

# SINISA TODOROVIC

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## EDUCATION

- **Ph.D.** in electrical and computer engineering, University of Florida, 2005  
Dissertation: “Irregular-Structure Tree Models for Image Interpretation”
- **M.S.** in electrical and computer engineering, University of Florida, 2002  
Thesis: “Statistical Modeling and Segmentation of Sky/Ground Images”
- **B.S./M.S.** in electrical engineering, University of Belgrade, Serbia, 1994

## EMPLOYMENT

- 09/20–now: **Professor**, School of EECS, Oregon State University
- 09/14–09/20: **Associate Professor**, School of EECS, Oregon State University
- 09/08–09/14: **Assistant Professor**, School of EECS, Oregon State University
- 05/05–08/08: **Postdoctoral Fellow**, Beckman Institute, University of Illinois at Urbana-Champaign
- 01/02–05/05: **Research Assistant**, University of Florida, ECE Department
- 11/94–07/01: **Software Engineer**, Siemens

## UNDERGRADUATE AND GRADUATE STUDENT ADVISING

- Current Undergraduate Students:
  - Josh Bamberger, Summer 2018 – now, MIME
- Current MS Students:
  - N/A
- Current PhD Students:
  - Ajay Krishna, Summer 2021 – now, CS, (started with an M.S. degree)
  - Tieqiao Wang, Winter 2021 – now, CS, (started with an B.S. degree)
  - Jisoo Lee, Fall 2020 – now, CS, (started with an B.S. degree)
  - Liqiang He, Winter 2018 – now, CS, (started with an M.S. degree)
  - Nicolas Aziere, Winter 2018 – now, CS, (started with an M.S. degree)
- Graduated PhD Students
  - Khoi Nguyen, Fall 2015 – Spring 2021, CS, (started with an M.S. degree)  
Ph.D. Dissertation: “Part-based and Uncertainty-Aware Few-shot Object Segmentation in Images,” May 2021
  - Jun Li, Fall 2017 – Fall 2020, CS, (started with an M.S. degree)  
Ph.D. Dissertation: “Action Segmentation with Limited Supervision,” Dec 2020

- Peng Lei, Fall 2013 – Fall 2018, CS, (started with an M.S. degree)  
Ph.D. Dissertation: “Pixel- and Frame-level Video Labeling using Spatial and Temporal Convolutional Networks,” Dec 2018
- Michael Lam, Fall 2012 – Fall 2017, CS, (started with a B.S. degree)  
Ph.D. Dissertation: “Fine-Grained Object Recognition Under Limited Training Data,” Dec 2017  
M.S. Thesis: “Object Detection in Biological Images Using a Search-Based Framework,” May 2014
- Anirban Roy, Fall 2011 – Spring 2017, CS, (started with a B.S. degree)  
Ph.D. Dissertation: “Semantic Image Segmentation Using Domain Constraints,” June 2017  
M.S. Thesis: “Learning Affinities of Exemplar Videos for View-Invariant Action Rec.,” Aug 2013
- Behrooz Mahasseni, Fall 2011 – Fall 2016, CS, (started with an M.S. degree)  
Ph.D. Dissertation: “Robust and Efficient Classification of Videos in the Wild,” Dec 2016
- Mohamed Amer, Fall 2009 – Spring 2014, EE, (started with a B.S. degree)  
Ph.D. Dissertation: “Hierarchical Graphical Models for Activity Recognition in Videos,” May 2014,  
- M.S. Thesis: “Recognizing Human Activities in Video through Mining Optimal Features,” May 2011
- Nadia Payet, Fall 2008 – Spring 2011, CS, (started with an M.S. degree)  
PhD Dissertation: “From Shape-based Object Rec. and Discovery to 3D Interpretation,” May 2011
- William Brendel, Fall 2008 – Spring 2011, CS, (started with an M.S. degree)  
PhD Dissertation: “From Multitarget Tracking To Event Recognition in Videos,” May 2011
- Graduated MS Students
  - Rahul Borkar, Summer 2017 – Spring 2019, ECE  
MS Thesis: “Video Object Segmentation By Jointly Tracking Foreground and Background”, June 2019
  - Dimitrios Trigkakis, Fall 2015 – Spring 2018, CS  
MS Thesis: “A Deep Action Segm. and Its Explanation with a Dictionary of Meaningful Attention Maps”, Dec 2017
  - Xu Xu, Fall 2013 – Spring 2017, CS, (started with an M.S. degree in Physics)  
MS Thesis: “Classifying and Synthesizing 3D Shapes of Objects using Deep Neural Networks”, June 2017
  - Chenyu Wang, Fall 2015 – Winter 2017, CS  
MS Report: “Fine Grained Video Classification for Endangered Bird Species Protection”, February 2017
  - Yao Zhou, Fall 2013 – Summer 2015, CS  
MS Thesis: “Scoring Shape Characters of Monocot Leaves”, July 2015
  - Zhongyuan Feng, Fall 2012 – Spring 2015, CS  
MS Thesis: “Efficient Incremental Panorama Reconstruction from Multiple Videos”, May 2015
  - Xu (Shell) Hu, Fall 2012 – Winter 2015, started as a PhD student in CS  
MS Thesis: “Part-Based Models for Analyzing Tooth Characters of Bat Skulls”, March 2015
  - Shravya Varakantham, 2012 – 2014, CS  
MS Thesis: “Computer vision for geometrical analysis of bridge gusset plates”, October 2014
  - Amit Bawaskar, Fall 2012 – Spring 2014, CS  
MS Thesis: “Interactive Player Tracking in Videos of American Football”, May 2014
  - Nikhil Tej, Fall 2010 – Fall 2013, CS  
MS Thesis: “Annotation of Image Segments with Ontologies (AISO)”, Sep 2013
  - Yaofei Feng, Fall 2011 – Spring 2013, CS  
MS Thesis: “Fine-grained Detection and Localization of Objects in Images,” May 2013
  - Sharath Kumar Dhamodaran, Fall 2011 – Spring 2013, CS  
MS Thesis: “Pattern Discovery in Noisy Images,” May 2013
  - Jennifer Inouye, Fall 2010 – Spring 2012, CS  
MS Thesis: “Analysis of Bio-based Composites for Image Segm. with the Aid of Games,” June 2012
  - Tian Liu, Fall 2008 – Spring 2010, CS  
MS Thesis: “Region Based Image Matching for 3D Object Recognition,” June 2010

- Advised and Supported PhD Students
  - Rameez Wajid, Winter 2018 – Spring 2019, PhD, ECE
  - Zahra Iman, Fall 2013 – Fall 2015, PhD, CS
  - Amirehosein Azarbakht, Fall 2011– Fall 2012, PhD, CS

## AWARDS AND HONORS

- OSU College of Engineering Research Collaboration Award, 2016
- Senior Member, IEEE 2013
- Outstanding Reviewer Award, ICCV 2007
- Jack Neubauer Best Paper Award in IEEE Transactions on Vehicular Technology, 2004

## CURRENT AND PRIOR RESEARCH FUNDING

- DARPA - I2O, \$8.8M (my share \$600K), Co-PI, 06/15/2019-06/14/2023  
Title: “OPICS: Obvious Plans and Inferences for Common Sense via Infant Behavior Learning”
- Air Force, STTR Phase I, \$58K, PI, 02/01/2019-10/31/2019  
Title: “DASHER: Deep Agents with Self-learning for Human Events Recognition”
- Hewlett-Packard, OSU Seed Grant, \$20K, PI, 02/01/2018-05/31/2018  
Title: “DAWN: A Deep Adaptive Writing Network for Print Quality Quantification under Limited Training Data”
- DARPA - I2O, \$5M (my share \$600K), Co-PI, 05/01/2017-04/30/2021  
Title: “Learning and Communicating Explainable Representations for Analytics and Autonomy”
- DOE - EREE, \$600.4K (my share \$100K), Co-PI, 04/01/2017-03/31/2020  
Title: “A Heterogeneous System for Eagle Detection, Deterrent, and Wildlife Collision Detection for Wind Turbines”
- NSF, \$3M (my share \$160K), Co-PI, 01/01/2016-12/31/2020  
Title: “NRT-DESE: Risk and Uncertainty Quantification in Marine Science and Policy”
- NSF, \$6.2M (my share \$180K), Co-PI, 01/01/2014-12/31/2017  
Title: “cROP: Common Reference Ontologies and Applications for Plant Biology”
- NSF, \$1M, (my share \$500K), PI, 09/01/2013-08/31/2017  
Title: “RI: Medium: Collaborative Research: Object and Activity Recognition as the Maximum Weight Sub-graph Problem with Mutual Exclusion Constraints”
- NSF, \$150K (my share \$150K), Co-PI, 04/01/2015-06/15/2016  
Title: “AVATOL-Next Generation Phenomics for the Tree of Life (supplement)”
- NSF, \$870K (my share \$500K), Co-PI, 04/01/2012-03/31/2015  
Title: “AVATOL-Next Generation Phenomics for the Tree of Life”
- HUDL, \$88K (my share \$44K), Co-PI, 01/01/2015-06/15/2015  
Title: “Digital Scout Project: Phase 4”
- HUDL, \$250K (my share \$120K), Co-PI, 09/01/2013-12/31/2014  
Title: “Digital Scout Project: Phase 3”
- HUDL, \$500K (my share \$250K), Co-PI, 10/25/2011-09/01/2013  
Title: “Digital Scout Project: Phase 2”

- Oregon Trawl Commission (ARF at OSU), \$61.5K (no overhead), PI, 09/15/2012-09/14/2013  
Title: “Development and evaluation of image recognition software to screen video images collected onboard commercial fishing boats”
- Oregon Department of Transportation, \$440K (my share \$119.5K), Co-PI, 04/13/2012-12/31/2014  
Title: “Imaging Tools for Evaluation of Gusset Plate Connections in Steel Truss Bridges”
- NSF RI, \$16K, PI, 06/15/2012-06/14/2013  
Title: “REU Supplement: RI: Small: Grounding Probabilistic Temporal Logic in a Hierarchy of Video Segmentation Tubes”
- DARPA, \$5M (my share \$351K), Co-PI, 11/01/2011–03/25/2015  
Title: “SEE on a Unified Foundation for Representation, Inference and Learning”
- NSF, \$5K, PI, 08/2011  
Title: “SIG-11: Second International Workshop on Stochastic Image Grammars”
- OSU GRF, \$10K (no overhead), PI, 01/2011–12/2011  
Title: “Advancing Bio-Based Composites by Automated Image Analytics”
- NSF, \$450K, PI, 09/2010–09/2013  
Title: “RI: Small: Grounding Probabilistic Temporal Logic in a Hierarchy of Video Segmentation Tubes”
- NSF, \$380K, Co-PI, 09/2008–09/2011  
Title: “RI: Small: Discovery, Modeling and Recognition of Objects in Image Sets”
- TTCI, \$100K, Co-PI, 11/2007–10/2008  
Title: “Machine Vision Inspection of Structural Railcar Components”
- NSF, \$100K, Co-PI, 08/2007–08/2008  
Title: “RI: SGER: Segmentation Trees and their Robust Matching as Core Technologies for Recognition”

#### **DIVERSITY AT OREGON STATE UNIVERSITY**

- EOA sexual harassment training, April 19, 2018
- Search Advocate, Workshop 1 and Workshop 2 – Feb 2016

#### **SERVICE AT OREGON STATE UNIVERSITY**

- Faculty Committees
  - School of EECS Dossier Committee – 2018-now
  - School of EECS Graduate Committee – 2008-12
  - School of EECS Faculty Hiring Committee – 2012-now; Chair 2015/16; Chair 2016/17
  - College of Engineering Promotion & Tenure Committee – 2015-18
- PhD Committees
  - Hung Phan Manh – advisor: Prof. F. Li, EECS
  - Wenxuan Wu – advisor: Prof. F. Li, EECS
  - Roshan Panahi – advisor: Prof. Joseph Louis, Civil & Construction Engineering
  - Phung Lai – advisor: Prof. R. Raich, EECS
  - Jialin Yuan – advisor: Prof. F. Li, EECS
  - Arash Abbasi – advisor Prof. H. Liu, EECS
  - Nisha Puri (graduated, Spring 2019) – advisor: Prof. Y. Turkan, Civil & Construction Engineering
  - Lucas Wells (graduated, Fall 2018) – advisor: Prof. J. Kiser, Forest Engineering, Resources and Management
  - Anh Pham (graduated, Spring 2018) – advisor Prof. R. Raich, EECS
  - Daniel Ching (graduated, Winter 2018) – advisor: Prof. F. Kamke, Wood Science and Engineering

- Yuanli Pei (graduated, Summer 2017) – advisor Prof. X. Fern, EECS
- Hamid Mahmoudabadi (graduated, Summer 2015) – advisor Prof. M. Olsen, Civil Engineering, EECS
- Mohammad Javad Norooz Oliae (graduated, Summer 2015) – advisor Prof. B. Hamdaoui, EECS
- Ben Tribelhorn (graduated, Summer 2014) – advisor Prof. M. Bailey, EECS
- Heng Zhang (graduated, Spring 2011) – advisor Prof. H. Liu, EECS
- Rob Hess (graduated, graduated, Spring 2010) – advisor Prof. A. Fern, EECS
- Matthew L. Reed (graduated, Spring 2010) – advisor Prof. M. Bailey, EECS
- MS Committees
  - Anand Koshy – advisor Prof. Chris Scaffidi
  - Sonam Goyanchandani – Software Innovation Track, advisor Prof. Chris Scaffidi
  - Damanpreet Kaur (graduated Summer 2021) – advisor Prof. Fuxin Li
  - Alrik Firl (graduated Summer 2018) – advisor Prof. Fuxin Li
  - Zheng Zhou (graduated Spring 2017) – advisor Prof. Fuxin Li
  - Vikedo Terhuja (graduated Fall 2015) – advisor Prof. Alan Fern
  - Teresa Vania Tjahja (graduated Spring 2015) – advisor Prof. Xioali Fern
  - Travis Moor (graduated Fall 2013) – advisor Weng-Keen Wong
  - Mohammad Javad Norooz Oliae (graduated Spring 2013) – advisor Prof. Bechir Hamdaoui
  - Gaole Jin (graduated Fall 2012) – advisor Prof. Raviv Raich
  - Mizuki Kagaya (graduated Spring 2010) – advisor Prof. Eugene Zhang
- MEng Committees
  - Bin Zhang (March 2016)
  - Yu Zhang (March 2016)
- Honors BS Committees
  - William Maurer – advisor Prof. Roberto Albertani
- GCR on PhD Committees
  - Kalbi Flavien Zongo (PhD, graduated 2018) – advisor: Sarah Emerson, Statistics
  - Dejan Dudich (MS, graduated 2015) – advisor: Salvador Hernandez, Civil Engineering
  - Ali Alsaman (PhD, graduated 2013) – advisor: David Sillars, Civil Engineering
  - Matthew McIntire (PhD, graduated 2012) – advisor: Chris Hoyle, Mechanical Engineering
  - Shuping Jiang (PhD, graduated 2012) – advisor: Lan Xue, Statistics
- ASE Saturday Academy
  - Anita Chow, Salem, OR (2011)
  - Casey Schafer, Corvallis, OR (2011)
- REU
  - Antonio Dimicco, EECS OSU (2012)
  - Katherine Maack, EECS OSU (2012)
  - Jin Yi, EECS OSU (2012)

## SYNERGISTIC ACTIVITIES

- Editor-in-Chief:
  - Image and Vision Computing , 2018 – now
- Associate Editor:
  - Pattern Recognition Letters , 2010-2014
  - Image and Vision Computing , 2009-2018
- Opinions Editor:
  - Image and Vision Computing , 2014-2018
- Guest Editor: - Special Issue on Stochastic Image Grammars in International Journal of Computer Vision , 2009

- Area Chair:
  - CVPR: 2012, 2014, 2017, 2019, 2020
  - ECCV: 2020
- Program Chair:
  - 11th IEEE International Conference on Automatic Face and Gesture Recognition 2015 (FG 2015)
  - International Workshops on Stochastic Image Grammars: SIG-09 (at CVPR '09); SIG-11 (at ICCV '11)
- Short-Course Co-Organizer:
  - SIG-12: Tutorial on Stochastic Image Grammars for Object, Scene and Event Understanding at CVPR 2012
  - SPIL-15: Search and Planning for Inference and Learning in Computer Vision at CVPR 2015
- Program Committee Member/Reviewer:

Journals: IEEE Trans. Pattern Analysis Machine Intelligence, IEEE Trans. Image Processing Computer Vision and Image Understanding, Image and Vision Computing, Statistical Analysis and Data Mining, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Trans. Multimedia, IET Computer Vision, ACM Transactions on Graphics, Pattern Recognition

Conferences: ICCV – IEEE Int. Conf. on Computer Vision, 2007-now; CVPR – IEEE Conf. Computer Vision Pattern Recognition, 2006-now; ECCV – European Conf. Computer Vision, 2006-now; NIPS – Neural Information Processing Systems, 2011-now; ICPR – IAPR Int. Conf. Pattern Recognition, 2006-now, 3dRR-07 – 3D Representation for Recognition, ICCV Workshop, 2007; VISAPP – Int. Conf. Computer Vision Theory Applications, 2006-8; FG – IEEE Int. Conf. Automatic Face Gesture Recognition, 2006; FGVC – IEEE Workshop on Fine-Grained Visual Categorization, 2011; ICRA – IEEE Conf. Robotics Automation, 2004; ICARCV – IEEE Int. Conf. Control Automation Robotics Vision, 2006; PSIVT – IEEE Pacific-Rim Symposium Image Video Technology, 2006; GbR – Graph-based Representations in Pattern Recognition, 2009; SIGGRAPH – Special Interest Group on GRAPHics and Interactive Techniques, 2010-11; SSSPR – Structural, Syntactic, and Statistical Pattern Recognition, 2014

## BOOK CHAPTERS

1. S. Todorovic, “Structured Prediction for Object Boundary Detection in Images,” in “Advanced Structured Prediction,” Editors: Sebastian Nowozin, Peter V. Gehler, Jeremy Jancsary, and Christoph H. Lampert, Publisher: MIT Press, 2014 (pp. 363-388)
2. S. Todorovic and N. Payet, “Shape-based object discovery in images,” in “Shape Perception in Human and Computer Vision,” Editors: S. Dickinson and Z. Pizlo, Publisher: Springer, 2013 (pp. 399-412)

## JOURNAL PUBLICATIONS

1. Dan Xie, Tianmin Shu, Sinisa Todorovic, Song-Chun Zhu, “Learning and Inferring ”Dark Matter” and Predicting Human Intents and Trajectories in Videos,” in IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 40, issue 7, pp. 1639 - 1652, 2017.
2. Cooper, Laurel; Meier, Austin; Laporte, Marie; Mungall, Chris; Elser, Justin; Sinn, Brandon; Cavaliere, Dario; Carbon, Seth; Dunn, Nathan; Qu, Botong; Smith, Barry; Preece, Justin; Zhang, Eugene; Todorovic, Sinisa; Gkoutos, Georgios; Doonan, John; Stevenson, Dennis; Arnaud, Elizabeth; Jaiswal, Pankaj, “The Planteome Database: An Integrated Resource for Reference Ontologies, Plant Genomics and Phenomics,” in Nucleic Acids Research, vol. 46, issue D1, pp. D1168-D1180, 2017.
3. H. Mahmoudabadi, M. J. Olsen, and S. Todorovic, “Detecting sudden moving objects in a series of digital images with different exposure times,” in Computer Vision and Image Understanding, vol. 158, pp. 17-30, 2017.

4. Z. Deng, S. Todorovic, and L. Latecki, "Unsupervised object region proposals for RGB-D indoor scenes," in *Computer Vision and Image Understanding*, vol. 154, pp. 127-136, 2017.
5. H. Mahmoudabadi, M. J. Olsen, and S. Todorovic, "Efficient terrestrial laser scan segmentation exploiting data structure," in *ISPRS Journal of Photogrammetry and Remote Sensing*, volume 119, pp. 135-150, 2016.
6. S. Kaltwang, S. Todorovic, and M. Pantic, "Doubly sparse Relevance Vector Machine for continuous facial behavior estimation", in *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 38, issue 9, pp. 1748 - 1761, 2016
7. M. Amer and S. Todorovic, "Sum product networks for activity recognition", in *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 38, issue 4, pp. 800-813, 2016
8. M. Amer, S. Yousefi, R. Raich, and S. Todorovic, "Monocular extraction of 2.1D sketch using constrained convex optimization", in *International Journal of Computer Vision*, vol. 112, issue 1, pp. 23-42, 2015
9. N. Lingutla, J. Preece, S. Todorovic, L. Cooper, L. Moore and P. Jaiswal, "AISO: Annotation of image segments with ontologies", in *Journal of Biomedical Semantics*, vol. 5, 2014
10. Q. Yao, Q. Liu, T. G. Dietterich, S. Todorovic, J. Lin, G. Diao, B. Yang, and J. Tang, "Segmentation of touching insects based on optical flow and NCuts", in *Biosystems Engineering*, vol. 114, issue 2, pp. 67-77, 2013
11. N. Payet and S. Todorovic, "SLEDGE: Sequential labeling of image edges for boundary detection ,", in *International Journal of Computer Vision*, vol. 104, issue 1, pp. 15-37, 2013
12. N. Payet and S. Todorovic, "Hough Forest Random Field for object recognition and segmentation," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 35, issue 5, pp. 1066-1079, 2012
13. David A. Lytle, Gonzalo Martinez-Munoz, Wei Zhang, Natalia Larios, Linda Shapiro, Robert Paasch, Andrew Moldenke, Eric N. Mortensen, Sinisa Todorovic, Thomas G. Dietterich, "Automated processing and identification of benthic invertebrate samples," *Journal of the North American Benthological Society*, vol. 29, no. 3, pp. 867-874, 2010
14. B. W Schlake, S. Todorovic, J. R. Edwards, J. M Hart, N. Ahuja, and C. P. Barkan, "Machine vision condition monitoring of heavy-axle load railcar structural underframe components," *Journal of Rail and Rapid Transit*, vol. 224, no. 5, pp. 499-511, 2010
15. M. Kagaya, W. Brendel, Q. Deng, T. Kesterson, S. Todorovic, P. Neill, and E. Zhang, "Video painting with space-time-varying style parameters," *IEEE Trans. Visualization and Computer Graphics*, vol. 17, no. 1, pp. 74 - 87, 2011
16. Y. Sun, S. Todorovic, and S. Goodison, "Local-learning based feature selection for high dimensional data analysis," *IEEE Trans. Pattern Analysis Machine Intell.*, vol. 32, no. 9, pp. 1610-1626, 2010 (The Spotlight Paper of the September 2010 issue)
17. S. Todorovic and N. Ahuja, "Unsupervised category modeling, recognition and segmentation in images," *IEEE Trans. Pattern Analysis Machine Intell.*, vol. 30, no. 12, pp. 2158-2174, 2008
18. S. Todorovic and N. Ahuja, "Region-based hierarchical image matching," *Int. J. Computer Vision*, vol. 78, no. 1, pp. 47-66, 2008
19. K. Lu, D. Wu, J. Fan, S. Todorovic, and A. Nucci, "Robust and efficient detection of DDoS attacks for large-scale internet," *Computer Networks*, vol. 51, no. 18, pp. 5036-5056, 2007
20. Y. Sun, S. Todorovic, J. Li, "Increasing the robustness of boosting algorithms within the linear programming framework," *Signal Processing*, vol. 48, no. 1-2, pp. 5-20, 2007
21. Y. Sun, Z. Liu, S. Todorovic, J. Li, "Adaptive boosting for synthetic aperture radar automatic target recognition," *IEEE Trans. Aerospace Electronic Systems*, vol. 43, issue 1, pp. 112-25, 2007
22. S. Todorovic and M. C. Nechyba, "Interpretation of complex scenes using dynamic tree-structure Bayesian networks," *Computer Vision Image Understanding*, vol. 106, issue 1, pp. 71-84, 2007

23. Y. Sun, S. Todorovic, J. Li, “Unifying multi-class AdaBoost algorithms with binary base learners under the margin framework,” *Pattern Recognition Letters*, vol. 28, issue 5, pp. 631-43, 2007
24. Y. Sun, S. Todorovic, J. Li, “Reducing the overfitting of AdaBoost by controlling its data distribution skewness,” *Int. J. Pattern Rec. Artificial Intell.*, vol. 20, no. 7, pp. 1093-116, 2006
25. S. Todorovic and M. C. Nechyba, “Dynamic trees for unsupervised segmentation and matching of image regions,” *IEEE Trans. Pattern Analysis Machine Intell.*, vol. 27, no. 11, pp. 1762-77, 2005
26. S. Todorovic and M. C. Nechyba, “A vision system for intelligent mission profiles of Micro Air Vehicles,” in *IEEE Trans. Vehicular Technology*, vol. 53, no. 6, pp. 1713–25, 2004, VTS Jack Neubauer Best Paper Award

## SELECTED REFEREED CONFERENCE PUBLICATIONS

1. J. Li and S. Todorovic, “Anchor-constrained Viterbi for set-supervised action segmentation,” in *Proc. Conf. Computer Vision Pattern Recognition (CVPR)*, virtual, 2021. (acceptance rate 1593/5900 = 27%)
2. J. Li and S. Todorovic, “Action shuffle alternating learning for unsupervised action segmentation in *Proc. Conf. Computer Vision Pattern Recognition (CVPR)*, virtual, 2021. (acceptance rate 1593/5900 = 27%)
3. K. Nguyen and S. Todorovic, “FAPIS: A few-shot anchor-free part-based instance segmenter,” in *Proc. Conf. Computer Vision Pattern Recognition (CVPR)*, virtual, 2021. (acceptance rate 1593/5900 = 27%)
4. K. Nguyen and S. Todorovic, “A self-supervised GAN for unsupervised few-shot object recognition,” in *Proc. 25th International Conference on Pattern Recognition (ICPR)*, Milan, Italy, 2020. (acceptance rate 1411/3250=43.4%)
5. J. Li and S. Todorovic, “Set-Constrained Viterbi for set-supervised action segmentation,” in *Proc. Computer Vision Pattern Recognition (CVPR)*, Seattle, WA, 2020 (acceptance rate 1470/6656 = 22%)
6. J. Li, F. Li, and S. Todorovic, “Efficient Riemannian optimization on the Stiefel manifold via the Cayley transform,” in *Proc. Int. Conf. Learning Representations (ICLR)*, Addis Ababa, Ethiopia, 2020 (acceptance rate 687/2594 = 26.5%)
7. J. Li, P. Lei, and S. Todorovic, “Weakly supervised energy-based learning for action segmentation,” in *Proc. Int. Conf. Computer Vision (ICCV)*, Seoul, South Korea, 2019. (oral presentation) (acceptance rate 187/4303=4.3%)
8. K. Nguyen and S. Todorovic, “Feature weighting and boosting for few-shot segmentation,” in *Proc. Int. Conf. Computer Vision (ICCV)*, Seoul, South Korea, 2019. (acceptance rate 1077/4303= 25%)
9. N. Aziere and S. Todorovic, “Ensemble deep manifold similarity learning using hard proxies,” in *Proc. Computer Vision Pattern Recognition (CVPR)*, Long Beach, CA, 2019. (acceptance rate 1300/5160=25.2%)
10. A. Roy and S. Todorovic, “Learning to learn second-order back-propagation for CNNs using LSTMs,” in *Proc. 24th International Conference on Pattern Recognition (ICPR)*, Beijing, China, 2018. (acceptance rate 125/1256=9.9%)
11. P. Lei and S. Todorovic, “Temporal Deformable Residual Networks for action segmentation in videos,” in *Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR)*, Salt Lake City, UT, 2018. (acceptance rate 979/3300=29.6%)
12. P. Lei, F. Li, and S. Todorovic, “Boundary Flow: A Siamese network that predicts boundary motion without training on motion,” in *Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR)*, Salt Lake City, UT, 2018. (acceptance rate 979/3300=29.6%)
13. T. Shu, S. Todorovic, and Song-Chun Zhu, “CERN: Confidence-energy recurrent network for group activity recognition,” in *Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR)*, Honolulu, HI, 2017. (acceptance rate 783/2680=29%)
14. B. Mahasseni, S. Todorovic, and A. Fern, “Budget-aware semantic video segmentation,” in *Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR)*, Honolulu, HI, 2017. (acceptance rate 783/2680=29%)



15. B. Mahasseni, M. Lam, and S. Todorovic, "Unsupervised video summarization with adversarial LSTM networks," in Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR), Honolulu, HI, 2017. (acceptance rate  $783/2680=29\%$ )
16. A. Roy and S. Todorovic, "Combining bottom-up, top-down, and smoothness cues for weakly supervised image segmentation," in Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR), Honolulu, HI, 2017. (acceptance rate  $783/2680=29\%$ )
17. M. Lam, B. Mahasseni, and S. Todorovic, "Fine-grained recognition as HSnet search for informative image parts," in Proc. IEEE Comp. Soc. Conf. Computer Vision Pattern Recognition (CVPR), Honolulu, HI, 2017. (oral presentation) (acceptance rate  $71/2680=2.6\%$ )
18. P. Lei and S. Todorovic, "Modeling human-skeleton motion patterns using Conditional Deep Boltzmann Machine," in Proc. 23rd International Conference on Pattern Recognition (ICPR), Cancun, Mexico, 2016.
19. A. Roy, S. Todorovic, and L. Latecki, "Context-regularized learning of Fully Convolutional Networks for scene labeling," in Proc. 23rd International Conference on Pattern Recognition (ICPR), Cancun, Mexico, 2016.
20. X. Xu and S. Todorovic, "Beam Search for Learning a Deep Convolutional Neural Network of 3D Shapes," in Proc. 23rd International Conference on Pattern Recognition (ICPR), Cancun, Mexico, 2016.
21. P. Lei and S. Todorovic, "Recurrent temporal deep field for semantic video labeling," in Proc. 14th European Conference on Computer Vision (ECCV), Amsterdam, Netherlands, 2016. (acceptance rate  $415/1561 = 26.6\%$ )
22. A. Roy and S. Todorovic, "A multiscale CNN for affordance segmentation in RGB images," in Proc. 14th European Conference on Computer Vision (ECCV), Amsterdam, Netherlands, 2016. (acceptance rate  $415/1561 = 26.6\%$ )
23. A. Roy and S. Todorovic, "Monocular depth estimation using Neural Regression Forest," in Proc. IEEE Conf. Computer Vision Pattern Recognition (CVPR), Las Vegas, NV, 2016. (spotlight presentation, acceptance rate  $643/2145 = 29.9\%$ ,  $123/2145 = 9.7\%$  spotlights)
24. B. Mahasseni and S. Todorovic, "Regularizing Long Short Term Memory with 3D human-skeleton sequences for action recognition," in Proc. IEEE Conf. Computer Vision Pattern Recognition (CVPR), Las Vegas, NV, 2016. (oral presentation, acceptance rate  $643/2145 = 29.9\%$ ,  $83/2145 = 3.9\%$  orals)
25. Z. Deng, S. Todorovic, and L. Latecki, "Semantic segmentation of RGBD images with mutex constraints," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Santiago, Chile, 2015 (acceptance rate  $602/2123 = 28.4\%$ )
26. T. Shu, D. Xie, B. Rothrock, S. Todorovic, and S.C. Zhu, "Joint inference of groups, events and human roles in aerial videos," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Boston, MA, 2015 (oral presentation, acceptance rate  $71/2123 = 3.3\%$ )
27. S. Kaltwang, S. Todorovic, and M. Pantic, "Latent trees for estimating intensity of facial action units," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Boston, MA, 2015 (acceptance rate  $602/2123 = 28.4\%$ )
28. M. Lam, J. Doppa, S. Todorovic, and T. Dietterich, "HC-Search: A new tool for structured prediction in computer vision," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Boston, MA, 2015 (acceptance rate  $602/2123 = 28.4\%$ )
29. S. Chen, A. Fern, and S. Todorovic, "Person count localization in videos from noisy foreground and detections," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Boston, MA, 2015 (acceptance rate  $602/2123 = 28.4\%$ )
30. M. Amer, P. Lei, and S. Todorovic, "HiRF: Hierarchical Random Field for collective activity recognition in videos," in Proc. 13th European Conference on Computer Vision (ECCV), Zurich, Switzerland, 2014 (acceptance rate  $362/1444=25.0\%$ )
31. S. Chen, A. Fern, and S. Todorovic, "Multi-object tracking via constrained sequential labeling," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Columbus, OH, 2014 (oral presentation, acceptance rate  $104/1807 = 5.75\%$ )

32. A. Roy and S. Todorovic, "Scene labeling using beam search under mutex constraints," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Columbus, OH, 2014 (oral presentation, acceptance rate 104/1807 = 5.75%)
33. S. Chen, Z. Feng, Q. Lu, B. Mahasseni, T. Fiez, A. Fern, and S. Todorovic, "Play type recognition in real-world football video," in Proc. IEEE Winter Conference on Applications of Computer Vision (WACV), Steamboat Springs CO, 2014.
34. D. Xie, S. Todorovic, and S. C. Zhu, "Inferring "dark matter" and "dark energy" from videos," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Sydney, Australia, 2013, (acceptance rate 413/1629=27.8%)
35. B. Mahasseni and S. Todorovic, "Latent multitask learning for view-invariant action recognition," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Sydney, Australia, 2013, (acceptance rate 413/1629=27.8%)
36. M. R. Amer, S. Todorovic, A. Fern, and S. C. Zhu, "Monte Carlo tree search for scheduling activity recognition," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Sydney, Australia, 2013, (acceptance rate 413/1629=27.8%)
37. M. Lam, J. R. Doppa, X. Hu, S. Todorovic, T. G. Dietterich, A. Reft, and M. Daly, "Learning to detect basal tubules of nematocysts in SEM images," in Proc. IEEE Int. Conf. Computer Vision Workshop, Sydney, Australia, 2013
38. X. Hu, M. Lam, S. Todorovic, T. G. Dietterich, M. A. O'Leary, A. L. Cirranello, N. B. Simmons, and P. M. Velazco, "Zero-shot learning and detection of teeth in images of bat skulls", in Proc. IEEE Int. Conf. Computer Vision Workshop, Sydney, Australia, 2013
39. B. Mahasseni, S. Chen, A. Fern, and S. Todorovic, "Detecting the Moment of Snap in Real-World Football Video", in Proc. 27th AAAI Conference on Artificial Intelligence (AAAI), Bellevue, Washington, 2013 (acceptance rate 242/975=24.8%)
40. S. Todorovic, "Human activities as stochastic Kronecker graphs," in Proc. 12th European Conference on Computer Vision (ECCV), Florence, Italy, 2012 (acceptance rate 368/1437=25.6%)
41. M. Amer, D. Xie, M. Zhao, S. Todorovic, and S.-C. Zhu, "Cost-sensitive top-down/bottom-up inference for multiscale activity recognition," in Proc. 12th European Conference on Computer Vision (ECCV), Florence, Italy, 2012 (oral presentation, acceptance rate 40/1437=2.8%)
42. W. Curran, T. Moore, T. Kulesza, W.-K. Wong, S. Todorovic, S. Stumpf, R. White, and M. Burnett, "Towards Recognizing "Cool": Can End Users Help Computer Vision Recognize Subjective Attributes of Objects in Images?" in Proc. Int. Conf. Intelligent User Interfaces (IUI), Lisbon, Portugal, 2012 (acceptance rate 15/212=7%)
43. M. Amer and S. Todorovic, "Modeling activities with stochastic structure as sum-product networks," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Providence, RI, 2012 (acceptance rate 465/1933=24%)
44. Joe Selman, Mohamed Amer, Alan Fern, and Sinisa Todorovic, "PEL-CNF: Probabilistic Event Logic Conjunctive Normal Form for video interpretation," in Proc. IEEE Int. Conf. Computer Vision (ICCV), 2nd Int. Workshop on Stochastic Image Grammars, Barcelona, Spain, 2011
45. W. Brendel, and S. Todorovic, "Learning spatiotemporal graphs of human activities," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Barcelona, Spain, 2011, (oral presentation, acceptance rate 45/1285=3.5%)
46. N. Payet and S. Todorovic, "From contours to 3D object detection and pose estimation," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Barcelona, Spain, 2011, (oral presentation, acceptance rate 45/1285=3.5%)
47. M. Amer and S. Todorovic, "A chains model for localizing group activities in videos," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Barcelona, Spain, 2011, (acceptance rate 295/1285=22.9%)
48. M. Amer, E. Bilgazyev, S. Todorovic, S. Shah, I. Kakadiaris, and L. Ciannelli, "Fine-grained categorization of fish motion patterns in underwater videos," in Proc. IEEE Int. Conf. Computer Vision (ICCV), 3rd Int. Workshop on Video Event Categorization, Tagging and Retrieval for Real-World Applications (VECTaR2011), Barcelona, Spain, 2011.

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50. W. Brendel, M. Amer, and S. Todorovic, "Multiobject tracking as maximum weight independent set," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Colorado Springs, CO, 2011, (oral presentation, acceptance rate 59/1677=3.5%)
51. N. Payet and S. Todorovic, "Scene shape from texture of objects," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Colorado Springs, CO, 2011, (acceptance rate 379/1677=22.5%)
52. N. Payet and S. Todorovic, " $(RF)^2$  — Random Forest Random Field," in Advances in Neural Information Processing Systems (NIPS), Vancouver, Canada, 2010, (acceptance rate 293/1219=24%)
53. W. Brendel and S. Todorovic, "Segmentation as Maximum-Weight Independent Set," in Advances in Neural Information Processing Systems (NIPS), Vancouver, Canada, 2010, (acceptance rate 293/1219=24%)
54. W. Brendel and S. Todorovic, "Human actions as sparse sequences of discriminative postures," in Proc. 11th European Conference on Computer Vision (ECCV), Hersonissos, Greece, 2010, (acceptance rate 287/1174=24.5%)
55. N. Payet and S. Todorovic, "From a set of shapes to object discovery," in Proc. 11th European Conference on Computer Vision (ECCV), Hersonissos, Greece, 2010, (acceptance rate 287/1174=24.5%)
56. Mohamed Amer, Raviv Raich, and Sinisa Todorovic, "Monocular Extraction of 2.1D Sketch," in Proc. IEEE Int. Conf. Image Processing (ICIP), Hong Kong, China, 2010, (acceptance rate 1190/2600=45.7%)
57. N. Ahuja and S. Todorovic, "From region based image representation to object discovery and recognition," in Proc. Structural, Syntactic, and Statistical Pattern Recognition (SSPR/SPR), Cesme, Turkey, 2010
58. W. Brendel and S. Todorovic, "Video object segmentation by tracking regions," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Kyoto, Japan, 2009, (acceptance rate 308/1571=19.6%)
59. S. Todorovic and N. Ahuja, "Texel-based texture segmentation," in Proc. IEEE Int. Conf. Computer Vision (ICCV), Kyoto, Japan, 2009, (acceptance rate 308/1571=19.6%)
60. B. Schlake, J. Edwards, J. Hart, C. Barkan, S. Todorovic, and N. Ahuja, "Machine vision condition monitoring of heavy-haul railcar structural underframe components," in Proc. Int. Heavy Haul Conf., Shanghai, China, 2009
61. N. Payet and S. Todorovic, "Matching hierarchies of deformable shapes," in Proc. 7th IAPR-TC-15 Workshop Graph-based Representations in Pattern Recognition (Gbr), Venice, Italy, 2009, (oral presentation)
62. G. Martinez, W. Zhang, N. Payet, S. Todorovic, N. Larios, A. Yamamuro, D. Lytle, A. Moldenke, E. Mortensen, R. Paasch, L. Shapiro, and T. Dietterich, "Dictionary-free categorization of very similar objects via stacked evidence trees," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Miami, FL, 2009, (acceptance rate 322/1464=22%)
63. S. Todorovic and N. Ahuja, "Scale-invariant region-based hierarchical image matching," in Proc. 19th Int. Conf. Pattern Recognition (ICPR), Tampa, FL, 2008, (oral presentation; acceptance rate 295/1631=18% )
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65. S. Todorovic and N. Ahuja, "Learning subcategory relevances to the recognition of a category," in Proc. IEEE Computer Vision Pattern Recognition (CVPR), Anchorage, AL, 2008 (acceptance rate 445/1593=27%)
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