

Pedro F. Felzenszwalb

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Education

Massachusetts Institute of Technology Ph.D. in Computer Science Thesis: Representation and Detection of Shapes in Images Advisor: W. Eric. L. Grimson	2003
Massachusetts Institute of Technology M.S. in Computer Science Thesis: Object Recognition with Pictorial Structures Advisor: W. Eric. L. Grimson	2001
Cornell University B.S. in Computer Science	1999

Appointments

Cornell University Visiting Professor, Department of Computer Science	2009 - 2010
University of Chicago Associate Professor, Department of Computer Science	2008 - present
University of Chicago Assistant Professor, Department of Computer Science	2004 - 2008
Cornell University Postdoctoral Fellow, Department of Computer Science	2003 - 2004

Professional Activities

Program chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2011
Associate editor, IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 2009 - present
Editorial board, International Journal of Computer Vision (IJCV), 2009 - present
Area chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2009, 2010
Area chair, European Conference on Computer Vision (ECCV), 2008
Area chair, IEEE International Conference on Computer Vision (ICCV), 2007
Program committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2004, 2005, 2006, 2007
Program committee, 1st International Workshop on Computer Vision Applications for Developing Regions, 2007
Organizer and presenter, Tutorial on Discrete Optimization Methods in Computer Vision at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2005

Grants and Awards

NSF CAREER Award 0746569: Object Recognition with Hierarchical Models, 2008-2013 (\$449,864)
NSF Award 0534820: The Generalized A* Architecture for Perceptual Systems, 2006-2009 (\$204,110)
Winner of the PASCAL Visual Object Detection Challenge, 2008 and 2009
Best paper, Mini-Symposium on Machine Understanding of People and Their Responses, Rank Prize Funds, 2005
Best poster, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2004
Runner up, CRA Outstanding Undergraduate Award, 1998

Teaching

Introduction to Artificial Intelligence (CMSC 25000), Winter 2009
Theory of Algorithms (CMSC 27200), Winter 2009
Topics in AI: Statistical Models for Image Analysis (CMSC 35900), Fall 2008
Computer Vision (CMSC 25040/35040), Spring 2008
Theory of Algorithms (CMSC 27200), Winter 2008
Theory of Algorithms (CMSC 27200), Winter 2007
Introduction to CS 2 (CMSC 15200), Winter 2007
Computer Vision (CMSC 25040/35040), Fall 2006
Theory of Algorithms (CMSC 27200), Winter 2006
Introduction to CS 2 (CMSC 15200), Winter 2006
Computer Vision (CMSC 25040/35040), Fall 2005
Introduction to Programming for the WWW II (CMSC 10200), Spring 2005
Introduction to CS 2 (CMSC 15200), Winter 2005
Topics in AI: Computer Vision (CMSC 35900), Fall 2004

Invited Talks

Object Detection with Discriminatively Trained Part Based Models
- Theory and Practice of Computational Learning (summer school/workshop), 2009
Hierarchical Models for Shape Recognition
- Int. Workshop on Shape Perception in Human and Computer Vision, October 2008
- CMU VASC Seminar, November 2007
- Workshop on Geometry and Statistics of Shape Spaces, SAMSI, July 2007
Efficient Belief Propagation for Early Vision
IPAM, February 2008
Object Recognition with Deformable Models
- University of Vermont, January 2008
- Penn State University, February 2008
- University of Iowa, February 2008
- University of Washington, March 2008
- UC Berkeley, March 2008
Models and Algorithms for Image Parsing
NIPS workshop, The Grammar of Vision, December 2007
Hierarchical Matching of Deformable Shapes
- Harvard University, April 2007
- MIT, April 2007
- Brown University, April 2007

A Hierarchical Representation for Matching Deformable Shapes
Workshop on Category-Level Object Recognition, Siracusa, Italy, September 2006

Representation and Detection of Deformable Shapes
Workshop on Mathematics and Image Analysis, Paris, France, September 2006

Deformable Templates
IMA, Visual learning and recognition workshop, 2006

A Global Model and Algorithm for Finding the Curves in an Image
University of Illinois at Urbana-Champaign, November 2005

Representation and Detection of Shapes in Images
- Johns Hopkins University, October 2005
- Cornell University, April 2004
- University of Illinois at Urbana-Champaign, March 2004
- University of Chicago, March 2004

Pictorial Structures for Object Recognition
Mini-Symposium on Machine Understanding of People and Their Responses, Grasmere, UK, February 2005

Learning Models for Object Recognition with the Hausdorff Distance
Cornell University, AI Seminar, February 2004

Representation and Detection of Non-rigid Objects
UC Berkeley, Computer Vision Seminar, 2003

Efficient Graph-based Image Segmentation
ALADDIN Workshop on Graph Partitioning in Vision and Machine Learning, CMU, January 2003

Learning Models for Object Recognition
MIT AI Lab Student Seminar, 2001

Computer Vision
MIT Applied Mathematics Student Seminar, May 2001

Efficient Matching of Pictorial Structures
Siemens Research, 2000

Efficiently Computing a Good Segmentation
DIMACS Workshop on Graph Theoretic Methods in Computer Vision, May 1999

Advising

Masters Thesis Advisor

Ross Girshick, Object Detection with Heuristic Coarse-to-Fine Search, 2009
Paolo Codenotti, Two-Dimensional Min-Filters with Polygons, 2006

Masters Thesis Committee

Xueyuan Zhou, Exploiting Geometric Structure of High Dimensional Data for Learning, 2008
Hung-Wu Wu, Handwriting Recognition with Elementary Geometric and Algorithmic Methods, 2006
Parinya Chalermsook, Maximum Independent Set of Rectangles, 2006

Ph.D. Thesis Committee

Qingqing Xu, One-class Boosting and its Application to Classification Problems, 2009
Leandro Cortes, Detection and Tracking of Multiple Objects in Fluorescence Microscopy, 2009
Jingbin Wang, Object Segmentation with Shape Constraints, 2007
Xiaofei He, Locality Preserving Projections, 2006
Elliot Bernstein, Statistical Models for Object Classification and Detection, 2006

Ph.D. Students

Ross Girshick, 2007-present

Eric Purdy, 2008-present

Undergraduate Students

Gabriel Bender, 2006-2008

Joshua Schwartz, 2005-2007

Trevor Smith, 2005-2006

Alexandra Shapiro, 2006

Patent

Method and apparatus for image processing employing image segmentation using tokenization.

W. Rucklidge, D. Huttenlocher, P. Felzenszwalb. US Patent No. 6,295,371. September, 2001.

Journal Publications

1. P. Felzenszwalb, R. Girshick, D. McAllester, D. Ramanan. Object Detection with Discriminatively Trained Part Based Models. To appear in the IEEE Transactions on Pattern Analysis and Machine Intelligence.
2. L. Babai, P. Felzenszwalb. Computing Rank Convolutions with a Mask. To appear in the ACM Transactions on Algorithms.
3. P. Felzenszwalb, D. McAllester. The Generalized A* Architecture. Journal of Artificial Intelligence Research, Volume 29, Pages 153-190, May 2007.
4. P. Felzenszwalb, D. Huttenlocher. Efficient Belief Propagation for Early Vision. International Journal of Computer Vision, Vol. 70, No. 1, Pages 41-54, October 2006.
5. P. Felzenszwalb. Representation and Detection of Deformable Shapes. IEEE Transactions of Pattern Analysis and Machine Intelligence, Vol. 27, No. 2, Pages 208-220, February 2005.
6. P. Felzenszwalb, D. Huttenlocher. Pictorial Structures for Object Recognition. International Journal of Computer Vision, Vol. 61, No. 1, Pages 55-79, January 2005.
7. P. Felzenszwalb, D. Huttenlocher. Efficient Graph-based Image Segmentation. International Journal of Computer Vision, Vol. 59, No. 2, Pages 167-181, September 2004.

Conference Publications

1. R. Basri, P. Felzenszwalb, R. Girshick, D. Jacobs, C. Klivans. Visibility Constraints on Features of 3D Objects. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2009.
2. P. Felzenszwalb, D. McAllester, D. Ramanan. A Discriminatively Trained, Multiscale, Deformable Part Model. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008.
3. P. Codenotti, P. Felzenszwalb. 2D Min-Filters with Polygons. Fall Workshop on Computational and Combinatorial Geometry, 2007.
4. P. Felzenszwalb, J. Schwartz. Hierarchical Matching of Deformable Shapes. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007.
5. P. Felzenszwalb, D. McAllester. A Min-Cover Approach for Finding Salient Curves. IEEE Workshop on Perceptual Organization in Computer Vision (in conjunction with CVPR), 2006.
6. D. Crandall, P. Felzenszwalb, D. Huttenlocher. Spatial Priors for Part-Based Recognition using Statistical Models. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2005.
7. P. Felzenszwalb, D. Huttenlocher. Efficient Belief Propagation for Early Vision. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2004.

8. P. Felzenszwalb, D. Huttenlocher, J. Kleinberg. Fast Algorithms for Large-State-Space HMMs with Applications to Web Usage Analysis. *Neural Information Processing Systems (NIPS)*, 2003.
9. P. Felzenszwalb. Representation and Detection of Deformable Shapes. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2003.
10. P. Felzenszwalb. Learning Models for Object Recognition. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2001.
11. T. Darrel, D. Demirdjian, N. Checka, P. Felzenszwalb. Plan-View Trajectory Estimation with Dense Stereo Background Models. *International Conference on Computer Vision (ICCV)*, 2001.
12. P. Felzenszwalb, D. Huttenlocher. Efficient Matching of Pictorial Structures. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2000.
13. D. Huttenlocher, P. Felzenszwalb, W. Rucklidge. Digipaper: A Versatile Color Document Image Representation. *International Conference on Image Processing (ICIP)*, 1999.
14. P. Felzenszwalb, D. Huttenlocher. Recognizing Flexible Objects. *IEEE Workshop on Graph Algorithms and Computer Vision (in conjunction with ICCV)*, 1999.
15. P. Felzenszwalb, D. Huttenlocher. Image Segmentation Using Local Variation. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 1998.

Other Publications

1. P. Felzenszwalb, D. McAllester. Object Detection Grammars. Technical Report, 2009.
2. D. Crandall, P. Felzenszwalb, D. Huttenlocher. Object Recognition by Combining Appearance and Geometry. In *Towards Category-Level Object Recognition*, LNCS Vol. 4170, 2006.
3. P. Felzenszwalb, D. Huttenlocher. Distance Transforms of Sampled Functions. *Cornell Computing and Information Science*, Technical Report TR2004-1963.
4. P. Felzenszwalb. Representation and Detection of Shapes in Images. Ph.D. thesis. MIT Artificial Intelligence Laboratory, Technical Report 2003-016.
5. P. Felzenszwalb. Object Recognition with Pictorial Structures. Master's thesis. MIT Artificial Intelligence Laboratory, Technical Report 2001-002.
6. P. Felzenszwalb, D. Huttenlocher. Efficiently Computing a Good Segmentation. *DARPA Image Understanding workshop*, 1998.