

Sanja Fidler

Curriculum Vitae

Work address:

Sanja Fidler
University of Toronto
Department of Computer Science
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Position

Assistant Professor at University of Toronto

Research Interests

Computer vision, biological vision, object class recognition and detection, large-scale object detection, 3D object detection, object segmentation, images/video and text, hierarchical representations, scene understanding

Degrees

- 2010 **Ph.D. in Computer Science**
Department of Computer and Information Science, University of Ljubljana
Thesis title: *Recognizing visual object categories with subspace methods and a learned hierarchical shape vocabulary*
- 2002 **B.S. in Applied Mathematics**
Department of Mathematics and Physics, University of Ljubljana
Thesis title: *Independent Component Analysis*

Employment (Research)

- Jan 2014 – **Assistant Professor**
University of Toronto
- Jul 2012 – Jan 2014 **Research Assistant Professor**
Toyota Technological Institute at Chicago

- Feb 2011 – Jun 2012* **Postdoctoral Fellow**
 University of Toronto
 Supervisor: Prof. Sven Dickinson
- Jan – Aug 2010* **Visiting Scientist**
 UC Berkeley and ICSI
 Supervisor: Prof. Trevor Darrell
- 2008 – 2010* **Research Assistant (Graduate)**
 Department of Computer and Information science, University of Ljubljana
 Funding project: EU FP7 ICT Cognitive Systems STREP Project POETICON
 Supervisor: Prof. Aleš Leonardis
- 2002* **Research Assistant (Undergraduate)**
 Department of Electrical Engineering, University of Ljubljana
 Project: Biomedical image analysis
 Supervisor: Prof. Franjo Pernuš

Employment (Teaching)

- 2003 – 2007* **Teaching Assistant (12h of courses/week, typically 4 courses per semester)**
 Department of Computer and Information Science, University of Ljubljana

Teaching

Faculty:

- 2015* CSC 2523 Object Modeling and Recognition: Visual Recognition with Text, graduate course
- 2014* CSC 420 Intro to Image Understanding, undergraduate course
- 2013* 2 lectures for the graduate course Computer Vision (taught by Prof. Raquel Urtasun at TTI-C)

Teaching Assistant:

- Courses* (all undergraduate):
- 2003 – 2007* Calculus I and II
- 2003 – 2007* Discrete Mathematics
- 2003 – 2004* Probability Theory
- 2004 – 2007* Introduction to Statistics
- 2003 – 2007* Programming (c, Java, Mathematica)
- 2003* Optimization

Supervision

Phd Students:

- Kaustav Kundu Co-supervised with Prof. Raquel Urtasun
Expected year of graduation: 2016
- Tom Sie Ho Lee Co-supervised with Prof. Sven Dickinson
Expected year of graduation: 2016

Msc Students:

- Yukun Zhu Co-supervised with Prof. Raquel Urtasun and Prof. Ruslan Salakhutdinov
(Sept 2014 –)
- Ziyu Zhang Co-supervised with Prof. Raquel Urtasun
(Sept 2014 –)
- Ivan Vendrov Co-supervised with Prof. Raquel Urtasun
(Sept 2014 –)
- Lluís Castrejon Co-supervised with Prof. Raquel Urtasun
(Sept 2015 –)
- Abhishek Sen Co-supervised with Prof. Raquel Urtasun
Finished in 2013.
Thesis Title: *Contextual Object Detection for Autonomous Driving*

Undergraduate Students:

- Jurgen Aliaj 2nd year undergraduate at UofT
USRA'15
Date: June 2015 –
- Andrew Berneshawi 4th year undergraduate at UofT, now at Amazon, Canada
CSC494 (project course): Road estimation with deep networks
Date: Jan 2015 – May 2015
- Stanislav Ivashkevich 4th year undergraduate at UofT
CSC494 (project course): 3D object detection with branch and bound
Date: Jan 2015 – April 2015
- Taher Jafferjee 4th year undergraduate at UofT
CSC494 (project course): Solving jigsaw puzzles
Date: Sept 2014 – Dec 2014
- Chenxi Liu 4th year undergraduate at Tsinghua University, admitted to UCLA in 2015
Co-supervised with Prof. Raquel Urtasun.
Date: June 2014 – Nov 2014
- Yinan Zhao 4th year undergraduate at Tsinghua University, admitted to UCLA in 2015
Co-supervised with Prof. Raquel Urtasun.
Date: June 2014 – Dec 2014

Jialiang Wang 4th year undergraduate at UofT, admitted to Harvard University in 2015
 USRA'14, co-supervised with Prof. Sven Dickinson
 Date: June 2014 – Aug 2014

Uri Priel 3rd year undergraduate at UofT
 USRA'14, co-supervised with Prof. Sven Dickinson
 Date: June 2014 – Aug 2014

Kamyar Ghasemipour 2nd year undergraduate at UofT
 USRA'14, co-supervised with Prof. Suzanne Stevenson and Prof. Sven Dickinson
 Date: June 2014 – Aug 2014

Chen Kong 4th year undergraduate at Tsinghua University, now a PhD student at CMU
 Co-supervised with Prof. Raquel Urtasun.
 Date: June 2013 – March 2014

Ziyu Zhang 4th year undergraduate at Tsinghua University, now a PhD student at UofT
 Co-supervised with Prof. Raquel Urtasun
 Date: August 2013 – June 2014

Meng Ye 4th year undergraduate at Beihang University
 Co-supervised with Prof. Raquel Urtasun
 Date: June 2013 – Nov 2013

Visiting Students:

Roozbeh Mottaghi Phd student at UCLA, now a postdoc at Stanford University
 Co-supervised with Prof. Raquel Urtasun.
 Date: June 2012 – Nov 2013

Abhishek Sharma PhD student at University of Maryland
 Co-supervised with Prof. Raquel Urtasun.
 Date: June 2012 – Nov 2012

Edgar Simo-Serra PhD student at Institut de Robotica i Informatica Industrial
 Co-supervised with Prof. Raquel Urtasun.
 Date: June 2013 –Nov 2013, June 2014 – Nov 2014

Liang-Chieh Chen PhD student at UCLA
 Co-supervised with Prof. Raquel Urtasun.
 Date: August 2013 – Nov 2013

Undergraduate Thesis Supervision:

Annie Ngai Co-supervised with Prof. Sven Dickinson
 Thesis title: *Efficient Fine-grained Object Recognition and Pose Estimation*
 Date: Sept 2014 - April 2015

Sung Baik Co-supervised with Prof. Raquel Urtasun
 Thesis title: *Efficient Tracking by Detection*
 Date: Sept 2014 - April 2015

Awards

- 2015* **Teaching award**
Awarded by CSSU at University of Toronto
- 2015* **Best reviewer award**
Computer Vision and Pattern Recognition (CVPR)
- 2012* **Best reviewer award**
Computer Vision and Pattern Recognition (CVPR)
- 2012* **Best reviewer award**
European Conference on Computer Vision (ECCV)
- 2008* **Best reviewer award**
European Conference on Computer Vision (ECCV)
- 2007* **Best teaching assistant award**
Department of Computer and Information Science, University of Ljubljana
- 2007* **Best Ph.D. student presentation**
Student competition at EU Cognition project meeting
http://www.vernon.eu/euCognition/six_monthly_meeting_2.htm
Presentation title: *Learning Hierarchical Representations of Object Categories*
- 2006* **Award for the postgraduate studies**
Department of Computer and Information Science, University of Ljubljana
- 2003* **Best paper award**
Austrian Association for Pattern Recognition (OAGM/AAPR) conference
- 2002* **Award for the Diploma thesis**
Department of Mathematics and Physics, University of Ljubljana
- 1992 – 2002* **National scholarship for exceptional students**
- 1991 – 1995* **First, second and two third places** at the national competitions in mathematics

Professional Service

Area Chair

CVPR 2016

Chair

Tutorial co-chair for CVPR'16

Publication co-chair for ICCV 2015

Publication co-chair for CVPR 2015

Publication co-chair for CVPR 2014

Publication co-chair for CVPR 2013

Presentations chair for CVPR 2010

Multimedia chair for International Mathematical Olympiad 2006

Committees (at UofT)

DCS Grad Recruiting Committee (2014)

Grad Research Skills Committee (2014, 2015)

DCS Professional Master's Admissions Committee (2014)

DCS Undergraduate Summer Research Program (2014, 2015)

Journal Reviewing

IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI)

International Journal of Computer Vision (IJCV)

Computer Vision and Image Understanding (CVIU)

Robotics and Autonomous Systems (RAS)

Pattern Recognition (PR)

Image and Vision Computing (IMAVIS)

Program Committees

2009 – 2015 IEEE Computer Vision and Pattern Recognition (CVPR)

2009 – 2015 IEEE International Conference on Computer Vision (ICCV)

2008 – 2014 European Conference on Computer Vision (ECCV)

2013 – 2014 Neural Information Processing Systems (NIPS)

2015 International Conference on Robotics and Automation (ICRA)

2015 International Conference on Intelligent Robots and Systems (IROS)

2009 Asian Conference on Computer Vision (ACCV)

Grants

2015 – 2019 NSERC Discovery grant
Title: *Video Understanding and Retrieval with Complex Natural Language Queries*
Total amount: CAD 170,000 (34,000 per year for a total of 5 years)

Press Coverage

June-July, 2015 *Neuroaesthetics in Fashion: Modeling the Perception of Beauty*

Our CVPR'15 paper on fashion received a lot of attention from the media. It has been featured in a number of News websites, Fashion magazines and International news. We received numerous requests for interviews.

News websites: New Scientist, Quartz, Tech Times, Wired (UK), Mashable, AOL News (with video), Huffington Post UK (with video), Huffington Post Canada, MSN (Canada), Protein, Yahoo (Canada), Science Daily, Daily Mail (UK), PSFK, Toronto Star (online and printed edition), Gizmag, TheRecord.com , iDigitalTimes

Fashion websites / news: Harper's Bazaar, Glamour, Elle, Cosmopolitan (UK), Marie Claire, Fashion Magazine, Yahoo style, Red Magazine (UK), The Pool (UK) FashionNotes, Styleite, Health Beauty Life

International news: Vogue (Spain), Woman (Spain), Stylebook (Germany), Wired (Germany), Jetzt (Germany), Ansa (Italy) , La Gazzetta (Italy), CenarioMT (Brazil), Amsterdam Fashion (NL), Marie Claire (France), Fashion Police (Nigeria), Nauka (Poland) , Pluska (Slovakia), Preetext (Austria), PopSugar (Australia), SinEmbargo (Mexico)

Television and radio: RTVE (Spanish)

Other

Coding skills: Matlab, Mathematica, C++

2010: Technical consulting for a computer startup Suplea, Ljubljana

1999 – 2002 (as undergraduate student): Co-developed, with Dr. Valentin Fidler (my father) and Mario Medved, nuclear medicine software MedicView and co-founded: <http://www.medicimaging.com>.

1999 – 2002 (as undergraduate student): Co-PI, together with Dr. Valentin Fidler, of a project funded by IAEA on developing affordable nuclear medicine software solutions for developing countries

Publications

Journal Articles and Book Chapters

- Roozbeh Mottaghi, Alan Yuille, **Sanja Fidler**, Raquel Urtasun, Devi Parikh. Human-Machine CRFs for Identifying Bottlenecks in Scene Understanding. *Trans. on Pattern Analysis and Machine Intelligence*, To appear, 2015.
- T. Lee, **S. Fidler**, A. Levinshtein, C. Sminchisescu, S. Dickinson, *A Framework for Symmetric Part Detection in Cluttered Scenes*, MDPI Symmetry, Vol. 7, pp 1333-1351, 2015.
- M. Fritz, M. Andriluka, **S. Fidler**, M. Stark, A. Leonardis, B. Schiele. Categorical Perception. In: *Cognitive Systems*, Editors: H. I. Christensen, G.-J. Kruijff, A. Sloman and J. Wyatt, Springer, 2010.
- **S. Fidler**, M. Boben, A. Leonardis. Learning Hierarchical Compositional Representations of Object Structure. In: *Object Categorization: Computer and Human Vision Perspectives*, Editors: S. Dickinson, A. Leonardis, B. Schiele and M. J. Tarr, Cambridge University Press, 2009.
- L. Furst, **S. Fidler**, A. Leonardis. Selecting features for object detection using an AdaBoost-compatible evaluation function. *Pattern Recognition Letters (PRL)*, 2008, vol. 29, no. 11, pp. 1603 – 1612.
- **S. Fidler**, D. Skočaj, A. Leonardis. Combining Reconstructive and Discriminative Subspace Methods for Robust Classification and Regression by Subsampling. *IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE PAMI)*, 2006, vol. 28(3), pp. 337 – 350.

Conference Papers

- D. Lin, C. Kong, **S. Fidler**, R. Urtasun. Generating Multi-Sentence Lingual Descriptions of Indoor Scenes. In *In British Machine Vision Conference (BMVC)*, 2015, **oral presentation**.
- C. Liu, A. Schwing, K. Kundu, R. Urtasun, **S. Fidler**. Rent3D: Floor-Plan Priors for Monocular Layout Estimation. In *Computer Vision and Pattern Recognition (CVPR)*, 2015, **oral presentation**.
- S. Wang, S. Fidler, R. Urtasun. Holistic 3D Scene Understanding from a Single Geo-tagged Image. In *Computer Vision and Pattern Recognition (CVPR)*, 2015, **oral presentation**.
- Y. Zhu, R. Urtasun, R. Salakhutdinov, **S. Fidler**. segDeepM: Exploiting Segmentation and Context in Deep Neural Networks for Object Detection. In *Computer Vision and Pattern Recognition (CVPR)*, 2015.
- E. Simo-Serra, **S. Fidler**, F. Moreno-Noguer, R. Urtasun. Neuroaesthetics in Fashion: Modeling the Perception of Beauty. In *Computer Vision and Pattern Recognition (CVPR)*, 2015.
- J. Yao, M. Boben, **S. Fidler**, R. Urtasun. Real-Time Coarse-to-fine Topologically Preserving Segmentation. In *Computer Vision and Pattern Recognition (CVPR)*, 2015.
- E. Simo-Serra, **S. Fidler**, F. Moreno-Noguer, R. Urtasun. A High Performance CRF Model for Clothes Parsing. In *Asian Conference on Computer Vision (ACCV)*, 2014.
- T. Lee, **S. Fidler**, Sven Dickinson. Multi-cue Mid-level Grouping. In *Asian Conference on Computer Vision (ACCV)*, 2014.
- C. Kong, D. Lin, M. Bansal, R. Urtasun, **S. Fidler**. What are you talking about? Text-to-Image Coreference. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.

- D. Lin, **S. Fidler**, C. Kong, R. Urtasun. Visual Semantic Search: Retrieving Videos via Complex Textual Queries. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
- L.-C. Chen, **S. Fidler**, A. Yuille, R. Urtasun. Beat the MTurkers: Automatic Image Labeling from Weak 3D Supervision. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
- R. Mottaghi, X. Chen, X. Liu, **S. Fidler**, R. Urtasun, A. Yuille. The Role of Context for Object Detection and Semantic Segmentation in the Wild. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
- X. Chen, R. Mottaghi, X. Liu, N.-G. Cho, **S. Fidler**, R. Urtasun, A. Yuille. Detect What You Can: Detecting and Representing Objects using Holistic Models and Body Parts. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
- D. Lin, **S. Fidler**, R. Urtasun. Holistic Scene Understanding for 3D Object Detection with RGBD cameras. In *International Conference on Computer Vision (ICCV)*, 2013, **oral presentation**.
- A. Schwing, **S. Fidler**, M. Pollefeys, R. Urtasun. Box In the Box: Joint 3D Layout and Object Reasoning from Single Images. In *International Conference on Computer Vision (ICCV)*, 2013.
- T. Lee, **S. Fidler**, S. Dickinson. Detecting Curved Symmetric Parts using a Deformable Disc Model. In *International Conference on Computer Vision (ICCV)*, 2013.
- R. Mottaghi, **S. Fidler**, J. Yao, R. Urtasun, D. Parikh. Analyzing Semantic Segmentation Using Human-Machine Hybrid CRFs. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2013.
- **S. Fidler**, R. Mottaghi, A. Yuille, R. Urtasun. Bottom-up Segmentation for Top-down Detection. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2013.
- **S. Fidler**, A. Sharma, R. Urtasun. A Sentence is Worth a Thousand Pixels. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2013.
- **S. Fidler**, S. Dickinson, R. Urtasun. 3D Object Detection and Viewpoint Estimation with a Deformable 3D Cuboid Model. In *Neural Information Processing Systems Conference (NIPS)*, 2012, **spotlight presentation**.
- J. Yao, **S. Fidler**, R. Urtasun. Describing the Scene as a Whole: Joint Object Detection, Scene Classification and Semantic Segmentation. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2012.
- Z. Zhang, **S. Fidler**, J. W. Wagoner, Y. Cao, J. M. Siskind, S. Dickinson, W. Wang. Super-edge grouping for object localization by combining appearance and shape information. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2012.
- A. Barbu, A. Bridge, Z. Burchill, D. Coroian, S. Dickinson, **S. Fidler**, A. Michaux, S. Mussman, S. Narayanaswamy, D. Salvi, L. Schmidt, J. Shangguan, J. Siskind, J. Wagoner, S. Wang, J. Wei, Y. Yin, and Z. Zhang. Video In Sentences Out. *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2012, **oral presentation**.
- W. May, **S. Fidler**, A. Fazly, S. Stevenson, and S. Dickinson. Unsupervised Disambiguation of Image Captions. *First Joint Conference on Lexical and Computational Semantics (*SEM)*, 2012.
- T. Lee, **S. Fidler**, A. Levinshtein, and S. Dickinson. Learning Categorical Shape from Captioned Images. *Canadian Conference on Computer and Robot Vision (CRV)*, 2012.
- S. Karayev, M. Fritz, **S. Fidler**, T. Darrell. A Probabilistic Model for Recursive Factorized Image Features. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2011.

- **S. Fidler**, M. Boben, A. Leonardis. A coarse-to-fine Taxonomy of Constellations for Fast Multi-class Object Detection. In *European Conference on Computer Vision (ECCV)*, 2010.
- **S. Fidler**, M. Boben, A. Leonardis. Evaluating multi-class learning strategies in a generative hierarchical framework for object detection. In *Neural Information Processing Systems Conference (NIPS)*, 2009.
- **S. Fidler**, M. Boben, A. Leonardis. Optimization framework for learning a hierarchical shape vocabulary for object class detection. In *British Machine Vision Conference (BMVC)*, 2009.
- **S. Fidler**, M. Boben, A. Leonardis. Similarity-based cross-layered hierarchical representation for object categorization. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2008.
- **S. Fidler**, A. Leonardis. Towards scalable representations of object categories : learning a hierarchy of parts. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2007.
- A. Leonardis, **S. Fidler**. Learning hierarchical representations of object categories for robot vision. In *ISRR 2007 : 13th International Symposium of Robotics Research*, 2007, Hiroshima, Japan, pp. 125 – 136. **Invited paper**.
- **S. Fidler**, G. Berginc, A. Leonardis. Hierarchical Statistical Learning of Generic Parts of Object Structure. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2006.
- D. Skočaj, A. Leonardis, **S. Fidler**. Robust estimation of canonical correlation coefficients. In *Digital imaging in media and education : 28th workshop of the Austrian Association for Pattern Recognition (AAPR)*, 2004, pp. 15-22.
- **S. Fidler**, A. Leonardis. Robust LDA classification by subsampling. In *Workshop in Statistical Analysis in Computer Vision* in conjunction with IEEE Computer Vision and Pattern Recognition, 2003.
- **S. Fidler**, A. Leonardis. Robust LDA classification. In *Vision in a dynamic world: 27th workshop of the Austrian Association for Pattern Recognition (AAPR)*, 2003, pp. 119-126. *Best paper award*.

Abstracts

- A. Leonardis and **S. Fidler**. A hierarchical computational model of statistical learning of two-dimensional visual shapes. In *32nd European Conference on Visual Perception (ECVP)*, 2009.
- **S. Fidler**, M. Boben, A. Leonardis. A bottom-up and top-down optimization framework for learning a compositional hierarchy of object classes. In *First Workshop on Stochastic Image Grammars (SIG)*, in conjunction with CVPR, 2009.

Theses

PhD thesis

Recognizing Visual Object categories with Subspace Methods and a Learned Hierarchical Shape Vocabulary. University of Ljubljana, 2010.

Diploma thesis

Independent Component Analysis. University of Ljubljana, 2002.