

ANDREW C. GALLAGHER

PROFESSIONAL EXPERIENCE

Cornell University, Visiting Research Scientist 2012-now

School of Electrical and Computer Engineering, Ithaca, NY

I conduct and supervise research with Ph.D. and M.Eng. students in the areas of computer vision, machine learning and data mining. Projects include mobile visual search and social game applications, describing people from images, and parsing 3D scene structure. In addition to research, I supervise the Advanced Multimedia Processing Lab.

Eastman Kodak Company, Senior Principal Research Scientist 1996-2012

Kodak Research Laboratories, Rochester, NY

At Kodak, I researched, invented, coded, and tested image enhancement and understanding algorithms on huge datasets. My code and algorithms were commercialized as “Kodak Perfect Touch” and shipped in millions of digital cameras, inkjet printers, and photofinishing products and have been applied to billions of images.

In addition to providing technical leadership, I generated a great deal of intellectual property, still of high commercial value, and analyzed both internal patent strategy and competitor's patent positions. As a senior researcher, I often led project teams, mentored interns and junior scientists, and presented technology to senior management.

EDUCATION

Carnegie Mellon University, Pittsburgh, PA 2009

Doctor of Philosophy, Electrical and Computer Engineering (4.0/4.0)

Focus: Machine Learning and Computer Vision

Rochester Institute of Technology, Rochester, NY 2000

Master of Science, Electrical Engineering (4.0/4.0)

Focus: Signal, Image, and Video Processing

Geneva College, Beaver Falls, PA

Bachelor of Science, Electrical Engineering (4.0/4.0)

PUBLICATIONS

Over 35 peer-reviewed conference and journal publications, most in top-tier publications.

Conference titles:

- A. Kowdle, A. Gallagher, T. Chen, [Combining Monocular Geometric Cues with Traditional Stereo Cues for Consumer Camera Stereo](#), ECCV Workshop on Unsolved Problems in Optical Flow and Stereo Estimation, 2012.
- H. Chen, A. Gallagher, B. Girod, [Describing Clothing by Semantic Attributes](#), ECCV 2012.
- A. Deever, A. Gallagher, [Semi-Automatic Assembly of Real, Cross-cut Shredded Documents](#), ICIP 2012.
- A. Gallagher, [Jigsaw Puzzles with Pieces of Unknown Orientation](#), CVPR 2012.
- Z. Jia, Y.-J. Chang, A. Gallagher, T. Chen, [A Learning-Based Framework for Depth Ordering](#), CVPR 2012.
- M. Park, J. Luo, A. Gallagher, M. Rabbani, Learning to Produce 3D Media from a Captured 2D Video, ACM Multimedia, 2011.
- A. Gallagher, D. Batra, D. Parikh, [Inference for Order Reduction in MRFs](#), CVPR 2011.
- A. Kowdle, Y. Chang, A. Gallagher, T. Chen, [Active Learning for Piecewise Planar 3D Reconstruction](#), CVPR 2011.
- A. Gallagher, [Detecting Anaglyph Images with Channel Alignment Features](#), ICIP 2010.
- C. Li, A. Gallagher, A. Loui, T. Chen, [Aesthetic Visual Quality Assessment of Consumer Photos with Faces](#), ICIP 2010.
- J. Xin, A. Gallagher, L. Cao, J. Luo, J. Han, [The Wisdom of Social Multimedia: Using Flickr For Prediction and Forecast](#), ACM Multimedia 2010.
- G. Wang, A. Gallagher, J. Luo, D. Forsyth, [Seeing People in Social Context: Recognizing People and Social Relationship](#), ECCV 2010.
- D. Batra, A. Gallagher, D. Parikh, T. Chen, [Beyond Trees: MRF Inference via Outer-Planar Decomposition](#), CVPR 2010.
- L. Cao, J. Luo, A. Gallagher, X. Jin, J. Han, T. Huang, [A Worldwide Tourism Recommendation System Based On Geotagged Web Photos](#), ICASSP 2010.
- D. Joshi, A. Gallagher, J. Yu, J. Luo, Exploring User Image Tags For Geo-Location Inference, ICASSP 2010.
- A. Gallagher, A. Blose, T. Chen, [Jointly Estimating Demographics and Height with a Calibrated Camera](#), ICCV 2009.
- A. Gallagher, D. Joshi, J. Yu, J. Luo, Geo-location inference from image content and user tags, CVPR Internet Vision Workshop 2009.
- A. Gallagher, T. Chen, [Understanding Images of Groups of People](#), CVPR 2009.
- A. Gallagher, T. Chen, [Finding Rows of People in Group Images](#), ICME 2009.
- A. Gallagher, C. Neustaedter, J. Luo, L. Cao, T. Chen, [Image Annotation Using Personal Calendars as Context](#), ACM Multimedia 2008.
- A. Gallagher, T. Chen, [Estimating Age, Gender and Identity using First Name Priors](#), CVPR 2008.
- A. Gallagher, T. Chen, [Clothing Cosegmentation for Recognizing People](#), CVPR 2008.
- A. Gallagher, T. Chen, [Image Authentication by Detecting Traces of Demosaicing](#), CVPR Vision of the Unseen Workshop, 2008.

P. Singla, H. Kautz, J. Luo, A. Gallagher, [Discovery of Social Relationships in Consumer Photo Collections Using Markov Logic](#), CVPR Vision of the Unseen Workshop, 2008.

A. Gallagher, T. Chen, [Using a Markov Network to Recognize People in Consumer Images](#), ICIP 2007.

A. Gallagher, M. Das, A. Loui, [User-Assisted People Search in Consumer Image Collections](#), ICME 2007.

A. Gallagher, T. Chen, [Using Group Prior to Identify People in Consumer Images](#), CVPR SLAM Workshop 2007. **Best Paper Award.**

A. Gallagher, [Using Vanishing Points To Correct Camera Rotation In Images](#), Canadian Conference on Computer and Robot Vision (CRV 2005).

A. Gallagher, [Detection of Linear and Cubic Interpolation in JPEG Compressed Images](#), Canadian Conference on Computer and Robot Vision (CRV 2005).

A. Gallagher, J. Luo, W. Hao, [Improved Blue Sky Detection Using Polynomial Model Fit](#), ICIP 2004.

Journal titles:

M. Park, J. Luo, A. Gallagher, M. Rabbani, [Learning to Produce 3D Media from a Captured 2D Video](#), *IEEE Trans. Multimedia*, 2012.

M. Park, J. Luo, A. Gallagher, [Toward Assessing and Improving the Quality of Stereo Images](#), *IEEE Journ. of Selected Topics in Signal Proc.*, 2012.

Jiebo Luo, Dhiraj Joshi, Jie Yu, A. Gallagher, [Geotagging in multimedia and computer vision-a survey](#), *Multimedia Tools and Applications*, 2011.

Dhiraj Joshi, A. Gallagher, Jie Yu, Jiebo Luo, [Inferring photographic location using geotagged web images](#), *Multimedia Tools and Applications*, 2010.

A. Gallagher, T. Chen, [Using Context to Recognize People in Consumer Images](#), *IPSI Transactions on Computer Vision and Applications*, 2009.

A. Gallagher, [A Ground Truth Based Vanishing Point Detection Algorithm](#), *Pattern Recognition*, Vol. 35, No. 7, pp. 1527-1543, 2002.

PATENTS

100+ issued U.S. Patents describing methods and systems for image enhancement, image analysis and understanding, and improvements to image sensor designs. Of these, I am the sole inventor and author for 25 issued patents, and I have collaborated with over 50 different co-inventors. About 90 of these patents were part of Kodak's Digital Imaging Patent Portfolio of about 1100 patents that generated over \$2B in licensing revenue from 2004-2012 and, in 2012, generated bids over \$500M.

List of Granted U.S. Patents as of November 16, 2012:

	Title	Inventors	Number	Priority Date
101	User Interface for face recognition	A. Gallagher, A. Loui, C. Cerosaletti, S. Hibino, M. Das, P. Stubler	US8315463	14-Nov-2006
100	Estimating aesthetic quality of digital images	C. Cerosaletti, A. Loui, A. Gallagher	US8311364	25-Sep-2009
99	Remote determination of image-acquisition settings and opportunities	J. Fredlund, B. Pillman, A. Gallagher, A. Blose, J. Border, K. Gobeyn, R. Wheeler, M. Telek	US8305452	2-Jun-2011
98	Producing object cutouts in topically related images	J. Luo, D. Batra, A. Gallagher	US8280164	4-Mar-2009
97	Method for comparing photographer aesthetic quality	C. Cerosaletti, A. Loui, A. Gallagher	US8238615	25-Sep-2009
96	Estimating gender or age of a photographer	A. Gallagher, A. Deever	US8200076	19-May-2010
95	Determining camera activity from a steadiness signal	A. Gallagher, A. Deever	US8180209	19-May-2012
94	Identifying a photographer	A. Gallagher, A. Deever	US8180208	19-May-2012
93	Grouping images by location	A. Gallagher, M. Das, A. Loui, J. Farmer	US8150098	20-Dec-2007
92	Determining scene distance in digital camera images	E. Gindele, A. Gallagher, A. Enge	US8073318	1-Feb-2005
91	Finding orientation and date of hardcopy medium	A. Gallagher, L. Beato	US8036417	11-Jun-2008
90	Identifying unique objects in multiple image collections	A. Gallagher	US8024343	7-Apr-2006
89	Determining the age of a human subject in a digital image	A. Gallagher	US8000505	1-Sep-2004
88	Method for automatically generating a dynamic digital metadata record from digitized hardcopy media	L. Beato, A. Scalise, J. Manico, A. Gallagher	US7982909	21-Apr-2006
87	Discovering social relationships from personal photo collections	J. Luo, P. Singla, H. Kautz, A. Gallagher	US7953690	25-Jan-2008
86	Digital camera which estimates and corrects small camera rotations	A. Gallagher, K. Parulski	US7893963	27-Mar-2000
85	Classifying image regions based on picture location	J. Luo, A. Gallagher	US7860320	26-Jun-2006
84	Image processing based on ambient air attributes	A. Gallagher	US7831100	11-Jan-2005
83	Adjusting digital image exposure and tone scale	A. Gallagher, N. Cahill, G. Fielding, L. Ray, E. Gindele	US7821570	30-Nov-2005
82	Detecting compositing in a previously compressed image	J. Luo, A. Gallagher	US7720288	21-Mar-2006
81	Finding images with multiple people or objects	A. Gallagher	US7711145	27-Jan-2006
80	Method and apparatus to extend the effective dynamic range of an image sensing device	A. Gallagher, D. Nichols	US7697045	13-Jul-2000
79	Camera using multiple lenses and image sensors in a rangefinder configuration to provide a range map	J. Border, A. Enge, E. Morales, B. Pillman, K. Jacoby, J. Adams, Jr., R. Palum, A. Gallagher	US7683962	9-Mar-2007
78	Correction of redevye defects in images of humans	A. Gallagher, J. Schildkraut	US7684642	3-Mar-2004
77	Method of processing an image to form an image pyramid	A. Gallagher, J. Snyder	US7672528	26-Jun-2003

76	Forming connections between image collections	A. Gallagher	US7668405	7-Apr-2006
75	Location based image classification with map segmentation	A. Gallagher, B. Kraus, A. Loui	US7663671	22-Nov-2005
74	Method and apparatus to extend the effective dynamic range of an image sensing device	A. Gallagher, D. Nichols	US7623168	13-Jul-2000
73	Method for adjusting the brightness of a digital image utilizing belief values	J. Luo, M. Dupin, A. Gallagher	US7609908	30-Apr-2003
72	Image processing based on ambient air attributes	A. Gallagher	US7606437	11-Jan-2005
71	Image processing based on direction of gravity	A. Gallagher	US7583858	12-Oct-2004
70	Using photographer identity to classify images	A. Gallagher, J. Weldy	US7574054	25-Oct-2008
69	Selection of alternative image processing operations to maintain high image quality	K. Spaulding, E. Gindele, A. Gallagher, R. Ptucha, J. Snyder, W. Fintel	US7570829	17-Feb-2005
68	Using time in recognizing persons in images	A. Gallagher, M. Das, P. Stubler	US7522773	28-Apr-2005
67	Detecting irises and pupils in images of humans	A. Gallagher	US7444017	10-Nov-2004
66	Applying an adjusted image enhancement algorithm to a digital image	K. Spaulding, R. Ptucha, E. Gindele, A. Gallagher	US7428332	14-Jan-2004
65	Determining scene distance in digital camera images	E. Gindele, A. Gallagher, A. Enge	US7389041	1-Feb-2005
64	Detection of hanging wires in digital color images	A. Gallagher	US7356193	1-Apr-2004
63	Detection of sky in digital color images	A. Gallagher, J. Luo, W. Hao	US7336819	29-Dec-2003
62	Selecting an image processing path to provide desired noise	A. Gallagher, M. Oehlbeck, N. Rodriguez	US7333669	28-Jun-2001
61	Method for determining image correction parameters	A. Gallagher	US7327390	4-Feb-2003
60	Method of detecting clipped image pixels	A. Gallagher	US7327504	6-Dec-2002
59	Constructing extended color gamut digital images from limited color gamut digital images	K. Spaulding, A. Gallagher, E. Gindele, R. Ptucha	US7308135	14-Jan-2004
58	Method of spatially filtering a digital image using chrominance information	A. Gallagher, E. Gindele	US7280703	14-Nov-2002
57	Sharpening a digital image in accordance with magnification values	G. Braun, A. Gallagher, R. Ptucha	US7269300	24-Oct-2003
56	Method for detecting image interpolation	A. Gallagher	US7251378	27-Oct-2000
55	Applying a tone scale function to a digital image	A. Gallagher, E. Gindele	US7245781	23-Oct-2003
54	Method for sharpening a digital image	A. Gallagher, E. Gindele	US7228004	5-Sep-2002
53	Electronic imaging system having a sensor for correcting perspective projection distortion	N. Cahill, A. Gallagher	US7224392	17-Jan-2002
52	Multiresolution method of spatially filtering a digital image	E. Gindele, A. Gallagher	US7181086	6-Jun-2002
51	Enhancing the tonal and color characteristics of digital images using expansive and compressive tone scale functions	E. Gindele, A. Gallagher	US7130485	2-Oct-2002
50	Enhancing the tonal and spatial characteristics of digital images using selective spatial filters	E. Gindele, A. Gallagher	US7116838	25-Oct-2002
49	Method and system for selectively applying enhancement to an image	J. Luo, A. Gallagher, A. Singhal, R. Gray	US7092573	10-Dec-2001
48	Method and apparatus for performing tone scale modifications on a sparsely sampled extended dynamic range digital image	A. Gallagher, E. Gindele	US7068396	21-Nov-2000
47	Method for estimating the appearance of noise in images	A. Gallagher, K. Chen	US7062108	12-Jun-2001
46	Enhancing the tonal, spatial, and color characteristics of digital images using expansive and compressive tone scale functions	E. Gindele, A. Gallagher	US7058234	25-Oct-2002
45	Method and system for improving an image characteristic based on image content	A. Gallagher, W. Bruuchs	US7050636	7-Dec-2001

44	Enhancing the tonal characteristics of digital images using expansive and compressive tone scale functions	E. Gindele, A. Gallagher	US7043090	2-Oct-2002
43	Method for constructing an extended color gamut digital image from a limited color gamut digital image	A. Gallagher, E. Gindele	US7035460	31-May-2002
42	Image processing system and method that maintains black level	A. Gallagher, E. Gindele	US7006252	17-Oct-2001
41	Method of estimating and correcting camera rotation with vanishing point location	A. Gallagher	US6968094	27-Mar-2000
40	Method for sharpening a digital image with signal to noise estimation	A. Gallagher	US6965702	27-Feb-2002
39	Method and apparatus to extend the effective dynamic range of an image sensing device and use residual image	A. Gallagher, K. Spaulding	US6943831	24-Jan-2001
38	Method for compensating a digital image for light falloff while minimizing light balance change	A. Gallagher	US6940546	4-Apr-2001
37	Method of and system for automatically determining a level of light falloff in an image	A. Gallagher	US6941027	27-Jul-2000
36	Method of enhancing the tone scale of a digital image to extend the linear response range without amplifying noise	E. Gindele, A. Gallagher	US6937775	15-May-2002
35	Method for making an exposure adjustment on a rendered image	A. Gallagher	US6931161	22-Jul-2002
34	Method and apparatus to extend the effective dynamic range of an image sensing device	A. Gallagher, D. Nichols	US6909461	13-Jul-2000
33	Method for detecting image interpolation	A. Gallagher	US6904180	27-Oct-2000
32	Method for sharpening a digital image without amplifying noise	A. Gallagher	US6891977	27-Feb-2002
31	Method and system for generating a low resolution image from a sparsely sampled extended dynamic range image sensing device	E. Gindele, A. Gallagher	US6873442	7-Nov-2000
30	Appliance communication system	A. Gallagher	US6873255	14-Sep-2002
29	Method for enhancing a digital image based upon pixel color	A. Gallagher, E. Gindele	US6856704	13-Sep-2000
28	System and method for selecting an image processing path using estimated appearance of noise	A. Gallagher	US6856702	28-Jun-2001
27	Method and apparatus for exposure control for a sparsely sampled extended dynamic range image sensing device	E. Gindele, A. Gallagher	US6813046	7-Nov-2000
26	Noise reduction method utilizing color information, apparatus, and program for digital image processing	E. Gindele, A. Gallagher	US6807300	20-Jul-2000
25	Method for enhancing a digital image with noise-dependent control of texture	A. Gallagher, E. Gindele	US6804408	22-Dec-1999
24	Method of determining vanishing point location from an image	A. Gallagher	US6778699	27-Mar-2000
23	Method for compressing an image from a sparsely sampled extended dynamic range image sensing device	A. Gallagher, M. Rabbani, E. Gindele, R. Gray	US6765611	21-Nov-2000
22	Method for enhancing the edge contrast of a digital image independently from the texture	A. Gallagher, E. Gindele	US6731823	22-Dec-1999
21	Method of compensating for MTF in a digital image channel	A. Gallagher, R. Parada	US6728003	4-Apr-2000
20	Adjusting the contrast of a digital image with an adaptive recursive filter	A. Gallagher	US6728416	8-Dec-1999
19	Method and apparatus for enhancing the edge contrast of an interpolated digital image	A. Gallagher, E. Gindele	US6714688	10-Nov-2000
18	Method for modification of non-image data in an image processing chain	P. Burns, A. Gallagher, A. Lopez-Estrada	US6707950	22-Jun-1999
17	Method and system for correcting non-symmetric distortion in an image	A. Gallagher	US6707998	14-May-2002

16	Method for compensating digital images for light falloff and an apparatus therefor	A. Gallagher, E. Gindele	US6670988	16-Apr-1999
15	Method and system of noise removal for a sparsely sampled extended dynamic range image sensing device	E. Gindele, A. Gallagher	US6646246	21-Nov-2000
14	Color image reproduction of scenes with preferential color mapping and scene-dependent tone scaling	E. Gindele, K. Topfer, J. Buhr, G. Woolfe, A. Gallagher	US6594388	25-May-2000
13	Method of estimating image format and orientation based upon vanishing point location	A. Gallagher	US6591005	27-Mar-2000
12	Method for enhancing the edge contrast of a digital image	A. Gallagher, E. Gindele	US6580835	2-Jun-1999
11	System and method for light falloff compensation in an optical system	A. Gallagher, E. Gindele	US6577378	22-Aug-2000
10	Method for preserving spatial detail when applying a multidimensional tonal transform to a digital color image	E. Gindele, A. Gallagher	US6549678	29-Jan-1999
9	Sparsely sampled image sensing device with color and luminance photosites	E. Gindele, A. Gallagher	US6476865	7-Mar-2001
8	Method for preserving image detail when adjusting the tone scale of a digital color image	A. Gallagher, E. Gindele	US6453075	31-Dec-1998
7	Method for compensating image color when adjusting the contrast of a digital color image	A. Gallagher, E. Gindele	US6438264	31-Dec-1998
6	Method for preserving spatial detail and color content when adjusting the tone scale of a digital color image	A. Gallagher, E. Gindele	US6408103	31-Dec-1998
5	Method for modifying the perspective of a digital image	A. Gallagher	US6400848	30-Mar-1999
4	Method for preserving image detail when adjusting the contrast of a digital image	A. Gallagher, E. Gindele	US6317521	6-Jul-1998
3	Method for adjusting the tone scale of a digital image	A. Gallagher, E. Gindele	US6275605	18-Jan-1999
2	Method for adjusting image detail to compensate for an applied tone scale	A. Gallagher, E. Gindele	US6167165	25-Nov-1998
1	Method and apparatus for area selective exposure adjustment	R. Goodwin, A. Gallagher	US5818975	28-Oct-1996

TEACHING AND INVITED TALKS

Nov. 2012	Putting the Pieces Together: Assembling Puzzles and Shredded Documents, Carnegie Mellon VASC Seminar.
Oct. 2012	Tutorial “ Visual Processing for Social Media ,” taught at IEEE International Conference for Image Processing, 2012.
Jan.-May 2012	Taught CSC108 Computer Applications, University of Rochester. This course enrolled 99 students and 5 TA’s, and covered Microsoft Office, Adobe Photoshop and After Effects, and Google SketchUp.
May 2011	Solving Jigsaw Puzzles by Measuring Puzzle Piece Compatibility, AI Seminar, Cornell University.
Apr. 2011	Humans and Computer Vision: The Loop, IPP Symposium, Brown University.
Mar. 2011	The Loop: People and Computer Vision, Rochester Society for Imaging Science and Technology.
Jul. 2010	Using a Camera to Measure People, Summer Math Institute, Rochester Institute of Technology.
Apr. 2010	Using Social Context to Understand Images of People, RIT Computer Engineering Graduate Seminar.
Dec. 2009	Graph Decomposition for Solving Inference Problems, Rochester Institute of Technology.
Nov. 2009	Using Social Context to Understand Images of People, Massachusetts Institute of Technology, CSAIL.
Jan.-May 2007	Recitation leader: 18-396 Signals and Systems, Carnegie Mellon University.
Sep.-Dec. 2006	Recitation leader: 18-396 Signals and Systems, Carnegie Mellon University.

AWARDS AND MEDIA

- 2012 Media related to solving world's largest jigsaw puzzles: [\[NewScientist\]](#) [\[SlashDot\]](#) [\[Phys.org\]](#) [\[MSNBC\]](#).
- 2011 Distinguished Reviewer Award, IEEE Conference on Computer Vision and Pattern Recognition.
- 2007 Best Paper Award, Semantic Learning Applications and Multimedia Workshop, IEEE CVPR, 2007.
- 2007 Best Class Project for the course "Learning-Based Methods in Vision", 16-721 at Carnegie Mellon University.
- 2006-2007 Nicolas Minnici Dean's Graduate Fellowship, Carnegie Mellon University Electrical and Computer Engineering Department, Fall 2006-Spring 2007.
- 2005 Eastman Kodak's *Eastman Innovation Award*, Kodak's most prestigious technology award with a prize of \$50,000, for innovations deemed essential to the success of Kodak's digital products. This award, shared with Edward B. Gindele, is related to image enhancement algorithms in Kodak Perfect Touch Software and powers nearly all of Kodak's consumer products.
- 2006 Media related to patent US8000505: Redeye predicts age in humans [\[Discovery News\]](#).
- 2004 Kodak Distinguished Inventor award for earning 20 U.S. Patents for the Eastman Kodak Company.

PROFESSIONAL ACTIVITIES

- 2012 Organizer, Video Content Analysis Session, Japan-American Frontiers of Engineering, sponsored by the National Academy of Engineering
- 2012 Served as a Science Peer Reviewer for the New Zealand Ministry of Business, Innovation & Employment
- 2011 Awards Chair, Rochester Section IEEE
- 2010 Co-Chair, Advancing Computer Vision with Humans in the Loop (ACHVL), a CVPR 2010 workshop.
- 2009-2010 Chair, Rochester Section IEEE Signal Processing Society
- 2008-2010 Organizer (2008) and Chair (2009, 2010), Western New York Image Processing Workshop

Technical Program Committee:

2010 ACM Multimedia Content Track, 2012 ICPR

Reviewer for:

SIGGRAPH Asia

IEEE ICCV, IEEE CVPR, IEEE ICIP, IEEE ICME, ECCV, AAAI

IEEE Trans. on Multimedia

IEEE Trans. on Information and Forensics

IEEE Trans. on Image Processing

IEEE Trans. on Pattern Recognition and Machine Intelligence

Computer Vision and Image Understanding

International Journal of Computer Vision

Journal of Electronic Imaging