NOEL C. F. CODELLA, PH.D.

noel.codella@gmail.com | www.noelcodella.com

Synopsis

- Graduate of Columbia University and Cornell University.
- Expertise includes Machine Learning, Computer Vision, Cross-Domain Few-Shot Learning, Transformers. Additional Expertise in Healthcare: Medical Imaging, Biomedical Engineering, Biology, and Physiology.
- Publications in major venues such as Nature Medicine, Lancet Oncology, ICLR, ICCV, ECCV, MICCAI.
- Over 4500 citations, with an h-index of 28, and an i10-index of 49, according to Google Scholar. Current citation rate exceeds 100 per month.
- First to develop an artificial intelligence system capable of diagnosing melanoma from dermoscopy images with an accuracy higher than the average expert dermatologist. This work was covered in prominent media outlets (CNN, MedGadget, etc., see below).
- Co-organizer of the International Skin Imaging Collaboration (ISIC) challenges on skin cancer classification, which have received over 120,000 total submissions to continuous live challenges, and 6,400 registrants over five years. Hosted at venues such as ISBI 2016-2017, MICCAI 2018-2020.
- Co-organizer of Cross-Domain Few-Shot Learning Challenge and Benchmark @ CVPR 2020.
- Co-Chair of 5 workshops @ CVPR 2019-2021 related to skin imaging and few-shot learning, with over 200 paper submissions, and an audience of 100+ attendees.
- Area Chair for ICLR 2018, 2019, 2022.
- Organizer IBM Research Booth presence @ CVPR 2018-2020.
- Contributed code to the IBM Watson Visual Recognition services.
- Pioneered the first study using cardiac anatomy as a biometric.
- Inventor of neural interface intellectual property (see patents).

Media Coverage

- **MedGadget**: Using Watson to Diagnose Skin Cancer: Interview with IBM Computer Vision Scientist, Noel Codella. https://www.medgadget.com/2017/06/using-watson-diagnose-skin-cancer-interview-ibm-computer-vision-scientist-noel-codella.html
- **CNN**: IBM uses a smartphone to help diagnose skin cancer. http://money.cnn.com/2016/11/14/technology/ibm-skin-cancer-smartphone/index.html
- **Mashable**: IBM's smart skin cancer detection tech is as accurate as expert dermatologists. http://mashable.com/2016/11/15/ibm-research-melanoma-testing-with-phone-camera/
- **ZDnet:** IBM's computer vision zeros in on identifying skin cancer. http://www.zdnet.com/article/ibms-computer-vision-research-zeroes-in-on-identifying-skin-cancer/
- **Medium:** Visual recognition could help detect skin cancer. https://medium.com/cognitivebusiness/visual-recognition-could-help-detect-skin-cancer-6e3f3796f877
- **VentureBeat**: Skin cancer meets its worst nightmare: IBM. https://venturebeat.com/2014/12/17/skin-cancer-meets-its-worst-nightmare-ibm/
- **SoundCloud:** Using Cognitive Computing to Visually Analyze Skin Cancer. **Audio Interview.** https://soundcloud.com/ibmresearch/using-cognitive-computing-to-visually-analyze-skin-cancer
- **IBM Research Blog:** Identifying skin cancer with computer vision https://www.ibm.com/blogs/research/2016/11/identifying-skin-cancer-computer-vision/
- **IBM Press Release:** IBM Research Scientists Investigate Use of Cognitive Computing-Based Visual Analytics for Skin Cancer Image Analysis. https://www.prnewswire.com/news-releases/ibm-research-scientists-investigate-use-of-cognitive-computing-based-visual-analytics-for-skin-cancer-image-analysis-300011209.html

Skills & Abilities

RESEARCH

- Computer Vision, Machine Learning, Image Processing, Software Engineering, Signal Processing, MR Image Reconstruction (non- Cartesian Radial k-space), MR Pulse Sequence Design, MR Motion Compensation Techniques

PROGRAMMING EXPERIENCE

- Keras/TensorFlow, Python, Theano, Caffe, Torch, C++, C, Java, Shell Scripting, MATLAB, EPIC, Lisp, Visual Basic, SQL, CGI, SOAP, Assembly

LEADERSHIP

- Mentored 6 Research Interns: 3 in Microsoft, 1 in IBM Research AI (ECCV submission), 2 in IBM Research Africa (NeurIPS Workshop)
- Computer Vision & Multimedia Professional Interest Community Chair, IBM Research AI (2018-Present)
- Technical Coordinator for collaborations with Cornell University and Memorial Sloan-Kettering (2013 – Present).
- International Skin Imaging Collaboration (ISIC) Melanoma Recognition Challenge Co-Organizer (2016 – Present).

Work Experience

PRINCIPAL RESEARCHER | MICROSOFT | SEPT 2020 – PRESENT

- Large-scale vision & text research.

GUEST LECTURER: COMPUTER VISION | COLUMBIA UNIVERSITY | SEPT 2018 – DEC 2018

- Guest lecturer for EECS6894 Graduate Computer Vision class. Topic: Medical Imaging.

GUEST LECTURER: COMPUTER VISION | NYU TANDON SCHOOL OF ENGINEERING | SEPT 2016 – DEC 2016

- Guest lecturer for CS-GY-6643 Graduate Computer Vision class. Topic: Medical Imaging.

ADJUNCT FACULITY| STEVENS INSTITUTE OF TECHNOLOGY| AUG 2014 – AUG 2016

- Taught CS541 graduate level class on Artificial Intelligence

RESEARCH STAFF MEMBER | IBM T.J. WATSON RESEARCH CENTER | OCT 2011 - PRESENT

- Computer Vision Research and Development.
  - Lead project with intern on cross-domain few-shot learning. Workshop @ CVPR 2020-2021, paper ECCV 2020.
  - Lead 5 years of public challenges on skin cancer classification at ISBI, MICCAI, and Kaggle.
  - Contributed to IBM Watson Visual Recognition Service.
  - Developed interpretable and explainable AI system for melanoma classification.
  - Developed first method to segment both healthy and diseased skin from natural photographs
  - Developed first melanoma recognition technology for dermoscopic photos to surpass accuracy of expert clinicians.
  - Worked to develop novel deep learning approaches for EEG analysis.
  - Applied deep learning to public pathology dataset to achieve top performance.
  - Applied deep learning to public medical image modality dataset to achieve top performance.
- Implemented Large-Scale Machine Learning on Hadoop (800 core cluster)
- Participated in National Institute for Standards and Technology (NIST) TRECVID Video Retrieval Conference
- Developed first described biometrics system based on cardiac anatomy.
- Developed satellite image classification and retrieval system.

POSTDOCTORAL RESEARCHER | IBM T.J. WATSON RESEARCH CENTER | DEC 2010 – OCT 2011

- Large-scale Multimedia Analytics. Projects included video event retrieval, satellite image classification, biometrics, social media event detection.

SOFTWARE ENGINEER | INFOVALUE, INC. | MAY 2004 – AUGUST 2004

- Worked on porting on-demand video servers and clients from Windows to Linux platforms. Also built a SOAP web-browser based server control panel.

Education

PH.D. | JULY 2005 - NOV 2010 | JOAN & SANFORD I. WEILL MEDICAL COLLEGE OF CORNELL UNIVERSITY

- Department of Physiology, Biophysics, and Systems Biology (PBSB)
- Developed and implemented software solutions for cardiac MRI image processing, image reconstruction, image acquisition, and cardiac electrophysiological modeling:
  - **Automated Left Ventricular Segmentation**. Enabled the additional diagnoses of diastolic dysfunction, as compared to manual analyses by expert cardiologists and radiologists.
  - **Self-Calibrating Parallel Image Reconstruction**. Enabled faster, higher quality MRI images.
  - **Free-Breathing Cardiac Cine Data Acquisition Strategies.** Improved comfort and reduced scanning time for patients during cardiac examinations.
  - **Cardiac Electrophysiology Modeling.** Designed and implemented the CardiacModeling.org open-source cardiac electrophysiological modeling framework.

M.ENG. | SEPT 2004 - MAY 2005 | CORNELL UNIVERSITY

- Department of Computer Science
  - Master's Thesis: Medical Imaging, Vascular Tracking
  - Minor Focus: System Security

B.S. | SEPT 2001 – MAY 2004 | COLUMBIA UNIVERSITY

- Department of Computer Science
  - Major Focus: Theory of Computation

Honors & Awards

IBM OUTSTANDING RESEARCH ACCOMPLISHMENT AWARD (2019)

- Trustworthy AI

IBM EMINENCE AND EXCELLENCE AWARD (2018)

- Image Analysis for Melanoma Detection

IBM OUTSTANDING TECHNICAL ACHIEVEMENT AWARD (2018)

- Image Analysis for Melanoma Detection

IBM RESEARCH IMAGE AWARD (2016)

- For significant contributions to IBM's public image through work on skin image analysis.

IBM INVENTION ACHIEVEMENT AWARDS (2013, 2014, 2016, 2017, 2018)

- First, second, third, and fourth plateaus, for multiple patenting filing activities.

IBM RESEARCH DIVISION AWARD (2013)

· For contributions to visual recognition technologies

IBM EMINENCE AND EXCELLENCE AWARD (2012)

· For efforts in organizing Greater New York Multimedia and Vision Workshop

IMAGECLEF MEDICAL MODALITY RECOGNITION CHALLENGE, 1ST PLACE (2013)

· For development of machine learning technologies that contributed to 1st place in ImageCLEF

HONOR GRADES IN GRADUATE CLASSES (2006 – 2007)

· Human Physiology

· Logic & Biological Experimental Design

CORNELL UNIVERSITY BITS ON OUR MIND (BOOM) BEST IN CATEGORY: BIOLOGICAL SCIENCE (2006)

· For development of robust vessel tracking algorithm

Technical Community Service Work

IBM Research

· IBM Engagement Catalyst for AI (2020-Current)

· IBM Computer Vision & Multimedia Professional Interest Community (PIC) Chair (2017-Current)

· IBM Global Technology Outlook (GTO) Advocate for Department of Cognitive Computing (2017)

· IBM Employee Charitable Contribution Campaign (ECCC) Canvasser (2016)

· IBM Research Culture Club Member & IBM 5K Co-Organizer (2014-Present)

· IBM Research Perception Professional Interest Community (PIC) Seminar Coordinator (2014-2017)

· Department Seminar Co-Organizer: Intelligent Information Management Department

· Assistant Teacher: Algorithms: IBM Family Science Saturdays

Professional

· CVPR Workshop Co-Founder / Co-Organizer: Skin Image Analysis (2019-2021), Learning with Limited Labels (2020-2021)

· International Conference on Learning Representations (ICLR) 2018, 2019, 2022 Area Chair

· NIPS 2018 Reviewer

· Associate Editor IEEE Journal of Biomedical and Health Informatics, Special Issue on Skin Image Analysis

· MICCAI ISIC Challenge Co-Organizer (2018-2020)

· IEEE International Symposium on Biomedical Imaging (ISBI) ISIC Challenge Co-Organizer (2016-2017)

· Circulation: Cardiovascular Quality and Outcomes Reviewer (2017)

· Circulation: Cardiovascular Imaging Reviewer (2017)

· IEEE Transactions on Medical Imaging (TMI) Reviewer (2015-2016)

· IEEE Signal Processing Letters Reviewer (2015)

· IEEE Transactions on Image Processing (TIP) Reviewer (2012-2015)

· IEEE EMBC 2009 Reviewer (Biomedical Imaging & Image Processing).

· Technical Program Committee Member: 2nd ACM Multimedia Workshop on Geotagging and Applications

· Panel Chairman: 3rd Greater New York Area Mutlimedia and Vision Meeting

· Poster and Medical Imaging Session Chairman: 2nd Greater New York Area Mutlimedia and Vision Meeting

Community

- Graduate Student Executive Council Webmaster: Weill Cornell Medical College
- Housing Student Representative: Weill Cornell Medical College
- Physiology Department Student Representative

Select Publications

FIRST AUTHOR PUBLICATIONS

- **Guo Y*, Codella N*,** Karlinkshy L, Smith JR, Rosing T, Feris R. A New Benchmark for Evaluation of Cross-Domain Few-Shot Learning. ECCV 2020. Available: https://arxiv.org/pdf/1912.07200, (*Contributed equally)
- **Codella N,** Hind M, Ramamurthy K, Campbell M, Dhurandhar A, Varshney KR, Wei D, Mojsilovic A. Teaching AI to Explain its Decisions Using Embeddings and Multi-Task Learning. ICML HILL Workshop. 2019
- **Codella N,** Lin CC, Halpern A, Hind M, Feris R, Smith J. "Collaborative Human-AI (CHAI): Evidence-Based Interpretable Melanoma Classification in Dermoscopic Images." First MICCAI Workshop on Interpretability of Machine Intelligence in Medical Image Computing (IMIMIC). https://arxiv.org/abs/1805.12234
- **Codella N**, Anderson D, Philips T, Porto A, Massey K, Snowdon J, Feris R, Smith J. Segmentation of both Diseased and Healthy Skin from Clinical Photographs in a Primary Care Setting. IEEE EMBC 2018. Available: https://arxiv.org/abs/1804.05944
- **Codella N***, Gutman D*, Celebi E, Helba B, Marchetti M, Dusza S, Kalloo A, Liopyris K, Mishra N, Kittler H, Halpern A. Skin Lesion Analysis toward Melanoma Detection: A Challenge at the International Symposium on Biomedial Imaging (ISBI) 2017, hosted by the International Skin Imaging Collaboration (ISIC). IEEE ISBI 2018. Available: arXiv preprint: https://arxiv.org/abs/1710.05006 , 2017. (*Contributed equally)
- Marchetti M*, **Codella N***, Dusza S, Gutman D, Helba B, Kalloo A, Misra N, Carrera C, Celebi ME, DeFazio D, Jaimes N, Marghoob A, Quigley E, Scope A, Yelamos O, Halpern A. Results of the 2016 International Skin Imaging Collaboration ISBI Challenge: Comparison of the accuracy of computer algorithms to dermatologists for the diagnosis of melanoma from dermoscopic images. Journal of the American Academy of Dermatology, 2017. Accepted, in press. (*Contributed equally)
- **Codella N**, Nguyen Q, Pankanti S, Gutman D, Helba B, Halpern A, Smith J. Deep Learning Ensembles for Melanoma Recognition in Dermoscopy Images. IBM Journal of Research and Development, vol. 61, no. 4/5, 2017. Available: https://arxiv.org/abs/1610.04662
- **Codella N**, Moradi M, Matasar M, Syeda-Mahmood T, Smith J. Lymphoma diagnosis in histopathology using a multi-stage visual learning approach. SPIE Medical Imaging, 2016.
- Gutman D*, **Codella N***, Celebi E, Helba B, Marchetti M, Mishra N, Halpern A. Skin Lesion Analysis toward Melanoma Detection: A Challenge at the International Symposium on Biomedial Imaging (ISBI) 2016, hosted by the International Skin Imaging Collaboration (ISIC). arXiv preprint: 1605.01397, 2016. (* Contributed equally)
- **Codella N**, Cai J, Abedini M, Garnavi R, Halpern A, Smith J. Deep learning, sparse coding, and SVM for melanoma recognition in dermoscopy images. International Workshop on Machine Learning in Medical Imaging, 118-126, 2015.
- *Abedini M, **Codella N**, Connell J, Garnavi R, Merler M, Pankanti S, Smith J. A generalized framework for medical image classification and recognition. IBM Journal of Research and Development 59 (2/3), 1: 1-1: 18, 2015. (* Alphabetical author ordering)
- **Codella N**, Connel J, Pankanti S, Merler M, Smith J. Automated medical image modality recognition by fusion of visual and text information. International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2014.
- **Codella N**, Hua G, et al. Large-Scale Video Event Classification Using Dynamic Temporal Pyramid Matching of Visual Semantics. ICIP 2013 (Oral Presentation).
- **Codella N**, Natsev A, et al. Video Event Detection Using Temporal Pyramids of Visual Semantics with Kernel Optimization and Model Subspace Boosting. ICME 2012 (Oral presentation).
- **Codella N**, Connell J, Ratha N, Weinsaft JW. Cardiac Anatomy as a Biometric. ICIP 2012 (Oral Presentation).
- **Codella N**, Spincemaille P, Prince M, Wang Y. A Radial Self-Calibrated (RASCAL) GRAPPA method using Weight Interpolation. NMR in biomedicine 24 (7), 844-854, 2011.
- **Codella N**, Hua G, Natsev A, Smith JR. Towards Large Scale Land-cover Recognition of Satellite Images. ICICS 2011, Singapore, Dec 2011 (Oral Presentation).

- **Codella N**, Weinsaft JW, et al. Improved Left Ventricular Mass Quantification with Partial Voxel Interpolation – In-Vivo and Necropsy Validation of a Novel Cardiac MRI Segmentation Algorithm. Circulation: Cardiovascular Imaging 5 (1), 137-146
- **Codella N**, Cham MD, Wong R, Chu C, Prince MR, Wang Y, Weinsaft JW. Rapid and Accurate Left Ventricular Chamber Quantification using a Novel CMR Segmentation Algorithm – A Clinical Validation Study. JMRI, 2010. 31:845–853
- **Codella N**, Weinsaft JW, Cham MD, Janik M, Prince MR, Wang Yi. Left Ventricle: Automated Segmentation by Using Myocardial Effusion Threshold Reduction and Intravoxel Computation at MR Imaging. Radiology, 2008. Sept. 248(3):1004-12

BOOK CHAPTERS

- Melanoma. Springer. Available: https://link.springer.com/referencework/10.1007/978-1-4614-7322-0

COLLABORATIVE PUBLICATIONS

- Wu H, Xiao B, **Codella N**, Liu M, Dai X, Yuan L, Zhang L. CvT: Introducing Convolutions to Vision Transformers. ICCV 2021
- Tschandl P, Rinner C, Apalla Z, Argenziano G, **Codella N**, Halpern A, Janda M, Lallas A, Longo C, Malvehy J, Paoli J, Puig S, Rosendahl C, Soyer HP, Zalaudek I, Kittler H. Human-computer collaboration for skin cancer recognition. Nature Medicine, 2020.
- Tschandl P, **Codella N**, et al. Comparison of the accuracy of human readers versus machine-learning algorithms for pigmented skin lesion classification: an open, web-based, international, diagnostic study. The Lancet Oncology. Vol 20 (7), pp. 938-947, 2019
- Kinyanjui NM, Odonga T, Cintas C, **Codella N**, Panda R, Sattigeri P, Varshney K. Fairness of Classifiers Across Skin Tones in Dermatology. MICCAI 2020.
- Hind M, Wei D, Campbell M, **Codella N**, et al. TED: Teaching AI to Explain its Decisions. AAAI AIES 2019
- Celebi ME, **Codella N**, Halpern A. Dermoscopy image analysis: overview and future directions. IEEE journal of biomedical and health informatics 23 (2), pp. 474-478, 2019
- Celebi ME, **Codella N,** Halpern A, Shen D. Guest Editorial Skin Lesion Image Analysis for Melanoma Detection. IEEE Journal of Biomedical and Health Informatics 23 (2), pp. 479-480, 2019.
- Kinyanjui NM, Odonga T, Cintas C, **Codella N**, et al. Estimating Skin Tone and Effects on Classification Performance in Dermatology Datasets. NeurIPS Fairness in Health Workshop. 2019.
- Rotemberg V, Halpern A, Dusza S, **Codella N**. The role of public challenges and data sets towards algorithm development, trust, and use in clinical practice. Seminars in cutaneous medicine and surgery 38 (1), E38-E42. 2019.
- Marchetti M, Liopyris K, Dusza S, **Codella N**, et al. Computer Algorithms Show Potential for Improving Dermatologists' Accuracy to Diagnose Cutaneous Melanoma; Results of ISIC 2017. Journal of the American Academy of Dermatology. 2019.
- Wang X, Guo G, Merler M, **Codella N**, Rohith M, Smith J, Kambhamettu C. Leveraging multiple cues for recognizing family photos. Image and Vision Computing, vol. 58, pp. 61-75. 2017.
- Bashivan P, Rish I, Yeasin M, **Codella N**. Learning Representations from EEG with Deep Recurrent-Convolutional Neural Networks. ICLR 2016. Available: https://arxiv.org/pdf/1511.06448.pdf
- Smith J, Cao L, **Codella N**, Hill M, Merler M, Nguyen Q, Pring E, Uceda-Sosa R. Massive-scale learning of image and video semntic concepts. IBM Journal of Research and Development. Vol. 59, 2/3, pp 1-7. 2015
- Cao L, Gong L, Kender J, **Codella N**, Smith JR. Learning by Focusing: A new framework for concept recognition and feature selection. ICME 2013.
- Cao L, Chang YC, **Codella N**, Merler M, Nguyen QB, Smith JR. IBM T.J. Watson Research Center, Multimedia Analytics: Modality Classification and Case-Based Retrieval tasks of ImageCLEF2012. ImageCLEF Conference (2012)
- Cao L, Chang SF, **Codella N**, Cotton C, Ellis D, Gong L, Hill M, Hua G, Kender J, Merler M, Mu Y, Smith JR, Yu FX. IBM Research and Columbia University TRECVID-2012 Multimedia Event Detection (MED), Multimedia Event Recounting (MER), and Semantic Indexing (SIN) Systems. NIST TRECVID Conference (2012).
- Cao L, Chang SF, **Codella N**, Cotton C, Ellis E, Gong L, Hill M, Hua G, Kender J, Merler M, Mu Y, Natsev A, Smith JR. IBM Research and Columbia University TRECVID-2011 Multimedia Event Detection (MED) System. NIST TRECVID Conference (2011).

- Lee HY, **Codella N**, Cham M, Weinsaft JW, Wang Yi. Automatic Left Ventricle Segmentation using Iterative Thresholding and Active Contour Model with Adaptation (lvITHACA) on Short-Axis Cardiac MRI. IEEE Trans Biomed Eng. 2010 Apr;57(4):905-13
- Liu J, Spincemaille P, **Codella N**, Nguyen TD, Prince MR, Wang Y. Respiratory and Cardiac Self-Gated Free-Breathing Cardiac CINE Imaging with Multi-Echo 3D Hybrid Radial SSFP Acquisition. MRM, 2010 May;63(5):1230-7.
- Mendoza D, **Codella N**, Wang Y, Prince M, Sethi S, Manoushagian S, Kawaji K, Min J, LaBounty T, Devereux R, Weinsaft J. Impact of Left Ventricular Diastolic Dysfunction on post-Myocardial Infarction Volumetric Filling as Assessed by Automated Processing of Routine cine-CMR. J Cardiovasc Magn Reson. 2010 Jul 31;12:46
- Kawaji K, **Codella N**, Prince MR, Chu CW, Shakoor A, LaBounty TM, Min JK, Swaminathan R, Devereux RB, Wang Y, Weinsaft JW. Automated Segmentation of Routine Clinical Cardiac Magnetic Resonance Imaging for the Diagnosis of Left Ventricular Diastolic Function. Circ Cardiovasc Imaging, 2009 Nov;2(6):476-84
- Janik M, Cham MD, Ross M, Wang Yi, **Codella N**, Min JK, Prince MR, Manoushagian S, Okin PM, Devereux RB, Weinsaft JW. Effects of Papillary Muscles and Trabeculae on Left Ventricular Quantification: Increased Impact of Methodological Variability in Patients with Ventricular Hypertrophy. Journal of Hypertension, 2008. Aug. 26(8):1677-85
- Lee HY, **Codella N**, Cham M, Weinsaft JW, Prince MR, Wang Yi. Left ventricle segmentation using graph search on intensity and gradient and a priori knowledge (lvGIGA) for short axis cardiac magnetic resonance imaging. JMRI, 2008. Nov. 28(6):1393-1401

Conference Abstracts

- Noel Codella, Hae-Yeoun Lee, Dorinna Mendoza, Sonia Sethi, Shant Manoushagian, James Min, Richard B. Devereux, Jonathan Weinsaft. Improved Agreement between Echocardiography and MRI-Derived LV Mass Using Automated MRI Segmentation with Partial Voxel Computation. 21st Annual Scientific Sessions of the American Society of Echocardiography, 2010.
- Dorina Mendoza, Noel Codella, Sonia Sethi, Keigo Kawaji, Shant Manoushagian, Martin Prince, Richard Devereux, James Min, Matthew Cham, Yi Wang, Jonathan Weinsaft. Automated cine-CMR segmentation with LV-METRIC for volumetric assessment of presence and severity of left ventricular diastolic dysfunction. Society for Cardiovascular Magnetic Resonance, 2010.
- Noel Codella, Pascal Spincemaille, Martin Prince, Yi Wang. A Rapid Self-Calibrating Radial GRAPPA method using Kernel Coefficient Interpolation. ISMRM 2010.
- Noel Codella, Pascal Spincemaille, Jing Liu, Martin Prince, Yi Wang. Retrospective Self-Gated Free- Breathing Radial 3D Cine SSFP CMR using Self-Calibrated GRAPPA: A Feasibility Study. ISMRM 2010.
- Noel Codella, Pascal Spincemaille, Martin Prince, Yi Wang. A Rapid Self-Calibrating Radial GRAPPA method using Kernel Coefficient Interpolation. ISMRM Parallel Imaging Workshop, 2009.
- Noel Codella, Pascal Spincemaille, Jing Liu, Ludovic de Rochefort, Bryan Kressler, Martin Prince, Yi Wang. 3D Free-Breathing Radial Cine-SSFP Using a Retrospective Z-Center-of-Mass Self Navigator: A Feasibility Study. Proc. ISMRM 2009, 1806.
- Noel Codella, Matthew Cham, Christopher Chu, Keigo Kawaji, Kristen Healy, Martin Prince, Yi Wang, Jonathan Weinsaft. Rapid and Accurate Quantification of Left Ventricular Ejection Fraction using an Automated Segmentation Algorithm – A Clinical Validation Study. Proc. ISMRM 2009, 1900.
- Keigo Kawaji, Noel Codella, Christopher Chu, Richard Devereux, Martin Prince, Yi Wang, Jonathan Weinsaft. A Novel Method for Cine-CMR Automated Assessment of Left Ventricular Diastolic Dysfunction. Proc. ISMRM 2009, 650.
- Noel Codella, Matthew D Cham, Matthew Janik, Martin R Prince and Yi Wang, Jonathan W Weinsaft. Rapid Automated Quantification of Left Ventricular Ejection Fraction with LV-METRIC - a Novel Segmentation Algorithm. Proc. SCMR 2008, 540.
- Noel Codella, Jonathan W Weinsaft, Matthew D Cham, Matthew Janik, Martin R Prince and Yi Wang. Automated soft segmentation of the left ventricle using myocardial effusion threshold reduction and intravoxel computation (METRIC). Proc. SCMR 2008, 1124.
- Noel C. Codella, Jonathan W. Weinsaft, Matthew D. Cham, Martin A. Prince, Yi Wang. Automated Segmentation of the Left Ventricle Using Myocardial Effusion Threshold Reduction and Intravoxel Computation (METRIC) Proc. ISMRM 2008, 984.
- Noel C. Codella, Jonathan W. Weinsaft, Matthew D. Cham, Martin A. Prince, Yi Wang. Partial Voxel Segmentation of the Left Ventricle: Interpolating Blood Content of Voxels. Proc. ISMRM 2007, 3851.

- Noel C. Codella, Yi Wang, Ramin Zabih. Robust Vessel Path Tracking in Imperfect Volumetric Data. Proc ISMRM 2006, 1273.

Patents

Issued

- Automatic identification of food substance (US10528793)
- Method and system for categorizing heart disease states (US20150317789)
- Static Image Segmentation (US9311716 B2)
- Image Segmentation Techniques (US9299145 B2)
- Techniques for spatial semantic attribute matching for location identification (US9251434 B2)
- Techniques for ground-level photo geolocation using digital elevation (US9165217B2)
- Unique Cardiovascular Measurements for Human Identification (US9031288B2)
- Social media event detection and content-based retrieval (US9002069B2)
- Method for segmenting objects in images (US8369590B2)
- Viewpoint recognition in computer tomography images (US9652846)
- Determination of unique items based on generating descriptive vectors of users (US10664894)
- Surgical skin lesion removal (US10568695)
- Surface reflectance reduction in images using non-specular portion replacement (US10255674)

Provisional

- Biological neuron to electronic computer interface (US Patent App. 15/851,949)
- Estimating the Number of Attendees in a Meeting (US Patent App. 15/295,409)
- System and method for comparing training data with test data (US Patent App. 14/982,036)
- Identifying transfer models for machine learning tasks (US Patent App. 15/982,622)
- Training transfer-focused models for deep learning (US Patent App. 16/373,149)
- Generating and augmenting transfer learning datasets with pseudo-labeled images (US Patent App. 16/125,153)
- Drug delivery device having controlled delivery and confirmation (US Patent App. 15/848,169)
- Pill collection visual recognition for automatic compliance to prescriptions (US Patent App. 15/483,126)
- Category Oversampling for Imbalanced Machine Learning (US Patent App. 14/500,023)