

## CURRICULUM VITAE

**JAMES S. DUNCAN, Ph.D.**

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### EDUCATION:

**Ph.D.** , Electrical Engineering, University of Southern California (Image Processing Institute), 1982

Dissertation: "A modular approach to extraction of low level features"

**Major field:** Image/Signal processing

**Minor fields:** Computer engineering, mathematics

**Thesis advisors:** Werner Frei and A.A. Sawchuk

**Certificates of Specialization** , University of California, Los Angeles, 1977:

- Digital systems architecture(5 graduate courses)
- Solid state devices and circuits(5 graduate courses)

**M.S.** , Engineering, University of California, Los Angeles, 1975

**Primary field:** Electronic circuits

**B.S.E.E.** , Lafayette College, 1973 (with honors)

### PROFESSIONAL APPOINTMENTS:

**Ebenezer K. Hunt Professor of Biomedical Engineering** Yale University, 2007-present.

**Professor** Biomedical Engineering, Yale University, 2003- present

**Director of Undergraduate Studies** , Biomedical Engineering, 1997-present.

**Professor** Diagnostic Radiology and Electrical Engineering, Yale University, 1997 - present.

**Vice-Chair** Diagnostic Radiology, 2002-present.

**Associate Professor**, Diagnostic Radiology and Electrical Engineering, Yale University, 1989 - 1997. (Tenured, 1993)

**Assistant Professor**, Diagnostic Radiology and Electrical Engineering, Yale University, 1983 - 1989

## **INDUSTRIAL EXPERIENCE:**

**Hughes Aircraft Company** , Electro-Optical and Data Systems Group, Thermal Imaging Laboratory, Culver City, California (1973 - 1983)

- Section Head, Signal Processing Section, 1982-83. Design and implementation of VLSI-based image processing algorithms for high resolution infrared imaging systems; supervision of 15 Master's degree- level engineers and scientists.
- Group Head, Integrated Circuits Group, 1978-82. Design of intelligent sensors for high resolution infrared imaging systems; systems engineer on several prototype systems; supervision of 6 engineers.
- Member of the Technical Staff, Electronics Department, 1973-78. Analog and digital circuit design and development for infrared imaging systems.

## **TEACHING ACTIVITY:**

- **Courses taught (all at Yale unless noted):**

- BEng/EEng 445/912 Biomedical Image Processing and Analysis (text: Gonzalez and Woods; handouts) (2004-present)
- EAS 352b Biomedical Engineering II (Mathematical Modeling of Physiology) (1997-present); Course Title changed in 2012 to "Biomedical Signals and Images"
- SCIE99 Perspectives in Science and Engineering (Faculty Discussant), Spring, 2010.
- EE455/914 Computer Vision (texts: Ballard and Brown, Horn) (1983-1996)
- EE445/912 Digital Image Processing (text: Rosenfeld and Kak) (1983-2003)
- EAS 352b Biomedical Engineering II (Mathematical Modeling of Physiology) (1997-present)
- BEng 480 Senior Seminar for Biomedical Engineers (texts: handouts) (2003)
- Neuroscience 501a/ Biology 723; Principles of Neuroscience (1 seminar on Visual Perception and Recognition); taught 1992
- Diag. Rad. 130b; Physics and Technology of Diagnostic Imaging (set of 4 lectures); (1983-1995)
- EE348 Digital Systems (1983-84)
- outside courses taught: November, 1991, "Model- Based Approaches to Image Processing/ Analysis," University of Amsterdam, The Netherlands. (1 week course); June, 1998, "Image-Based Recovery of Left Ventricular Deformation," Ile de Berder, France, (1 week course- IEEE Summer School on Medical Imaging); SIGGRAPH 1999, Los Angeles, "Modeling in Medical Imaging."; Medical Image Analysis, (1 week course), Lipari, Italy, July, 2009;

- **Supervision/mentoring of individual research fellows/students**

- 14 postdoctoral fellows directly supervised:
  1. Alexander Karpikov, Ph.D. (Yale University), Yale postdoc:2008 to 2011; research area: development of system to acquire multi-angle Total Internal Reflectance Microscopy (TIRF)
  2. Stathis Hadjidemetriou, Ph.D. (Columbia University), Yale postdoc: 2004-2006; Research area: analysis of microtubules from TIRF and confocal microscopy. Current Postion: Research Scientist, UCSF.
  3. Sudha Chelikani, PhD. (Yale University) Yale postdoc: 2002-2004; Research area: nonrigid image registration; Current position: Associate Research Scientist, Yale University (Diagnostic Radiology).
  4. Xenios Papademetris, Ph.D. (Yale University) Yale postdoc: 2002-2003. Research area: Registration for neuroimage analysis/ image analysis for small animal imaging. Current position: Assistant Professor of Diagnostic Radiology and Biomedical Engineering, Yale University
  5. Eric Bardinet, Ph.D. (University of Paris), Yale postdoc: 1997. Research area: cardiac motion research and indexing based on pictorial content. Current Position: Research Scientist, INRIA, Nice, France.
  6. Suguna Pappu, Ph.D. (Massachusetts Institute of Technology), Yale postdoc: 1995-1997. Research area: Integrated image segmentation in three dimensions. Current position: MD Resident, then Research Associate in Diagnostic Radiology, Yale.
  7. John McEachen, Ph.D. (Yale University), Yale postdoc: 1997-1998. Research area: Motion Similarity retrieval for indexing cardiac motion sequences in image databases. Current position: Associate Professor of Electrical Engineering, Naval Postgraduate School, Monterrey, California.
  8. Pengcheng Shi, Ph.D. (Yale University) Yale postdoc: 1997-1998. Research area: Development of Unified Framework for Physically and Geometrically Based Motion Models for Cardiac Analysis. Current Position: Assistant Professor of Electrical Engineering, Hong Kong University of Science and Technology, Hong Kong, China.
  9. Glynn Robinson, Ph.D. (University of London), Yale postdoc: 1994-1996 Research area: Indexing and Retrieval of Images from Medical Image Databases by Pictorial Content. Current position: engineer in the UK.
  10. Francois Meyer, Ph.D., (University of Rennes, France), Yale postdoc: 1990-1991 Research area: Cardiac motion analysis using spatially constrained velocity fields. Current position: Associate Professor of Electrical Engineering, University of Colorado.
  11. Colin Studholme, Ph.D. (University of London), Yale postdoc: 2001-2003; Research area: MRI distortion compenstation/nonrigid image registration based on mutual information. Current Position: Assistant Professor of Radiology, University of California, San Francisco (UCSF)
  12. Amir Amini, Ph.D. (University of Michigan), Yale postdoc: 1991-1993; Research area: cardiac MR tagging and motion analysis. Current Position: endowed full Professor of Electrical Engineering, University of Louisville.

13. Hemant Tagare, Ph.D. (Rice University), Yale postdoc: 1991-1993; Research area: Intermodality Image Analysis; Feature-based image indexing Current Position: Associate Professor (tenured), Depts of Diagnostic Radiology and Electrical Engineering , Yale University
  14. Lawrence Staib, Ph.D. (Yale University), Yale postdoc: 1990-1992 Research Area: Deformable Surfaces for Segmentation of 3D Medical Images Current Position: Associate Professor (tenured), Depts of Biomedical Engineering, Diagnostic Radiology and Electrical Engineering , Yale University
- 28 Ph.D. students in Electrical Engineering/Biomedical Engineering directly supervised (22 graduated as of December, 2012.):
1. Nripesh Parajuli, predoctoral student (Electrical Engineering), 2012-present; B.S. Electrical Engineering, Lafayette College, USA; Research Project: Bayesian Integration of Multimodal Cardiac Displacements; Funding: first year student (Yale Grad School).
  2. Austin Bishop, predoctoral student (Biomedical Engineering), 2011-present; B.S. Biomedical Engineering, Case Western Reserve University, USA; Research Project: Segmentation of Mitral Valve from CT images; Funding: NIH R01 (UConn Subcontract).
  3. Xiaojie Huang, predoctoral student (Electrical Engineering), 2009-present; B.S. Electrical Engineering, Tsinghua University, China; Research Project: dictionary learning for segmentation of 4D echocardiography; Funding: NIH R01.
  4. Jean Huang, predoctoral student (Biomedical Engineering), 2010- present; B.S. Engineering, Harvard University; Research project: analysis of diffusion tensor images in neurodegenerative disease.
  5. Jingjing Zhu, predoctoral student (Biomedical Engineering), 2009 - present; B.S. Biomedical Engineering, Shanghai Jiaotong University, China; Research Project: multilinear models for recovery of heart valve position and motion from echocardiography; Support: Siemens Corporate Research grant.
  6. Michael An, predoctoral student, (Biomedical Engineering), 2007-present; B.S. Biomedical Engineering, Johns Hopkins University, US, 2006; Research Project: structure/ function brain connectivity analysis in Autism; Support: NIH R01
  7. Liang Liang, predoctoral student, (Electrical Engineering), 2007-present; B.S. Electrical Engineering, Tsinghua University, China, 2006; Research Project: tracking of groups of vesicles from confocal and TIRF microscopy; Support: Keck Foundation.
  8. Colin Compas, predoctoral student, (Biomedical Engineering), 2007-2012; B.S. Biomedical Engineering, Vanderbilt University, US, 2006; Research Project: system design for integrated segmentation/motion analysis of Left Ventricular function; Support: NIH R01
  9. Chao Lu, predoctoral student, (Biomedical Engineering), 2006-2012; B.S. Electrical Engineering, Shanghai Jiaotong University, China, 2005; Research

Project: registration and adaptive plan selection in prostate radiotherapy;  
Support: NIH R01

10. Nicha Chiphakdithai, predoctoral student, (Biomedical Engineering), 2006-2012; B.S. Electrical Engineering, Johns Hopkins University, US, 2005; Research Project: non-rigid registration of volumetric brain images in the presence of surgical resection; Support: NIH R01
11. Paul Pearlman, predoctoral student, (Electrical Engineering), 2006-2011; B.S. Electrical Engineering, Georgia Institute of Technology, Atlanta, Georgia, 2005; Research Project: statistical approaches for structure segmentation from ultrasound; Current position: Postdoctoral Fellow, Image Sciences Institute, University of Utrecht, The Netherlands.
12. Yun Zhu, predoctoral student, (Biomedical Engineering), 2004-2010; B.S. Electrical Engineering, Shanghai Jiaotong University, China, 2001; Research Project: integrated segmentation/motion analysis of Left Ventricular function; Current Position: Postdoctoral Fellow, Stanford University, Dept of Computer Science.
13. Qian Yang, predoctoral student (Electrical Engineering), 2004-2009; B.S. Electronic Engineering, Chinese University of Science and Technology; Research project: segmentation/tracking of microtubules from confocal microscopy; research support: industrial funding. current position: financial market modeling, Royal Bank of Scotland.
14. William Greene, Ph.D. 2009 (Biomedical Engineering); B.S. Biomedical Engineering, University of California, San Diego; Research at Yale: automated cone beam CT registration for prostate radiotherapy; current position: algorithmic trader (trading model development), Royal Bank of Scotland.
15. Deepti Bathula, Ph.D. 2009 (Biomedical Engineering); B.E. Computer Systems Engineering, University of Auckland, New Zealand; Research at Yale: Structure-constrained analysis of fMRI; current position: research assistant, Dept of Psychiatry (brain imaging), University of Oregon.
16. Ping Yan, Ph.D. 2008 (Mechanical Engineering); B.S.E.E., Nanjing University, China, Research at Yale: Boundary element models for constrained recovery of LV Deformation; current position: postdoctoral fellow, Radiation Therapy, Columbia University.
17. Christine Delorenzo, Ph.D., 2007 (Biomedical Engineering); B.S. Engineering, Dartmouth College, 2001; research at Yale: brain shift compensation for image-guided neurosurgery. current position: Postdoctoral Fellow, brain imaging, Columbia University.
18. Jing Yang, Ph.D., 2005 (Electrical Engineering) ; research at Yale: Neighbor Constrained Segmentation of Neuroanatomical Structure from MRI; current position: research scientist, Siemens Corporate Research, Princeton, NJ.
19. Ning Lin, Ph.D. 2005 (Electrical Engineering); research at Yale: Integrated Segmentation and Deformation Analysis of the Left Ventricle; current position: mathematical modeling development/security trading, Assistant Vice President, HSBC Investment Bank, New York, NY .

20. Reshma Munbodh, Ph.D., 2005 (Electrical Engineering); research at Yale: Image Registration for Prostate Radiotherapy; current position: Postdoctoral Fellow, Sloan-Kettering Cancer Institute.
  21. Oskar Skrinjar, Ph.D., 2000 (Electrical Engineering); research at Yale: Brain Shift deformation analysis for image-guided neurosurgery; current position: Assistant Professor of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA.
  22. Xenios Papademetris, Ph.D., 2000 (Electrical Engineering); undergraduate: University of Cambridge, UK; research at Yale: Biomechanical Modeling for Cardiac Image Analysis; Current position: Assistant Professor of Diagnostic Radiology and Biomedical Engineering, Yale University
  23. Xiaolan Zeng, Ph.D., 1999 (Electrical Engineering); research at Yale: Coupled Surface Segmentation of the Cortical Surface from MRI; current position: Vice President, Clinical Affairs, EDDA Technology, Princeton, NJ.
  24. Ravi Bansal, Ph.D., 1999 (Electrical Engineering); research at Yale: 3D-2D Image Registration for Prostate Radiotherapy Planning; current position: Assistant Professor of Psychiatry (Imaging Research), Columbia University, NY,
  25. Amit Chakraborty, Ph.D. 1996, (Electrical Engineering), research at Yale: Game Theoretic Approach to Image Segmentation; current position: group manager, Siemens Corporate Research, Princeton, NJ.
  26. John McEachen, Ph.D. 1996 (Electrical Engineering); research at Yale: Multiframe Estimation of Nonrigid Motion from Image Sequences; Current position: Associate Professor of Electrical Engineering, Naval Postgraduate School, Monterey, California.
  27. Pengcheng Shi, Ph.D., 1996 (Electrical Engineering); research at Yale: Image Analysis of 3D Cardiac Motion Using Physical and Geometrical Models. Current Position: Assistant Professor of Electrical Engineering, Hong Kong University of Science and Technology, Hong Kong, China.
  28. H. Isil Bozma, Ph.D., 1992 (Electrical Engineering); research at Yale: Decentralized Integration in Modular Systems Using a Game-Theoretic Framework. Current Position: Full Professor, Electrical & Electronic Engineering Department, Bogazici University, Istanbul, Turkey.
  29. Lawrence Staib, Ph.D., 1992 (Electrical Engineering); research at Yale: Parametrically Deformable Contour Models for Image Analysis; Current Position: Associate Professor (tenured), Depts of Biomedical Engineering, Diagnostic Radiology and Electrical Engineering , Yale University
- 2 M.D. student theses directly supervised
  - Ph.D. Area (~ qualifying) examination committees for 20 Ph.D. students
  - Special Research Investigation Advisor: 24 Ph.D., 3 M.S. students
  - Senior Undergraduate Project Advisor: 15 students

## PROFESSIONAL SOCIETIES:

- Institute of Electrical and Electronics Engineers (Fellow)
- American Institute for Medical and Biological Engineering (Fellow)
- International Society of Medical Image Computing and Computer Assisted Intervention (MICCAI), President 2007-present
- Society of Photo-Optical Instrumentation Engineers
- American Association for Artificial Intelligence
- I.E.E.E. Computer Society
- Eta Kappa Nu
- Sigma Xi

## HONORS/AWARDS:

- Elected to the *Council of Distinguished Investigators*, “In Recognition of Major Accomplishments in Imaging Science,” Academy of Radiology Research, November, 2012
  - Elected as Fellow of the MICCAI (Medical Image Computer and Computer-Assisted Intervention) Society, September, 2010.
  - MICCAI 2008 Significant Researcher Award given to J.S. Duncan for his pioneering research on Statistical and Deformable Model-Based methods, their multi-organ based applications and his service to the to the MICCAI Society.
  - Elected as a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), December, 2000.
  - Elected as a Fellow of the American Institute for Medical and Biological Engineering, 1999.
  - awarded Fulbright Research Scholar Fellowship to the Netherlands, for 1993-94 academic year.
  - elected to Senior Member, Institute of Electrical and Electronics Engineers (IEEE), December, 1992.
  - visiting (full) Professor, Department of Mathematics and Computer Science, University of Amsterdam, The Netherlands, November, 1991. (funded by a fellowship from the Netherlands Facility for Computer Science (NFI), via a grant from the Netherlands Organization for Scientific Research (NWO).)
- co-author on award-winning papers given by my graduate students/ postdoctoral researchers:
- best paper by a young investigator award-, *Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2009*; first author- William Greene
  - best paper by a young investigator award- Honorable Mention (Francois Erbsmann Prize), *16th International Conference on Information Processing in Medical Imaging, 1999*; first author- Oskar Skrinjar
  - best paper by a young investigator award- Honorable Mention (Francois Erbsmann Prize), *13th International Conference on Information Processing in Medical Imaging, 1993*; first author- Hemant Tagare
  - best paper by a young investigator award-First Place (Francois Erbsmann Prize), *12th International Conference on Information Processing in Medical Imaging, 1991*; first author-

Isil Bozma

- first place paper (out of 15 in imaging) *Northeast Bioengineering Conference*, Kingston, R.I., March, 1992; first author- John McEachen
- honorable mention paper (out of 15 in imaging) *Northeast Bioengineering Conference*, Kingston, R.I., March, 1992; first author- Peng Cheng Shi

- National Science Foundation- Individual Investigator Grant 1996-1999
- 2 Bioengineering Research Partnerships (BRP)- National Institutes of Health, 2001-present, 2006- present
- 12 Individual Investigator (R01) grants- National Institutes of Health, 1993- 2005
- First Independent Research Support and Transition (FIRST) Award, National Institutes of Health, 1988-1993
- Yale Fluid Fund Research Award, 1983
- Hughes Invention Awards, 1976, 1980-1982
- Hughes Staff Doctoral Fellowship, 1979
- Hughes Engineer Degree Fellowship, 1978
- Hughes Master's Degree Fellowship, 1973

#### **U.S. PATENTS:**

- "An AC Resettable Coupling Circuit for CCD's", 1983
- "On-Focal Plane DC Restoration", 1982
- "On-Focal Plane Automatic Responsivity Control Circuit", 1982

#### **PROFESSIONAL SERVICE- JOURNALS:**

##### **Editorships:**

- co-Editor-in-Chief, *Medical Image Analysis*, Elsevier Science/ Oxford University Press, Oct., 1995 - Present
- Associate Editor, *IEEE Transactions on Medical Imaging*, March, 1991 - Present
- Associate Editor, *Annual Review of Biomedical Engineering*, 2008 to present.
- Editorial Board, *Pattern Analysis and Applications*, Springer, 1997-2005
- Editorial Board, *Journal of Mathematical Imaging and Vision*, 1994-present
- Editorial Board, "Modeling in Physiology," *The American Physiological Society*, Dec. 1991 - 1998.

##### **Reviewer for:**

- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Medical Imaging
- IEEE Transactions on Acoustics, Speech and Signal Processing
- International Journal of Computer Vision



- Proceedings of the National Academy of Sciences (PNAS)
- Neuroimage
- Journal of the Optical Society of America
- Medical Physics
- Magnetic Resonance Imaging
- The Journal of Nuclear Medicine
- Investigative Radiology
- The American Physiological Society

## **PROFESSIONAL SERVICE- COMMITTEES AND CONFERENCES:**

### **Study Section Membership:**

- NIH Scientific Review Panel Member and Chair, P41 Study Section on Neuroimaging Analysis, June, 2012, Boston, MA.
- Advisory Panel, Irish National Science Foundation, Grant Review, University of Cork, Ireland, December, 2010.
- NIH Scientific Review Panel Member, Neurotechnology Study Section June, 2010, Washington, DC
- External Advisory Board (EAB), Cardiovascular Research Grid, NIH/Johns Hopkins, Rai Winslow, PI, 2008 to present.
- Consultant/ Reviewer: Dutch National Science Foundation, Cardiovascular Risk Management Grant Reviews, October, 2010
- Scientific Advisory Committee, Center for Imaging of Neurodegenerative Diseases, UCSF (Mike Weiner, Director), 2009- present.
- Scientific Advisory Committee, Laboratory of Neuroimaging (LONI), UCLA, Art Toga, Director. 2004-present (committee chair, 2005-present)
- Scientific Advisory Committee, Medical Imaging Project, Co-ME project (imaging and image-guided intervention), ETH-Zurich; Swiss National Science Foundation, Switzerland; 2001-present.
- Scientific Review Panel, University Medical Center (UMC) Utrecht, The Netherlands, Dec., 2007.
- Scientific Evaluation Panel, Medical Images and Signals Project, EPSRC, London, UK, April, 2007.
- Scientific Advisory Committee, Max Planck Institute for Cognitive Neuroscience, Leipzig, Germany, 1999- 2000.

- Chair, Diagnostic Imaging Study Section, Center for Scientific Review, National Institutes of Health (NIH), Oct 2001 to June, 2003.
- Charter Permanent Member, Diagnostic Imaging Study Section, Center for Scientific Review, NIH, June, 1999- June, 2003.
- Member, Diagnostic Imaging Study Section, National Institutes of Health, February, 1999.
- Member, Diagnostic Imaging Study Section, National Institutes of Health, February, 1998.
- Member, Program Project Special Study Section, National Institutes of Health (NCI), October, 1996.
- Member, Diagnostic Imaging Study Section, National Institutes of Health, October, 1996. (Rosen)
- Member, Program Project Special Study Section, National Institutes of Health (NCI), November, 1995.
- Member, Diagnostic Radiology Special Study Section, National Institutes of Health, February, 1994. (Wingate)
- Member, Special Research Resource Study Section, National Institutes of Health, January, 1993.
- Special Reviewer, Cardiovascular Study Section, National Institutes of Health, October, 1992.
- Reviewer, National Science Foundation, Software Development Grant for Neuroimaging, August, 1991
- Member, Special Diagnostic Imaging Study Section, Mathematics and Computers in Diagnostic Imaging, National Institutes of Health, (July, 1991); (October, 1990); (August, 1988) (L. Rosen, executive secretary).
- Reviewer, National Science Foundation, Robotics and Automation Grant for Image Analysis, February, 1990.
- Member, Research Initiation Grant Review Panel, Emerging Technologies Group, National Science Foundation, March, 1988.
- Member, National Cancer Institute Ad Hoc Technical Review Group for Small Business Innovative Research Grants (SBIR), Diagnostic Imaging Topic Area, April, 1986

#### **Conference Chairs/ Conference Program Committees:**

- Program Committee, International meeting on *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Nice, France, 2012 and Nagoya, Japan, 2013.

- Program and Scientific Committees, *Information Processing in Medical Imaging (IPMI)* 2013.
- Program Committee, Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), Breckenridge, CO, January, 2012
- Area Chair, Medical Image Analysis, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2010, 2011, 2013
- Program Committee, International Conference on *Information Processing in Medical Imaging (IPMI)*, Irsee, Germany, July, 2011.
- Scientific Committee, Functional Imaging and Modeling of the Heart (FIMH), New York, USA, May, 2011.
- General Chair, International meeting on *Medical Image Computing and Computer Assisted Intervention (MICCAI)* 2005.
- Co-organizer, Workshop on Cardiac Imaging, Institute for Pure and Applied Mathematics (IPAM), UCLA, 2006
- Program and Scientific Committees, *Information Processing in Medical Imaging (IPMI)* 2005.
- Scientific Committee, *Information Processing in Medical Imaging (IPMI)* 2003.
- Area Chair/ Program Committee, CVPR 2003, Madison, WI.
- Area Chair/ Program Committee, CVPR 2001, Kauai.
- Scientific Committee, IPMI 2001.
- Program Committee, Second Workshop on Empirical Evaluation Methods in Computer Vision (In Conjunction with ECCV 2000), June 2000, Dublin, Ireland
- Program Committee, 2000 Workshop on Mathematical Methods in Biomedical Image Analysis, Hilton Head, SC, June 2000
- Area Chair, Medical Image Analysis, IEEE Conference on Computer Vision and Pattern Recognition, Colorado Springs, June, 2000.
- Executive Committee, 1998 and 1999 Conferences on Medical Image Computing and Computer- Assisted Intervention (MICCAI), Boston, MA and Cambridge, UK.
- Area Chair, Medical Image Analysis, 1999 IEEE Conference on Computer Vision and Pattern Recognition, Colorado Springs, June, 1999.
- Executive Program Committee, 1999 Conference on Information Processing in Medical Imaging, Hungary, June, 1999.
- General Chair, 1997 International Conference on *Information Processing in Medical Imaging (IPMI)*.

- Program Committee, Conference on Visualization in Biomedical Computing (VBC), Hamburg, Germany, Sept, 1996.
- Program Committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), San Francisco, Ca., June, 1996.
- Program Committee, Workshop on Mathematical Methods in Biomedical Image Analysis, San Francisco, June, 1996
- Program Committee, Medical Robotics and Computer Assisted Surgery (MRCAS), Baltimore, Md, October, 1995.
- Program Committee, IEEE International Conference on Computer Vision (ICCV), Cambridge, Mass, 1995.
- Program Committee, IEEE Workshop on Physics- Based Modeling, Cambridge, Mass., June, 1995.
- Program Committee, 14th International Conference on *Information Processing in Medical Imaging (IPMI)*, Brittany, France, June, 1995.
- Program Committee, Conference on Computer Vision, Visualization and Robotics in Medicine (CVRMed), Nice, France, April, 1995
- Program Committee, IEEE Computer Society Workshop on Non-rigid and Articulated Motion, Austin, Texas, Nov. 11-12, 1994.
- Program Committee, "Visualization in Biomedical Computing (VBC)," Mayo Clinic, October, 1994
- Program Committee, IEEE Computer Society Workshop on Biomedical Image Analysis, Seattle, Washington, June, 1994.
- Program Committee, International Conference on Volume Image Processing (VIP93), Utrecht, The Netherlands, June, 1993.
- Review Committee, 13th International Conference on *Information Processing in Medical Imaging (IPMI)*, Flagstaff, Arizona, June, 1993.
- Co-chair, "Biomedical Image Processing IV," SPIE Intl. Symposium on Electronic Imaging Science and Technology, San Jose, Feb. 1993.
- Co-chair, "Mathematical Methods in Medical Imaging," SPIE Intl. Symposium on Optical Applied Science and Engineering, San Diego, (July, 1992) and (July, 1993).
- Program Committee, 12th International Conference on *Information Processing in Medical Imaging*, Wye, England, July, 1991.
- Organizing Committee and Session Chairman, 1991 Northeast Bioengineering Conference

- Program Co-Chairman, 12th Northeast Bioengineering Conference, Yale University, March 1986
- Program Committee, Computer Assisted Radiology Conference 1985 (CAR'85), 1987 (CAR '87), and 1989 (CAR '89), Berlin, West Germany.

## INVITED LECTURES:

"Model-Based Strategies for Biomedical Image Analysis," Vanderbilt University, EE Department, April, 2013; University of Illinois, May, 2013 (Computational Science and Engineering Symposium); University of Pennsylvania, Department of Radiology, June, 2013.

"Image Processing and Biomedical Image Analysis: My Career from 1980 to the Present," 40th Anniversary of the USC Signal and Image Processing Institute, Los Angeles, CA., December 2, 2012.

"Computational Strategies for Biomedical Image Analysis," Biomedical Engineering Seminar, University of Connecticut, Storrs, CT., November 2, 2012.

Model Based Biomedical Image Analysis, *CVPR Future Directions Workshop*, June, 2012, Providence, RI.

Model-based Strategies for Biomedical Image Analysis: A Platform for Information Integration, *Grand Challenges in Biomedical Imaging. IEEE EMBS Special Series in Biomedical Engineering*, Bethesda, MD. March 1, 2012.

"Career Opportunities for Graduate Students in Biomedical Image Analysis," MICCAI Workshop, Toronto, Canada, September 18, 2011.

*Oxford Medtronic Distinguished Lecture in Biomedical Engineering*: Oxford University, Engineering Sciences, June, 2011.

Lectures: Model-Based Strategies for Biomedical Image Analysis. Given in three Distinguished Lecturer Series: January, 2011, University of Houston Computer Science; March, 2011, Lehigh University, April, 2011; Siemens Corporate Research, Princeton, New Jersey, May, 2011.

Multimodal MRI Analysis of Brain Subnetworks in Autism Using Multi-View EM, What Can Computer Vision do for Neuroscience and Vice Versa ? Workshop at HHMI Janelia Farm, Virginia, November, 2010.

Models for Biomedical Image Analysis: Recent Progress, Department of Engineering Science, University of Oxford, UK, Michael Brady Symposium, September, 2010.

Model-Based Biomedical Image Analysis, Plenary lecture given to 200 researchers, University College London (UCL) Centre for Medical Image Computing, London, UK. December, 2010.

Model-Based Biomedical Image Analysis for Cardiac Imaging, IBM Almaden Research Labs, San Jose, California, October, 2009.

Medical Image Analysis: Summer Course, four 2.5 hour lectures, Lipari, Italy, July, 2009 (see above)

Model-Based Strategies for Biomedical Image Analysis, Keynote Address, 8th IEEE Inter-

national Conference on Bioinformatics and Bioengineering (BIBE 2008), Athens, Greece, October, 2008.

Model-Based Analysis of Brain Structure/Function from MRI, Workshop on Brain Imaging, Mathematical Biosciences Institute (MBI), Invited lecture, June, 2008.

Keynote Lecture: Image Processing Track, "Models in Biomedical Image Analysis." SPIE Medical Imaging, February, 2008, San Diego, CA.

Model-Based Biomedical Image Analysis, Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, Utah, September, 2007.

Model-Based Biomedical Image Analysis for Image Guided Intervention, Mayo Symposium on Medical Image Computing and Image Guided Intervention, Biomedical Imaging Resource, Mayo Clinic College of Medicine, June 15, 2007.

Recovery of Deformation from 3D Medical Images, Department of Computer Science Distinguished Lecture Series, University of Central Florida, April, 2007.

Model-Based Biomedical Image Analysis: Applications to Microscopy, Department of Electrical and Computer Engineering, University of California, Santa Barbara (UCSB), March, 2007

"Imaging/Image Analysis for Personalized Medicine," IBM Yorktown, Workshop on Informatics in Personalized Medicine, December, 2006.

"Computational Platforms for Recovery of LV Deformation from Medical Images" Rutgers University Biomedical Engineering Seminar, March, 2006; University of Illinois, June, 2006; University of Iowa, October, 2006.

"Computational Platforms for Recovery of LV Deformation from Medical Images" Institute for Pure and Applied Mathematics (IPAM) Workshop on Heart Modeling, Feb, 2006, UCLA, Los Angeles.

"Recovery of Soft Tissue Deformation from 3D Medical Images Using Biomechanical Models", presented to the MIT AI Lab, Dept of EECS, Cambridge, MA, June, 2005.

"Image-Guided Neurosurgery in Epilepsy," Medical Technology Caucus, U.S. House of Representatives, Hon. A. Eshoo, Chair. March, 2005.

"Model-Based Recovery of Structure and Function from Medical Images," Frontiers in Bioimaging Lecture Series, University of Illinois, March, 2005.

"Geometric Strategies for Neuroanatomic Analysis from MRI," Institute for Pure and Applied Mathematics (IPAM) Brain Imaging Workshop, UCLA, July, 2004; Medical Image Processing Group, University of Pennsylvania, March, 2005

"Shape-based strategies for segmentation and deformation tracking," MIT Signal Processing

Seminar, November, 2003.

“Model Based Image Analysis,” University of Southern California (March, 2003), Stanford University (March, 2003), University of Pennsylvania (May, 2003).

“Model-Based Recovery of Quantitative Information from Medical Images,” keynote talk, Medical Image Analysis session, *International Conference on Medical Imaging*, Quebec City, Canada, August, 2002.

“The Use of Physical Models in the Recovery of Soft Tissue Deformation from Medical Images,” *The Virtual Human Body - State of the Art and Visions for Medicine*, International Symposium, July 1, 2002, Hamburg, Germany.

“Global and Local Geometrical Models for Shape-Constrained Recovery of Structure from Medical Images,” *First SIAM Conference on the Life Sciences*, Boston, MA, March, 2002.

“The Use of Physical Models in the Recovery of Soft Tissue Deformation from Medical Images,” *First SIAM Conference on the Imaging Sciences*, Boston, MA, March, 2002.

“Medical Image Analysis in Computer Vision: Opportunities and Challenges,” Keynote Address: Workshop on Applications in Computer Vision (WACV), IEEE Computer Society, Palm Springs, CA, December, 2000.

“Modeling in Medical Image Analysis,” Keynote Address: International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Pittsburgh, October, 2000.

“Geometrical and Physical Modeling in Medical Image Analysis,” Keynote Address: International Conference on Computer Assisted Radiology and Surgery (CARS), San Francisco, July, 2000.

“The Use of Geometrical and Physical Models in Quantitative Medical Image Analysis,” presented at:

- SIGGRAPH, Course on *Modeling in Medical Imaging*, Los Angeles, August, 1999.
- Carnegie Mellon University, Robotics Institute, November, 1999.
- Dartmouth College, November, 1999.
- Agilent (formerly Hewlett Packard) Ultrasound Imaging Systems, Andover, MA, Nov., 1999.

“Segmentation and Measurement of Neuroanatomical Structure,” presented at:

- University of Florida, March, 1999. Host: Baba Vemuri.
- MIT/ MERL, Spring, 1998. Hosts: Sara Gibson, Sandy Wells.



Keynote Address: “Recovery of Nonrigid Object Motion from 2D and 3D Image Datasets,” Conference of the Advanced School for Computing and Imaging (ASCI), Lommel, Belgium, June, 1996.

“Problems in Medical Image Analysis: Deformable Object Segmentation and Tracking Non-rigid Myocardial Motion, and Cardiac Deformation Analysis”, presented at these places:

- University of Stony Brook, New York, October, 1998.
- University of Pennsylvania, June, 1996. Hosts: Dimitris Metaxas, Leon Axel.
- Johns Hopkins University, October, 1995. Hosts: Elliot McVeigh, Elias Zerhouni.
- Massachusetts Institute of Technology (MIT) AI Laboratory, October, 1994. host: Eric Grimson
- INRIA, (Institut National de Recherche en Informatique et en Automatique), Sophia Antipolis, France, November, 1994. Host: Nicholas Ayache
- Harvard University, Division of Applied Sciences, December, 1994. Host: Alan Yuille
- Brown University, LEMS, Division of Engineering, January, 1995. Host: Ben Kimia.

#### **OTHER UNIVERSITY ACTIVITIES/ SERVICE:**

- Chair, Scholar Awards Committee (appointed by Provost), Fall, 2012 to present.
- Search Committee, Deputy Chief Information Officer (CIO), Yale University (appointed by Provost), Sept, 2012 - present.
- Organizer, Division of Bioimaging Sciences (Diagnostic Radiology) Scientific Retreat, October 18-19, 2012
- Information Technology Services Advisory Committee (ITSAC), Yale University, 2010-May, 2012.
- School of Engineering and Applied Science (SEAS) Dean’s Advancement Committee for Engineering (ACE); Promotions and hiring advisory to Dean of Engineering; 2011 to present.
- School of Medicine Special Committee investigating academic misconduct, Linda Mayes convener; Fall 2011 to present.
- Electrical Engineering Faculty Search Committee, Dept of Electrical Engineering, Spring, 2011- present
- Biomedical Engineering Faculty Search Committee, Biomechanics position, Fall, 2011 to present

- Mechanical Engineering Faculty Search Committee, Robotics position, Fall 2011 to present.
- *Acting Chair*, Dept of Biomedical Engineering, SEAS, Faculty of Arts and Sciences , Spring, 2011.
- Search Committee, Dean of Yale University Graduate School of Arts and Sciences, Advisory Committee, 2010-2011
- Yale Magnetic Resonance Research Center Scientific Advisory Committee, 2008-present.
- Faculty Advisory Committee, Yale Scientific Magazine, 2007 to present.
- Yale Biological Sciences Advisory/Tenure Committee, Fall 2009- Spring, 2010.
- Yale Physical Sciences Advisory/Tenure Committee, Fall 2006- 2010.
- Vice-Chair for Bioimaging Sciences Research, Department of Diagnostic Radiology, 2002 to present.
- Director of Undergraduate Studies, Department (Program from 1997-2003) of Biomedical Engineering, 1997 to present.
- School of Medicine, Tenure Allotment Committee, 2004 to 2009.
- Member, School of Medicine Dean's Board on Sexual Harassment, 2005-06; 2010-present.
- STARS (Science, Technology and Research Scholars) Advisory Committee, Yale College (program to encourage minorities to consider careers in science/technology), 2001-present.
- Yale Provost's Committee on Cooperative Research, 2002-2004; 2009-2011.
- Director, Yale Interdepartmental Program in Biomedical Engineering, Faculty of Engineering, 2000-2003.
- Director, Section of Bioimaging Sciences, Dept of Diagnostic Radiology, 1999-2002.
- Member, Biomedical Engineering Task Force, 1998-1999.
- School of Medicine, Term Appointments and Promotions Committee, 1999-2002.
- Chair, Curriculum Committee, Biomedical Engineering Program, Faculty of Engineering (appointed by Dean A. Bromley), 1996 - 2004
- Chair, Department of Diagnostic Radiology Appointments and Promotions Committee, 1996- present
- Funds and Fellowships Review Committee, Yale Medical School, Chair: Sara Rockwell, Ph.D.

- Research Computing Committee, Yale Medical School (appointed by Dean C. Slayman), Chair: John Paton, Ph.D.
- Search Committee, Senior Faculty position in Computer Vision, Department of Electrical Engineering, 1995-96
- Search Committee, Senior Faculty position in Computer Engineering, Department of Electrical Engineering, 1996 - present
- Committee on the Status of Women, Yale University School of Medicine, 1995- 2004.
- Member, Liaison Committee to Diagnostic Radiology Chair Search Committee, 1994-95
- Medical Student Thesis Advisor, Dept of Diagnostic Radiology, 1995-2000.
- Dept. of Diagnostic Radiology, Executive Committee, 1990-1995
- Director, Image Processing and Analysis Group, Dept. of Diagnostic Radiology, 1992 - present
- Member, Center for Systems Science (1986-2000)
- Diagnostic Imaging Faculty Advisory Committee (3 years)
- Radiology Information System Advisory Committee (2 years)
- Computer Advisory Committee (Dept. of Medicine), 1985.
- Assistant Director, Council of Engineering Summer Research Program for College Juniors, 1984.

## PUBLISHED REFEREED ARTICLES:

1. L. Liang, H. Shen, P. Rompolas, V. Greco, P. Decamilli and **J. Duncan**, A Multiple Hypothesis based Method for Particle Tracking and Its Extension for Cell Segmentation, *Information Processing in Medical Imaging*, Asilomar, CA, June, 2013 (12 pages- in press)
2. X. Zhou, X. Huang, **J. Duncan**, W. Yu, Active Contours with Group Similarity, 2013 IEEE Conference on *Computer Vision and Pattern Recognition (CVPR)*, Portland, OR, June, 2013 (8 pages- in press)
3. J. Kanik, T. Mansi, I. Voigt, P. Sharma, R. Ionasec, D. Comancieiu and **J.S. Duncan**. Estimation of Patient-Specific Material Properties of the Mitral Valve Using 4D Transesophageal Echocardiography, *Biomedical Imaging: From Nano to Macro, IEEE International Symposium (ISBI)*, May, 2013. (in press) 5 pages.
4. Z. Zhang, D. Friedman, D.P. Dione, B.A. Lin, **J.S. Duncan**, A.J. Sinusas and S. Sampath, "Assessment of Left Ventricular 2D Flow Pathlines During Early Diastole Using Spatial Modulation of Magnetization with Polarity Alternating Velocity Encoding: A Study in Normal Volunteers and Canine Animals with Myocardial Infarction," *Magnetic Resonance in Medicine*, online early version published October, 2012. Pp. 1-10.
5. Nicha Chitphakdithai, Veronica Chiang and **J.S. Duncan**, "Tracking Metastatic Brain Tumors in Longitudinal Scans via Joint Image Registration and Labeling," MICCAI Workshop on Spatio-Temporal Image Analysis for Longitudinal and Time-Series Image Data (STIA), LNCS 7570, Nice, France, October, 2012. Pp. 124-136.
6. X. Huang, D. Dione, C. Compas, X. Papademetris, B. Lin, A. Sinusas and **J.S. Duncan**, "A Dynamical Appearance Model Based on Multiscale Sparse Representation: Segmentation of the Left Ventricle from 4D Echocardiography," *Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, Nice, France, October, 2012. Pp. 58-65.
7. C. Lu, Y. Zheng, N. Birkbeck, J. Zhang, T. Kohlberger, C. Tietjen, T. Boettger, **J. Duncan** and S. Zhou, "A Dynamical Appearance Model Based on Multiscale Sparse Representation: Segmentation of the Left Ventricle from 4D Echocardiography," *Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, Nice, France, October, 2012. Pp. 462-469.
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9. Chao Lu, S. Chelikani, D. A. Jaffray, M. Milosevic, L. H. Staib and **J. S. Duncan**, "Simultaneous Nonrigid Registration, Segmentation and Tumor Detection in MRI Guided Cervical Cancer Radiation Therapy," *IEEE Transactions on Medical Imaging (TMI)*, Vol. 31, No. 6, June, 2012. Pp. 1213-1227.

10. L. Liang, Y. Xu, P. De Camilli, D. Toomre and **J.S. Duncan**, "A Bayesian method for 3D estimation of subcellular particle features in multi-angle TIRF microscopy," *2012 9th IEEE International Symposium on Biomedical Imaging (ISBI)*, May, 2012. Pp 984-987.
11. C.B. Compas, E.Y. Wong, X. Huang, S. Sampath, B.A. Lin, X. Papademetris, K. Thiele, D.P. Dione, A.J. Sinusas, M. O'Donnell and **J.S. Duncan**, "A combined shape tracking and speckle tracking approach for 4D deformation analysis in echocardiography," *2012 9th IEEE International Symposium on Biomedical Imaging (ISBI)*, May, 2012. Pp. 458-461.
12. P. Pearlman, H. Tagare, B. Lin, A. Sinusas and **J. Duncan**, Segmentation of 3D RF Echocardiography Using a Spatio-temporal Predictor, *Medical Image Analysis*, Vol. 16, No. 2, Feb, 2012. Pp.351-360.
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16. L. Liang, Hongying Shen, Pietro De Camilli, D. Toomre and **James S. Duncan**, An Expectation Maximization Method for Subcellular Particle Tracking Using Multi-angle TIRF Microscopy," *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, G. Fichtinger, A. Martel and T. Peters (eds.), LNCS 6891, Part I, Toronto, CA, 2011. Pp. 629-636.
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34. Chao Lu, Sudha Chelikani, J. Knisely and **J. Duncan**, Integrated Segmentation and Registration for Prostate Radiotherapy, *Mathematical Methods in Biomedical Image Analysis (MMBIA)*, San Francisco, June, 2010.
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39. Xenophon Papademetris, Christine DeLorenzo, Sven Flossmann, Markus Neff, Kenneth P. Vives, D D. Spencer, Lawrence H. Staib and **James S. Duncan**, From Medical Image Computing to Computer Aided Intervention: Development of a Research

Interface for Image Guided Navigation, *The International Journal of Medical Robotics and Computer Assisted Surgery*, Vol. 5, Issue 2, June, 2009. Pp. 147-157.

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41. Y. Zhu, X. Papademetris, A. Sinusas and **J.S. Duncan**, A Dynamical Shape Prior for LV Segmentation from RT3D Echocardiography, *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 5761, September, 2009. Part I: Pp. 206-213.
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45. LG Chepenik, C. Fredericks , X. Papademetris, L. Spencer, C. Lacadie, F.Wang, B Pittman, **JS Duncan**, LH Staib, JS Duman, J. Gelernter, HP Blumberg, Effects of the Brain Derived Neurotrophic Growth Factor Val66Met Variation on Hippocampus Morphology in Bipolar Disorder, *Journal of Neuropsychopharmacology*, March, 2009, 34(4): 944-51. Epub 2008 Aug 13.
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48. W. H. Greene, S. Chelikani, K. Purushothaman, X. Papademetris, L. H. Staib, J. P. S Knisely and **J. Duncan**, A Constrained Non-Rigid Registration Algorithm for use in Prostate Image-Guided Radiotherapy, *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 5241, September 2008. Part I: Pp. 780-788.
49. Yun Zhu, Xenophon Papademetris, Albert Sinusas, **James Duncan**, "Bidirectional Segmentation of Three- Dimensional Cardiac MR Images Using a Subject-Specific Dynamical Model", *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 5241, September 2008. Part II: Pp. 450-457.



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54. S. Hadjidemetriou, D. Toomre and **J.S. Duncan**, Motion Tracking of the Outer Tips of Microtubules, *Medical Image Analysis*, Vol. 12, November, 2008. Pp. 689-702.
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61. C. Delorenzo, X. Papademetris, K. Vives, D. Spencer and **J. S. Duncan**, A Realistic Brain Phantom for 3D Deformation Recovery, *Biomedical Imaging: Macro to Nano, IEEE International Symposium on Biomedical Imaging (ISBI)*, April, 2007. Pp. 9-12.
62. Y. Zhu, X. Papademetris, A. Sinusas and **J. S. Duncan**, Cardiac Image Segmentation with Incompressibility Constraint, *Biomedical Imaging: From Nano to Macro ( ISBI) 2007. 4th IEEE International Symposium on Biomedical Imaging*, April, 2007. Pp. 185-188.
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## PRESENTATIONS WITH PUBLISHED ABSTRACTS:

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## PAST AND PRESENT PEER-REVIEWED FUNDING:

### Awarded:

"Integrated RF and B-mode Deformation Analysis for 4D Stress Echocardiography"

Funding: 3 years,  $\simeq$  \$5M total costs (9/13 - 8/18);

**Principal Investigator : James S. Duncan, Ph.D.**

(received score in 4th percentile—likely to be funded).

"Image Analysis and Biomechanical Modeling of the Aortic Valve"

Source: Siemens Corporate Research, Princeton, N.J.

Funding: 3 years,  $\simeq$  \$160K total costs (3/12 - 2/15);

(funds 1 graduate student)

**Principal Investigator : James S. Duncan, Ph.D.**

"Extraction of Subnetworks in Autism Using Multimodal MRI,"

Source: NIH- NINDS (R01NS035193)

Funding: 5 years,  $\simeq$  \$1.9M total costs (9/11 - 8/16);

**Principal Investigator (multiple): James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 20% salary

"Integrated Methods for Measuring Neuroanatomy in Autism"

Source: NIH-NINDS (R56NS035193)

Funding: 1 year (9/1/10 - 8/31/11)

\$250K direct; \$385,865 total (competitively-awarded bridge funding)

**Principal Investigator: James S. Duncan, Ph.D.**

"Probabilistic Modeling for Stenotic Aortic Valve Intervention"

Source: NIH

Funding: 3 years (9/11 to 8/14); \$89K / year

(subcontract from University of Connecticut; PI: Wei Sun, Ph.D.)

Role: subcontract PI; graduate student funding

"Training in Multimodality Molecular and Translational Cardiovascular Imaging"

Source: NIH-NHLBI (T32HL098069)

Funding: 3 years (8/11 - 6/14 )

\$59K direct; \$180 total

**Principal Investigators: Albert Sinusas, M.D. and James S. Duncan, Ph.D.**

"Open Collaborative Faculty Award (gift)"

Collaborative Research in Biomedical Image Analysis

Source: IBM Almaden Research Laboratories  
Funding: 3 years (11/08 to 11/11), \$180K direct  
**Principal Investigator: James S. Duncan, Ph.D.**

”Novel Quantitative Imaging and Analysis of Endocytosis”

Source: Keck Foundation

Funding: 2 years,  $\simeq$  \$1M total costs (11/07-12/09)

J. Duncan’s Involvement: co-PI (with P. DeCamilli and D. Toomre)

”Bioimaging and Intervention in Localization-Directed Epilepsy,”

Source: NIH-NIBIB/NINDS

**Bioengineering Research Partnership**

Funding: 5 years,  $\simeq$  \$5.6M total costs (4/07-3/12; 1 year NCE)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan’s Involvement: PI, 25% salary

ARRA Supplement to include PET imaging

Funding: 9/10 to 6/11; NCE to 3/12; \$417K total

”LV Strain Quantification from 4D Echocardiography,”

Source: NIH- NHLBI

**Bioengineering Research Partnership**

Funding: 5 years, \$7.2M total costs (7/06 - 6/11 (NCE to 6/13));

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan’s Involvement: P.I., 25% salary

”Image Analysis for Adaptive Prostate Radiotherapy,”

Source: NIH- NIBIB

Funding: 5 years,  $\simeq$  \$2.0M total costs (9/05 - 6/09);

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan’s Involvement: P.I., 20% salary

”Integrated Function/Structure Image Analysis in Autism,”

Source: NIH- NINDS

Funding: 5 years,  $\simeq$  \$1.8M total costs (1/05 - 12/09);

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan’s Involvement: P.I., 20% salary

”Bioimaging and Intervention in Neocortical Epilepsy,”

Source: NIH-NIBIB/NINDS

**Bioengineering Research Partnership**

Funding: 5 years,  $\simeq$  \$7.2M total costs (4/02-3/07)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: PI, 25% salary

"The MICCAI 2005 International Conference

Funding: 1 year, \$20K total costs (2005)

Principal Investigator: James S. Duncan, Ph.D.

(funds for conference support: no salary involved)

"Enhancement of the Undergraduate Biomedical Engineering Curriculum at Yale,"

Source: NSF

Funding: 2 years, \$100K total costs (12/02-11/04)

**Investigators:** Mark Saltzman, **James Duncan**, Lawrence Staib

No salary involved/ support of teaching laboratories

"Automatic Image Registration for Prostate Radiotherapy,"

Source: NIH-National Cancer Institute

Funding: 4 years,  $\simeq$  \$880K direct costs (2/00 - 1/05)

(extension to 1/06) **Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 25 % salary

"A Visualization Supercomputer for Medical Image Analysis,"

Source: NIH- NCCR (Shared Instrumentation Grant)

Funding: 1 years, \$130K direct costs (1999-00)

**Principal Investigator: James S. Duncan, Ph.D.**

"Integrated Methods for Measuring Neuroanatomy in Autism,"

Source: NIH- NINDS

Funding: 3 years,  $\simeq$  \$363K direct costs (6/96 - 5/99);

renewed for another 4 years  $\simeq$  \$440K direct costs (9/00-8/04)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 20% salary

"Dynamic Analysis of LV Deformation from 4D Images,"

Source: NIH- National Heart, Lung and Blood Institute

Funding: 4 years,  $\simeq$  \$1M direct costs (7/96 - 6/00)

renewed for another 4 years (7/00-6/04)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 15 % salary



"An Integrated Method for Simultaneous Recognition and Segmentation of Deformable Objects,"

Source: National Science Foundation (NSF)

Funding: 3 years,  $\simeq$  \$245K total costs (6/96 - 5/99)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 8% salary

"Formation of a Program in Biomedical Engineering at Yale University,"

Source: Whitaker Foundation

Funding: 3 years,  $\simeq$  \$750K total costs (7/96 - 6/99)

Principal Investigator: John C. Gore, Ph.D.

J. Duncan's Involvement: Investigator, 20% salary

"Indexing Image Databases for Motion Similarity Retrieval,"

Source: NIH- NLM

Funding: 4 years,  $\simeq$  \$600K direct costs (7/96 - 6/00)

Principal Investigator: C. Carl Jaffe, M.D.

**J. Duncan's Involvement: co-Investigator, 10% salary**

"4D Flow Field Analysis of Regional LV Function,"

Source: NIH- National Heart, Lung and Blood Institute

Funding: 3 years,  $\simeq$  \$730K direct costs (1/93 - 6/96)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 40 % salary

"Indexing of Electronic Medical Image Databases"

Source: National Library of Medicine

Total Funding: 3 years,  $\simeq$  \$450K direct costs (5/93-4/96)

Principal Investigator: C. Carl Jaffe, M.D. (**J. Duncan, Ph.D., Co-PI**)

J. Duncan's Involvement: co- investigator, 25% salary

"Neurobiology of Tourette's Syndrome and Obsessive Compulsive Disorder,"

Neuroimaging Subproject

Source: NIMH

Funding: 3 years, subproject = \$330K direct costs (11/92 - 10/95)

Principal Investigator: James Lechmann, M.D.

J. Duncan's Involvement: Investigator, Image Analysis, 10% salary

"Multimodality Cardiac Image Understanding,"

NIH FIRST Award

Source: NIH- National Heart, Lung and Blood Institute

Funding: 5 years, \$350K (7/88 - 6/93)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 50% salary

"Indexing of Electronic Medical Image Databases"

Source: National Library of Medicine

Funding: \$ 146,627 Direct costs/ year (7/90 - 6/93)

Principal Investigator: C. Carl Jaffe, M.D. (**J. Duncan Co-PI**)

% Time by Dr. Duncan: 25%

"Psycholinguistic and Biological Mechanisms in Dyslexia,"

Neuroimaging Core Laboratory

Source: NIH- National Institute of Child Health and Human Development

Funding: 5 years, \$5M Total Costs (9/87 - 8/92)

Principal Investigator: Bennett Shaywitz, M.D.

**J. Duncan's Involvement: Project Leader (Image Analysis), 10% salary**

"Computer Based Intermodality Analysis of Tomographic Images of the Human Brain"

Source: Whitaker Foundation

Funding: \$ 60,000 direct costs/ year (7/89 - 6/92)

Principal Investigator: George Zubal, Ph.D.

% Time by Dr. Duncan: 5%

"An Artificial Intelligence-Based Approach for the Analysis of Cardiac Performance Using Multimodality Image Understanding,"

Source: Whitaker Foundation

Funding: 3 years, \$150K Direct Costs (7/85 - 6/88)

**Principal Investigator: James S. Duncan, Ph.D.**

J. Duncan's Involvement: P.I., 30% salary

"Thrombolysis in Myocardial Infarction,"

Radionuclide Angiographic Image Analysis Core Laboratory

Source: NIH- National Heart, Lung and Blood Institute

Funding: 5 years, \$1M per year (10/83 - 9/88)

Principal Investigator: Barry L. Zaret, M.D.

**J. Duncan's Involvement: Co-investigator, 40% salary**

"Applicability of Learning Automata Theory to Network Design,"

Source: NSF

Funding: 6 months, \$30K (6/88 - 12/88)

Principal Investigator: Kumpati S. Narendra, Ph.D.

**J. Duncan's Involvement: Co-Investigator, 20% salary , 3 months**

**Training Grants (Including NRSA's):**

"Training in Multi-modality Molecular and Translational Cardiovascular Imaging"

Source: NIH- NHLBI (T32HL098069)

Funding: 3 years, through 2012, \$221K per year

Role: co-PI (with A. Sinusas)

"Medical Informatics Research Training at Yale,"

Source: NIH- National Library of Medicine

Funding:  $\simeq$  \$400K Total Costs per year (7/87 - present)

Principal Investigator: Perry Miller, M.D., Ph.D.

J. Duncan's Involvement: 3 Ph.D. students working under him funded by this grant. (1 currently)

"Magnetic Resonance Imaging Postdoctoral Training Grant,"

Source: NIH- National Cancer Institute

Funding: 5 years,  $\sim$  \$450K (7/85 - 6/90)

Principal Investigator: John Gore, Ph.D.

J. Duncan's Involvement: (no salary) Collaborating faculty.

Faculty Advisor/Sponsor for the Following NIH **National Research Service Awards** (NRSA Postdoctoral Fellowships):

- "Segmentation of Structure From Medical Images,"

Source: NIH- National Library of Medicine

Funding: 1 year,  $\sim$  \$26K (7/90 - 6/91)

Principal Investigator: Larry Staib, Ph.D.

J. Duncan's Involvement: responsible faculty advisor (no salary)

- "Optimization Strategies for Medical Image Understanding,"

Source: NIH- National Cancer Institute

Funding: 2 years,  $\sim$  \$28K (11/95 - 10/97)

Principal Investigator: Suguna Pappu, Ph.D.

J. Duncan's Involvement: responsible faculty advisor (no salary)

- "LV Deformation Recovery Using 3D Biomechanical Models,"

Source: NIH- NHLBI

Funding: 2 years,  $\sim$  \$25K (2/96 - 1/98)

Principal Investigator: Pengcheng Shi, Ph.D.

J. Duncan's Involvement: responsible faculty advisor (no salary)

- "Statistical Fusion of Multimodal Neurologic Images,"

Source: NIH- National Library of Medicine

Funding: 2 years, ~ \$25K (1/96 - 12/97)

Principal Investigator: John McEachen, Ph.D.

J. Duncan's Involvement: responsible faculty advisor (no salary)