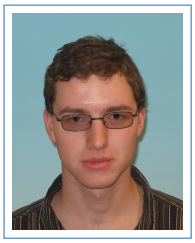

Karel Lebeda

Research Interests

2D and 3D visual tracking and modelling, 3D computer vision. More generally data processing, modelling and understanding.

Contact Information

✉ **Drahomyšl 44, 438 01 Žatec, Czech Republic**, *permanent*.

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Personal Information

birth **28 July, 1988**, Louny, Czech Republic.

citizenship **Czech Republic**, *European Union*.

Education

2016 **NVIDIA Cuda programming & Deep learning training**, NVIDIA & University of Surrey, Guildford.

2013 **ENS/INRIA CVML Summer School**, Paris, France.

2013 – 2016 **PhD Degree**, *University of Surrey*, Guildford.
Electronic Engineering, spec. Computer Vision (CVSSP). Thesis: 2D and 3D Tracking and Modelling (supervised by Prof R. Bowden and Dr S. Hadfield).

2012 **Vision and Sports Summer School**, Prague, Czech Republic.

2010 – 2013 **Master Degree**, *Czech Technical Univ.*, Prague, *Grad. cum laude*, **top of the year**.
Open Informatics, spec. Computer Vision and Image Processing. Including one semester of Erasmus exchange at the *University of Surrey* (UK) in 2012. Thesis: Robust Sampling Consensus (supervised by Prof J. Matas).

2007 – 2010 **Bachelor Degree**, *Czech Technical University*, Prague, *Grad. cum laude*, **top 1 %**.
Electrical Engineering and Informatics, spec. Computer Science. Thesis: Automated Measurement and Evaluation of Wood Species Parameters for Absorption Zones Calculation (in Czech, supervised by Dr J. Koller, in collaboration with Mendel University in Brno).

Awards & Accolades

2014 Invited talk at *The 35th Pattern Recognition and Computer Vision Colloquium*; presented my paper *2D Or Not 2D: Bridging the Gap Between Tracking and SfM*.

2013 The *LT-FLO* tracker placed on a 5th place out of 27 tested in the *Visual Object Tracking Challenge* 2013.

2013 Awarded *The Best Poster of ENS/INRIA CVML Summer School* for presentation of work *Tracking the Untrackable: How to Track When Your Object Is Featureless*.

2010 ACM International Collegiate Programming Contest. Member of the team CTU01. Awarded 1^{st} prize from Czech Technical University teams at *CTU Open* round, advancement to Central European Regional Contest.

2009 Eurobot competition. Member of the FELaaCZech Team, advancement into international contest. Participated in development of hardware and controlling software (C, Java). In years 2010 – 2012 external member.

2007 Cisco Networking Academy Games. Awarded 1^{st} prize in category HS3 at Czech national round, advancement into Central and Eastern European contest.

Grants & Scholarships

2015 Awarded *Rabin Ezra Scholarship* to attend the CVPR and ICCV conferences.

2014 Awarded *BMVA Student Travel Bursary* to attend ACCV.

2013 Awarded *ICCV Student Travel Grant* by the PAMI-TC.

2013 Participated in preparation of *Centre for Defence Enterprise* (MoD UK) grant proposals *Who are you really? Rapid detection of abnormal, obfuscated and falsified behaviour* and *Hidden networks in public data*. The proposals received favourable reviews, however they were not funded.

2013 – 2015 University Research Scholarship, University of Surrey, funding the PhD studies (awarded 4 per faculty).

2009 Attained a CTU grant for building the FELaaCZech robot for the Eurobot competition and for travelling to the European finals.

2008 – 2012 CTU FEE Scholarship, based on study results, every semester the highest band.

Projects

2015 Particle counter – SEM micrographs analysis (image processing, Matlab).

since 2012 Open-source project of LO-RANSAC for homography and epipolar geometry computation. C library, GNU GPL, available from the CMP website (a fork from RANSAC part of CMP WBS-Demo).

2008 – 2009 Project Rosomák ("Glutton") for Institute of Geophysics, Czech Academy of Sciences. Java application for an automated examination of tectonic moves by measuring Moiré effect (image processing) on photos of circular grid on a crack gauge.

2008 Accounting of chemical interventions in plants protection. Java application for the mandatory records-keeping of farmers' chemicals usage (for the purposes of the governmental inspections).

Membership

since 2013 ΥΠΕ – International Honor Society for the Computing and Information Disciplines.

since 2015 Computer Vision Foundation.

2009 – 2013 Academic Senate of Faculty of Electrical Engineering CTU (elected body).

Employment

2016 **CVSSP, University of Surrey.** Postdoctoral research fellow, commercialisation of my PhD research (5 months).

2013 – 2015 **University of Surrey.** Teaching C and C++ programming: demonstrating in labs and marking coursework (4 semesters in total).

2012 **Center for Machine Perception, Czech Technical University.** Development, implementation and testing of computer vision algorithms (4 months).

Licences & Certificates

Driving licence – groups **A** (motorcycle), **B** (car), **T** (tractor).

Cisco Networking Certificate – CCNA I. and II.

English Language Certificate – IELTS band 8/9.

Languages

Czech Native Speaker

English Fluent (IELTS 8)

Computer skills

Op. Systems MS Windows, Linux.

Languages Matlab, C, C++, Java, Bash, SQL, Mathematica, several Assemblies.

Others LaTeX, git, web technologies.

Selected Publications (<200 citations and h-index 5 according to Google Scholar)

Full list is available at *cvssp.org/Personal/KarelLebeda/publications*.

thesis [1] K. Lebeda: *2D and 3D Tracking and Modelling*. PhD Thesis, University of Surrey, 2016.

journal [1] K. Lebeda, S. Hadfield, J. Matas and R. Bowden: *Texture-Independent Long-Term Tracking Using Virtual Corners*. In IEEE Trans. on Image Processing, 2016.

journal [2] S. Hadfield, K. Lebeda and R. Bowden: *Hollywood 3D: What are the best 3D features for Action Recognition?* In Int'l Journal of Computer Vision, 2016.

journal [3] S. Hadfield, K. Lebeda and R. Bowden: *Stereo reconstruction using top-down cues from urban environment.* In Computer Vision and Image Understanding, 2016.

conference [4] K. Lebeda, S. Hadfield and R. Bowden: *Exploring Causal Relationships in Visual Object Tracking.* In Proc. of ICCV, 2015.

workshop [5] K. Lebeda, S. Hadfield and R. Bowden: *Dense Rigid Reconstruction from Unstructured Discontinuous Video.* In Proc. of ICCV 3dRR, 2015.

conference [6] K. Lebeda, S. Hadfield and R. Bowden: *2D Or Not 2D: Bridging the Gap Between Tracking and Structure from Motion.* In Proc. of ACCV, 2014.

thesis [7] K. Lebeda: *Robust Sampling Consensus*. Master's Thesis, CTU–CMP–2013–1, Czech Technical University, 2013.

conference [8] K. Lebeda, J. Matas and O. Chum: *Fixing the Locally Optimized RANSAC.* In Proc. of BMVC, 2012.

Under review:

journal K. Lebeda, S. Hadfield and R. Bowden: *Causal Relationships in Visual Tracking.* Under review for IEEE Transactions on Pattern Analysis and Machine Intelligence.

journal K. Lebeda, S. Hadfield and R. Bowden: *TMAGIC – A Model-free 3D Tracker.* Under review for IEEE Transactions on Image Processing.

Selected Reviewing

journal Computer Vision and Image Understanding (2013–2015)

journal Signal Processing Letters (2015)

journal Image and Vision Computing (2015–2016)

conference British Machine Vision Conference (2016)

conference International Conference on Pattern Recognition (2014, 2016)

References

Prof Richard Bowden, *University of Surrey, Faculty of Engineering and Physical Sciences, Dept. of Electronic Engineering, Centre for Vision, Speech and Signal Processing*, PhD Supervisor, *R.Bowden(at)surrey.ac.uk*.

Dr Simon Hadfield, *University of Surrey, Faculty of Engineering and Physical Sciences, Dept. of Electronic Engineering, Centre for Vision, Speech and Signal Processing*, PhD Co-Supervisor, *S.Hadfield(at)surrey.ac.uk*.

Prof Jiří Matas, *Czech Technical University in Prague, Faculty of Electrical Engineering, Dept. of Cybernetics, Center for Machine Perception*, Master's Thesis Supervisor, *Matas(at)cmp.felk.cvut.cz*.