

# Filip Šroubek – Curriculum Vitae

## Education:

- Doc. – Associate Professor in Mathematics (Mathematical modeling and numerical mathematics) 2017, Charles University, Prague, Czech Republic.
- DSc. – Research Professor in Physico-Mathematical Sciences (Informatics and Cybernetics) 2014.
- Ph.D. 2003, thesis: "Image Fusion via Multichannel Blind Deconvolution", supervisor: Prof. Jan Flusser, Charles University, School of Computer Science, Prague, Czech Republic
- M.S. (Computer Science) 1998, thesis: "Simulation and 3D Visualization of Atomic Collision Cascades", Czech Technical University, Dept. of Computer Science and Engineering, Prague, Czech Republic.
- B.S. (Computer Science) 1996, Czech Technical University, Dept. of Computer Science and Engineering, Prague, Czech Republic.

## Research Employment:

**Current:** Vice-head of the Dept. of Image Processing, Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic, Prague. Since 2006 research fellow and since 2008 vice-head of the department.

**till 2012** Research fellow in the Dept. of Characterization of Semiconductor Materials and Structures, Institute of Photonics and Electronics, Academy of Sciences of the Czech Republic, Prague; visualization of quantum dots.

**Jul 2010 – Apr 2011** Fulbright Visiting Scholar at the University of California, Santa Cruz, U.S.A.

**Sep 2004 – Feb 2006** Postdoc in the Imaging and Vision Dept., CSIC, Madrid, Spain (nominee of the Spanish States Secretary of Education and Universities fellowship, and of the NATO Science fellowship)

**Nov-Dec 2001** Dept. of Physics, University of Essen, Germany; computer simulation and visualization of atomic collision cascades in solids.

**Sep 2000** Participated in and completed the School on Mathematical Problems in Image Processing organized by the Abdus Salam International Center for Theoretical Physics, Trieste, Italy.

**Aug-Sep 1998** Joining a neural-net project conducted by the Department of Civil Engineering, Queen's University, Kingston, Canada.

**Sep 1997** Working on 3D visualization of atomic collision phenomena using SGI workstations and 3D shutter glasses at Dresden University, Germany.

## Teaching activities:

- Teaching at Charles University and the Czech Technical University: "Variational methods in Image processing"; since 2010.

- Teaching at the Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering: “Machine Learning 2”; since 2021, “Statistical methods for classification and decision making”; 2007 – 2012.
- Teaching Assistant of the “Image Processing and Recognition” course at the Czech Technical University; years: 1999 – 2003.

### **Supervision of graduate students:**

- Ph.D. : graduates 1 , current 2
- Master and bachelor: graduates, current 5 at Charles University and the Czech Technical University

### **Professional activities:**

- Editor of Digital Signal Processing journal, Elsevier since 2013.
- Member of the Doctoral Study Board at the Faculty of Mathematics and Physics (since 2012) and of the Doctoral Study Board at the First Faculty of Medicine (since 2013), Charles University, Prague, Czech Republic.
- Member of IEEE and Czech Association for Cybernetics since 2007.
- Member of the PhD defense board at the Universidad Politecnica, Madrid, Spain and at the Universidad de Castilla–La Mancha, Ciudad Real, Spain.
- Reviewer of several international journals (e.g. IEEE TIP, PAMI) and conferences (e.g. IEEE ICIP).

### **Other**

- Opponent of many BS., MS. and PhD. thesis at Charles University and the Czech Technical University.
- Organizer of the 5th International Workshop in Information Optics (WIO’06), Toledo, Spain, 2006.
- Results of super-resolution research has been disseminated by leading Spanish newspapers (El Mundo, El Pais, etc.), by the Spanish state TV channel TVE2 and also by the Czech National TV (CT2)
- Performing video analyses for the Police of the Czech Republic and elaborating expert evidences in criminal proceedings.

## Funding ID

- Principal investigator of four national grants: Czech Grant Agency GACR GA18-05360S “Solving inverse problems for the analysis of fast moving objects” 2018-2020; Czech Grant Agency GACR GA13-29225S “Image Blind Deconvolution in Demanding Conditions” 2013-2016; Czech Grant Agency GACR 202/05/0242 “Space resolved ballistic electron emission spectroscopy on individual InAs/GaAs dots embedded in AlGaAs barriers”, 2005–2007; Project of the Academy of Sciences “Mathematical methods for superresolution of digital images”, 2006–2007.
- Co-investigator of TRIO (Ministry of Industry) grant FV20356, “Implementation of Industry 4.0 principles during production and repairs of constructional layers of surface transportation”, 2017–2019; grant of Ministry of the Interior CR, “InVideo - Image Analysis for the Police of the Czech Republic”, 2017–2018; Technology Agency CR grant TA04011392, “Early ultrasound detection of breast cancer”, 2014–2017; grant of Ministry of the Interior of CR VG20102013064 “Methods for identification of image recording devices, authentication, and image reconstruction” 2010–2013.
- Team member of EU Artemis grant 7H14004 “Almarvi”, and national grants: Czech Grant Agency 102/00/1711, 202/02/0098, 102/04/0155, 102/08/1593, 103/11/1552, 15-16928S, 21-03921S, Technology Agency TN01000024 - “Narodni Centrum Kompetence”, Center of Applied Research “DAR” (Ministry of Education 1M0572).
- Member and initiator of 3 international projects with Spain: bilateral project between the Czech Academy of Sciences and the Spanish C.S.I.C. 2002–2010, two Spanish national grants in the Instituto de Óptica (CSIC), 2005–2007 and 2007–2009.
- Travel grants/Fellowships: Travel grant of the Academy of Sciences, 2013-2015; Fulbright fellowship for scholars, 2010–2011; Fellowship granted by the National Program for the Mobility of Spanish and Foreign University Professors and Researches, 2004–2006; NATO Postdoctoral fellowship, 2004–2005.

# Achievements Track-Record

## Tutorials and Invited Presentations:

- F. Šroubek, J. Flusser, and B. Zitová. Inverse problems in image restoration: from basic principles to current deep-learning trends (tutorial). In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019)*. IEEE, 2019. [Download](#)
- F. Šroubek, J. Flusser, and B. Zitová. *Restoration and Recognition of Blurred Images*, 2018. [Download](#)
- J. Flusser, F. Šroubek, and B. Zitová. Handling blur (tutorial). In *Proceedings of the 23rd International Conference on Pattern Recognition*. IAPR, 2016. [Download](#)
- P. Favaro, D. Wipf, F. Šroubek, and J. Wang. Removing camera blur: Tricks of the trade, insights and applications (tutorial). In *Proceedings of the 2015 IEEE International Conference on Computer Vision (ICCV 2015)*. IEEE, 2015. [Download](#)
- F. Šroubek. Advances in image restoration: from theory to practice. In *Digital Photography XI*. SPIE-IS&T, 2015. [Download](#), Keynote Presentation
- F. Šroubek. Recent advances in image restoration. In *IEEE Second International Conference on Image Information Processing (ICIIP -2013)*. IEEE Press, 2013. [Download](#), Keynote Presentation
- F. Šroubek. Superresolution imaging - from equations to mobile applications. In *Neural Information Processing Systems Workshops Abstracts*, pages 1–1. NIPS Foundation, 2011. [Download](#)
- F. Šroubek and J. Flusser. Superresolution and blind deconvolution of video. In *SIAM Conference on Imaging Science (Abstracts)*, pages 1–1. SIAM, 2010. [Download](#)
- J. Flusser, F. Šroubek, and B. Zitová. Tutorial on image fusion for image and video quality enhancement, 2009, ICIP
- J. Flusser, F. Šroubek, and B. Zitová. Fusion in image processing (tutorial). In *Proc. 11th Int'l. Conf. on Information Fusion*, pages 1–4. IEEE, 2008
- A. Goshtasby, J. Flusser, F. Šroubek, and B. Zitová. Tutorial: Survey and recent advances in image registration and fusion. In *Abstracts Book of IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pages 27–27. IEEE, 2008
- J. Flusser, F. Šroubek, and B. Zitová. Tutorial: Image fusion - principles, methods, and applications. In *Proceedings of the 15th European Signal Processing Conference*, pages 1–2. EURASIP, 2007
- F. Šroubek, G. Cristóbal, and J. Flusser. Blind superresolution. In Cristóbal G., Javidi B., and Vallmitjana S., editors, *Proceedings of the 5th International Workshop on Information Optics*, pages 1–2. Springer, 2006
- B. Zitová, J. Flusser, and F. Šroubek. Image registration: A survey and recent advances. tutorial. In *Proceedings of the 12th IEEE International Conference on Image Processing. ICIP'05*, pages 1–2. IEEE, 2005

## Awards

- Outstanding Contribution Award at the 15th International Conference on Computer Analysis of Images and Patterns, York, UK, 2013.
- Prestigious award (Wichterle premium) of the Academy of Sciences of the Czech Republic, May 2008.
- Price of the Academy of Sciences of the Czech Republic for the scientific achievement “Image recognition using fusion”, 2007.
- The Award of the Chairman of the Czech Science Foundation (for the project No. GA CR 102/04/0155), 2007.
- National award (Hlávka prize) for young scientists, Nov 2006.

## Patents

- M. Stratmann, J.F. Evers-Senne, M. Schmieder, J. Flusser, and F. Sroubek. Method for preparing images in non-visible spectral ranges, and corresponding camera and measuring arrangement, December 5 2013. US Patent App. 13/991,235
- G.C. Perez and F. Sroubek. Blind deconvolution and super-resolution method for sequences and sets of images and applications thereof, October 22 2009. US Patent App. 12/090,192

## Software

- “MBD” – MATLAB toolbox for multichannel blind deconvolution and demosaicing (over 1000 registered users)
- “BSR” – MATLAB toolbox for blind superresolution (over 1000 registered users).

## Publications

See the full list of publications at

[http://www.utia.cas.cz/biblio?author=cav\\_un\\_auth%2A0101209](http://www.utia.cas.cz/biblio?author=cav_un_auth%2A0101209)