **Sep 2011–Present**

Coordinated other assistants, taught lectures, graded labs, supervised students:

- Image and Video Processing, Master's level (4 semesters);
- Media Security, Master's level (4 semesters);
- Master, undergraduate, and Ph.D. student projects (7 students);

National University of Singapore   Teaching Assistant, part-time/full-time
Singapore   **Aug 2005–May 2007/Jan 2008–Dec 2009**

Conducted tutorials and labs, designed and graded exercises, tutorials, labs, and exams:

- 3D Computer Graphics with OpenGL (2 semesters);
- Programming Methodology with C (4 semesters);
- Data Structures and Algorithms (2 semesters);
- Database Management (1 semester);

Service

An invited speaker at NUS (Singapore) in Sep 2014, VideoSense winter school (Italy) in Dec 2014, and Heidelberg University (Germany) in Dec 2014
An organizer and a participant in Visual Privacy task within MediaEval benchmarking initiative in 2012, 2013, and 2014
An organizer of DroneProtect task within MediaEval benchmarking initiative in 2015
An organizer of Special Session on 'HDR Imaging and Privacy' in SPIE Europe 2014
A board member of IEEE MMTC R-Letter: the reviewer and editor of papers in Oct 2013, Feb 2015, and Jun 2015 issues
A TPC member for MMSys'13, CrowdMM'13, MMSys'14, NOSSDAV'14, ACM MM'14, ICACCI'14, QoMEX'14, ICME'15, CBMI'15, QoMEX'15, ACM MM'15, and CrowdMM'15

A reviewer for MMM'07, ACM MM'06, ISWPC'06, ACM MM'11, WIAMIS'12, ACM MM'13, DSP'13, ICME'14, IEEE TIP in 2011 and 2013, IEEE MM in 2012, 2013, 2014, and 2015, EURASIP'12, IEEE TCSVT'13, IEEE IFS in 2013 and 2014, IEEE SPL in 2013 and 2014, IEEE JSAC'13, IEEE TIE'13, IEEE Image Communic. in 2012, 2013, and 2014
A volunteer for VTC'08, ACM MM'05, and Mobwiser'04
Wrote "PhD Survival Guide" for School of Computing, NUS, 2011
Helped in the orientation day for new PhD students in NUS, 2008–2010.
A group leader during undergraduate studies, 1997–2001.

Skills	**Programming and Scripting Languages**: C, C++, Java, JavaScript, PHP, Python, Tcl/Tk, Unix shell **Tools and Systems**: Apache, Django, Ektron CMS, Matlab, MySQL, OpenCV, OpenGL, OpenMash **Operating Systems**: Linux, OS X, Windows **Language Skills**: spoken and written English; spoken and written Russian **Other Skills**: strong analytical skills; social and easy going; independent worker; passionate about cool things and challenges; energetic team player; stubborn when it comes to making things work and solving problems.
References	**Touradj Ebrahimi**, Professor Multimedia Signal Processing Group, EPFL, EPFL/STI/IEL/GR-EB, Station 11 CH-1015 Lausanne, Switzerland. TEL: +41 21 693 2606 FAX: +41 21 693 7600 email: touradj.ebrahimi (at) epfl.ch **Wei Tsang Ooi**, Associate Professor Department of Computer Science, AS6-05-14, National University of Singapore, 13 Computing Drive, Singapore 117417. TEL: +65 6516 4463 FAX: +65 6779 1610 email: ooiwt (at) comp.nus.edu.sg **Michael S. Brown**, Associate Professor Department of Computer Science, AS6-05-15, National University of Singapore, 13 Computing Drive, Singapore 117417. TEL: +65 6516 7097 FAX: +65 6779 4580 email: brown (at) comp.nus.edu.sg **Lawrence A. Rowe**, Chairman and CEO of FX Palo Alto Laboratory 3174 Porter Drive, Palo Alto, California 94304 USA. TEL: +1 650 842 4800 email: rowe (at) cs.berkeley.edu More references can be provided on request.