David C. Munson, Jr.

Education

Princeton University, Ph.D. Electrical Engineering, 1979

Princeton University, M.A. Electrical Engineering, 1977

Princeton University, M.S. Electrical Engineering, 1977

University of Delaware, B.S. Electrical Engineering, 1975

Professional Experience

7/2006-7/2016, Robert J. Vlasic Dean of Engineering, University of Michigan

6/2003-7/2006, Chair, Dept. of Electrical Engineering and Computer Science, University of Michigan

6/2003-present, Professor, Electrical Engineering and Computer Science, University of Michigan

8/1988-6/2003, Professor, Electrical and Computer Engineering, Research Professor, Coordinated Science Laboratory, Faculty Affiliate, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign

8/1983-8/1988, Associate Professor, Electrical and Computer Engineering, Research Associate Professor, Coordinated Science Laboratory, University of Illinois at Urbana-Champaign

8/1979-8/1983, Assistant Professor, Electrical and Computer Engineering, Research Assistant Professor, Coordinated Science Laboratory, University of Illinois at Urbana-Champaign

12/2003-present, Co-founder and Vice President of InstaRecon, Inc.

3/2014-present, Adviser, eLab (venture capital firm)

11/2012-present, Board of Directors, Ann Arbor State Bank

2003-present, Expert witness with Hogan & Hartson and Adli Law Group in patent infringement cases

1974-1976, Summer positions with Institute for Defense Analyses, National Security Agency, and E. I. DuPont

Selected Activities as Dean of Engineering at Michigan

Administration

Led a college of nearly 10,000 students, 600 faculty members, and 600 staff members

Managed $475M annual budget with surplus invested in new programs and facilities

Built administrative team, with four associate deans and thirteen department chairs, and key staff members

New academic units: Division of Integrative Systems and Design, Center for Research on Learning and Teaching in Engineering, and expanded Biomedical Engineering Department reporting jointly to Engineering and the Medical School

Master planning, design and completion of major new facilities and renovations

Completed Engineering Make a Difference Campaign in 2008, raising $302M

Launched Engineering Victors for Michigan Campaign, with $1B goal consisting of $400M basic campaign plus additional $600M to be raised with other units and partners

Initiated international fundraising program

Instituted modern and vastly expanded Communications and Marketing organization with emphasis on video, social media, and web design

Expanded Engineering advisory board, adding diversity and international membership; invigorated Engineering Alumni Society Board

Emphasized outward facing posture of Engineering to industry and government, engaging corporate officers and elected officials

Faculty

Grew faculty by 30%, with a focus on selectivity, diversity, leadership, and new capabilities

Increased collaboration via the introduction of interdisciplinary centers, institutes, and degree programs

Created Professor of Engineering Practice track; hired onto this track several members of the National Academy of Engineering

Instituted new faculty awards for teaching, research, and service

Added faculty development seminars, leadership coaching service, and dual career services for partners

Undergraduate Programs

Grew student body by 25% while dramatically improving undergrad selectivity

Fostered a student-oriented culture, engaging with student groups and holding open office hours

Advocated for improved University mental health services

Launched Center for Entrepreneurship, offering programs to 2,500 students annually, with half of the students from outside Engineering

Doubled funding and lab space for student project teams

Instituted Multidisciplinary Design Program and Minor

Grew international programs in engineering and instituted a Minor, among the most popular at Michigan

Formalized the Joint Institute with Shanghai Jiao Tong University (1,000 students)

Established Insitu, a humanitarian technology institute, offering training to hundreds of students working on projects in the developing world

Tech Day recruiting event expanded (now 1,500 prospective students and parents)

Launched HAIL – a recruitment program where 1,000 engineering alumni interview prospective undergraduates

Graduate Programs and Research

Annual research expenditures nearly doubled to $226M

PhD student selectivity dramatically improved

Fostered interdisciplinary research with other units: about 250 funded projects with other colleges and schools at U-M

New interdisciplinary masters degree programs: Energy Systems, Sustainability, Entrepreneurship, Design Science, and Robotics

Biointerfaces Institute founded, a research collaboration led by Engineering in partnership with Medicine, Dentistry, and Pharmacy

Mobility Transformation Center, R&D effort focused on driverless cars, created in partnership with Vice President for Research and U-M Transportation Research Institute

Robotics Institute founded in collaboration with other campus units

Co-founded Michigan Institute for Data Science, a campus-wide collaboration

Co-founded Energy Institute, a campus-wide collaboration

Co-founded Graham Sustainability Institute, a campus-wide collaboration

Created FLUX, the campus-wide high-performance computing cluster

Partnered on campus-wide Business Engagement Center and programs in Office of Tech Transfer

Mcubed launched, a $15M bi-annual research seed-funding program, originated in Engineering and implemented campus-wide

Diversity, Equity and Inclusion

Center for Engineering Diversity and Outreach redesigned, serving our student body, students in K-12, and interfacing with industry

Pipelines created to selected high schools and community colleges, nationwide, to improve diversity of our student body

Michigan Engineering Zone created in Detroit, with undergrads and alumni mentoring 300 minority students on FIRST robotics teams from 18 public high schools

Women students in freshman class increased from 22% to 29%

Incoming underrepresented minority PhD students more than doubled

Percentage of women faculty increased from 14% to nearly 20%

Programs expanded to support undergraduate research, including for women and minority students

NextProf workshop instituted to diversify engineering faculties at Michigan and nationwide

Expanded diversity programs on North Campus, including the Martin Luther King Celebration

Collaboration with the Arts

ArtsEngine program established between Engineering and the schools of Music, Theatre and Dance; Art and Design; and Architecture and Urban Planning, promoting collaboration in teaching and research

Living Arts living-learning community established in Bursley Dormitory

Minors in all arts disciplines made available to all engineering students

Alliance for the Arts in Research Universities (a2ru) established to better integrate arts disciplines within the teaching and research missions of colleges and universities nationwide

Awards and Honors:

Benjamin Garver Lamme Medal, American Society of Engineering Education (2016)

Fellow of Engineering Society of Detroit (2013)

Society Award, IEEE Signal Processing Society (highest award of IEEE SP Society) (2003)

Robert C. MacClinchie Distinguished Professor of Electrical and Computer Engineering, University of Illinois (2001-2003)

IEEE Third Millennium Medal (2000)

Distinguished Lecturer, IEEE Signal Processing Society (2000)

Texas Instruments Distinguished Professor, Rice University (Fall 1999)

ECE Outstanding Teaching Award, University of Illinois (1998)

Meritorious Service Award, IEEE Signal Processing Society (1995)

Outstanding Alumnus Award, College of Engineering, University of Delaware (1995)

Fellow of IEEE (1991)

Outstanding Professor Award, Alpha Chapter, Eta Kappa Nu (1990)

Incomplete List of Teachers Ranked Excellent, Daily Illini

Selected Professional Activities

Tech Committee, UniversalGiving.org, 2016-present

Board of Directors, Engineering Society of Detroit, 2006-2016

ASEE Engineering Deans Council Executive Board, 2009-10, 2011-2015

ASEE Engineering Deans Council Public Policy Committee, 2010-2015

IEEE Jack Kilby Signal Processing Medal Committee, 2002-2006, chair 2003-2005

IEEE Signal Processing Society Fellow Evaluation Committee, 1999-2005

Editorial Board, Proceedings of the IEEE, 2002-2005

Member, IEEE History Committee, 1997-2000

Co-founder, IEEE International Conference on Image Processing (ICIP)

President, IEEE Signal Processing Society, 1992, 1993

Founding Editor-in-Chief, IEEE Transactions on Image Processing, 1991-1995

Member, IEEE Periodicals Council, 1993

Executive Vice-President, IEEE Circuits and Systems Society, 1990

Member, Board of Governors, IEEE Signal Processing Society, 1988-95

Chairman, Multidimensional Signal Processing Technical Committee, IEEE Signal Processing Society, 1988-89

Chairman, DSP Technical Committee, IEEE Circuits and Systems Society, 1988-1989

Associate Editor, IEEE Transactions on Acoustics, Speech, and Signal Processing, 1986-88

Member, Board of Governors, IEEE Circuits and Systems Society, 1985-1988

Visiting Committees and Review Panels

Stanford University, School of Engineering, External Advisory Board

Georgia Tech University, College of Engineering, External Advisory Board

Case Western Reserve University, School of Engineering, External Advisory Board

University of Toronto, College of Engineering, external reviewer

University of Delaware, College of Engineering, external reviewer

University of Missouri, College of Engineering, external reviewer

Johns Hopkins University, School of Engineering, external reviewer

University of Pittsburgh, College of Engineering, external reviewer

Louisiana State University, College of Engineering, external reviewer

Stanford University, Dept. of Electrical Engineering, external reviewer

University of Southern California, Dept. of Electrical and Computer Engineering, external reviewer

Georgia Tech University, Dept. of Electrical and Computer Engineering, external reviewer

University of California, Santa Cruz, Dept. of Electrical Engineering, external reviewer

University of Central Florida, Dept. of Electrical and Computer Engineering, external reviewer

University of California, Irvine, Dept. of Electrical Engineering and Computer Science, external reviewer

University of Delaware, Dept. of Electrical and Computer Engineering, external reviewer

Michigan Technological University, Dept. of Electrical and Computer Engineering, external reviewer

Queens University, Canada, Dept. of Electrical and Computer Engineering, external reviewer

NSF CAREER and numerous other research review panels

NSF Communications and Computing Foundations review panel

DARPA panel to formulate research program in hybrid digital/optical imaging

U.S. Army Research Lab, Sensors and Electron Devices Directorate, external reviewer (3 times)

Selected University of Michigan Committees

Member; Diversity, Equity and Inclusion Committee

Member; Dean of Literature, Science and the Arts Search Committee

Member; Dean of Art and Design Search Committee

Member; General Counsel Search Committee

Co-Director of ArtsEngine

Chair; Deans Advisory Committee, Graham Institute for Environmental Sustainability

Member; Deans Advisory Committee, Michigan Energy Institute

Chair; Deans Budget Subcommittee

Member; Deans Facilities and Operations Subcommittee

Member; Deans Development Subcommittee

Member; Deans Undergraduate Education Committee

Selected University of Illinois Committees

Member; Campus Faculty Promotions Review Committee

Chair; Campus Research Board Review Committee

Member; Campus Task Force on Graduate Education

Member; Campus Center for Advanced Study Advisory Committee

Member; Campus Senate

Section Leader; United Way Charitable Fund Drive

Member; Dean of Engineering Search Committee

Member; College of Engineering Executive Committee

Member; Mechanical and Industrial Engineering Head Search Committee

Co-Chair; Beckman Institute External Review Committee (twice)

Member; Beckman Institute Program Advisory Committee

Chair; ECE Faculty Advisory Committee (multiple terms)

Chair; Coordinated Science Laboratory Policy and Planning Committee

Education Initiatives at Michigan

At the University of Michigan, Dean Munson emphasized co-curricular experiential education, collaboration with the Arts and other disciplines, and community and diversity.

In his first year, Dean Munson appointed task forces to identify what improvements could be made in three areas of experiential education: entrepreneurship, multidisciplinary design, and international programs. Following up on these studies, he appointed the nation's first Associate Dean for Entrepreneurial Programs. Michigan Engineering launched the Center for Entrepreneurship (CFE), now among the largest (2,500 students) and best entrepreneurship programs in the nation (http://www.cfe.umich.edu). Fully 50% of the involved students are from outside of Engineering. CFE emphasizes the development of an entrepreneurial mindset, which is applicable in a wide variety of disciplines and endeavors, including social entrepreneurship. Program highlights include dozens of courses taught by practitioners; a student start-up accelerator that assists about 20 student companies each semester; student trips to the Bay Area, Chicago, and New York for intensive mentoring by alumni in the VC and start-up community; 1,000 Pitches – an idea competition that received more than 4,000 submissions per year; and MHacks – among the largest hackathons in the nation (more than 1200 students at a single event).

In the area of multidisciplinary design, Michigan Engineering launched a formal Multidisciplinary Design Program (MDP) that is home to approximately 50 interdisciplinary student design teams, including our many award-winning competitive student design teams (e.g. Solar Car, Formula Race Car, Baja, Mars Rover, Michigan Autonomous Aerial Vehicle) and a dozen overseas project teams providing assistance in the developing world. To build this program, professional staff members were hired, the student project center was doubled in size, and an MDP Minor was created. In addition, a Division of Integrative Systems and Design (ISD) was established. ISD is home to the College's interdisciplinary masters degree programs related to engineered systems and design, and leads our efforts in online education.

To enable more students to undertake international experiences, the staffing of our office of International Programs in Engineering (IPE) was doubled, new academic partnerships were added all around the globe, our premier partnership -- the Joint Institute with Shanghai Jiao Tong University – was formalized, and we worked with industry to create more summer internships overseas, provided funding for student travel, and created an International Minor in Engineering, enrolling more than 250 students. The number of students having an international experience increased at about 20% per year for 5 consecutive years, with the quality of the experiences very high.

Other forms of experiential learning also were valued. The College increased its placement assistance for students seeking summer internships and made available hundreds of research opportunities each year on campus. Dean Munson dramatically increased funding for the latter. He also supported students, often financially, as they participated in the 1200 student groups and societies on campus. These engagements provided opportunities for broadened learning and leadership development.

Dean Munson supported creation of the Center for Research on Learning and Teaching in Engineering and championed the recruitment of a group of tenure-track faculty members whose scholarly work is focused on engineering education.

Dr. Munson is passionate about the Arts and their relationship to other disciplines. In the case of Engineering, most Michigan students are musicians, and others are artists, dancers, and have interests in architecture. Clearly, the notions of creativity, refinement, and perfection, are shared between the Arts and Engineering. To create programming at the intersection of the Arts and Engineering, Dean Munson partnered with the deans of the three arts units at Michigan (Music, Theatre and Dance; Art and Design; Architecture and Urban Planning) to create an organization called ArtsEngine (artsengine.umich.edu). Among the programs offered, ArtsEngine sponsors a living-learning community, called Living Arts, in one of the campus dormitories. There, 120 students in engineering and the arts (including all of the liberal arts) undertake a host of joint projects and coursework together, to learn from one another and develop both sides of the brain. ArtsEngine also promotes the creation of new courses at the intersection of the Arts and other disciplines. One such course, Creative Process, is jointly taught by faculty members from music, dance, engineering, art and design, and architecture. ArtsEngine has spawned a national movement on the role of the arts in research universities. Led by ArtsEngine, a major consortium of more than 30 universities has been established, called the Alliance for the Arts in Research Universities (a2ru.org). An aim of this group is to identify and disseminate best practices for integrating the Arts with other disciplines throughout colleges and universities.

Education Activities at Illinois

At the University of Illinois, Professor Munson taught nine different undergraduate and graduate courses within the systems area of electrical and computer engineering, six of which he originated or completely redesigned. He championed a revision of the undergraduate curriculum in his department at the University Illinois. The required curriculum was reduced, offering more flexibility to students. As part of this effort, he developed a completely new course on analog signal processing. Most students completing this course went on to take his elective course on digital signal processing (DSP), which he also developed. Thousands of students have used his Course Notes for the DSP course. Professor Munson and a colleague collaborated to produce a textbook for the analog signal processing course (Prentice-Hall, 2009). He also developed the laboratories for this course. At the graduate level, he developed a course on digital imaging. In addition, he has taught undergraduate courses on circuit analysis, signals and systems, and probability, and graduate courses on digital signal processing, linear systems, and random processes. At Illinois, he received multiple teaching awards and regularly appeared on the campus list of teachers ranked excellent.

Professor Munson taught semester-length courses to off-campus students over a twenty-year span, using an assortment of distance-learning technologies, beginning with an electronic blackboard and ending with web-based instruction. In Fall 2000, he developed a semester-length web-based course on digital signal processing for off-campus M.S.

students, well before the current online education movement.   Each semester, from 1998-2002, Professor Munson taught a short course on digital signal processing via satellite for the National Technological University (NTU).

In 2000, Professor Munson joined the Infinity Project to develop a high school course on the subject of multimedia engineering and information technology. Topics include waveforms and music processing, image processing, digitization, communications and networking, and coding and cryptography, all within a computer-intensive, hands-on design-based framework. The primary goals of the curriculum are to familiarize students with the high-tech world, illustrate the relevance of math and science in everyday life, and introduce students to aspects of engineering. This project is based at Southern Methodist University and initially was funded by Texas Instruments and various Federal sources. Professor Munson authored several chapters of this curriculum, which has been used in more than 400 high schools and in freshman courses at numerous universities, including West Point. The Infinity team published a textbook and laboratory manual with Prentice-Hall in 2004.

Research Activities:

Professor Munson has conducted research in several areas of signal and image processing. His early work involved optimum design of digital filter structures for the minimization of quantization noise, analysis of limit cycles in digital filters, generation of random sequences with prescribed statistical characteristics, and the design and analysis of linear time-varying systems. He has spent much of his subsequent research career working on imaging systems, particularly synthetic aperture radar (SAR). He was the first to mathematically describe the tomographic imaging mechanism underlying spotlight-mode SAR, and the first to show why high-quality radar imagery can be produced from band-pass Fourier data. Professor Munson's tomographic formulation of SAR served as the basis for U.S. ground-based imaging of satellites, beginning in the 1980s, and also underlies progress on space-based high-resolution SAR imaging of the earth.

Professor Munson extended that early work in numerous directions. He and his colleagues devised a new method of earth-based radar imaging of the moon and interior planets, providing significantly improved resolution, and they showed the feasibility of using existing aircraft weather radars in a synthetic aperture mode for imaging of runways during landing in fog and cloud cover. In related work, he and colleagues demonstrated the feasibility of passive (covert) imaging of aircraft using reflected radio and television signals.

In other research, Professor Munson joined with colleagues working in computational imaging to produce a lensless camera that calculates imagery that is in focus at all depths. The resulting camera melded ideas from optics, radio astronomy, and computer tomography. This same effort yielded new results in reflection tomography that were applied to produce 3-D optical images of objects, using 2-D images collected from a set of views. In a related project, Professor Munson collaborated to produce 3-D imagery of ocean mines using LIDAR (laser radar). This project required the design and construction of a high-powered laser imaging system and testing in the ocean off Scripps Pier in San Diego.

Many of the aforementioned projects require tomographic synthesis of imagery, called back-projection, from views acquired at different angles. Collaborating with Yoram Bresler, Professor Munson and his students devised fast back-projection algorithms for

far-field SAR, near-field SAR, bistatic SAR, fan-beam tomography, and cone-beam tomography. These algorithms offer tremendous computational savings over traditional imaging algorithms. In 2003, Professors Bresler and Munson co-founded InstaRecon, Inc. to develop and commercialize their patented fast algorithms for tomography. The new algorithms use an hierarchical decomposition of the image to reduce the complexity of image formation from $O(N^3)$ to $O(N^2 \log N)$ for 2-D imaging, and from $O(N^4)$ to $O(N^3 \log N)$ for 3-D imaging. Fast algorithms are available for all scanner geometries, with speed-ups ranging from 10× to 100× for images of typical size. InstaRecon has commercialized the technology for use in micro-CT for scanning of laboratory animals and materials specimens. Other applications include medical CT, luggage scanning, industrial inspection, and SAR.

In other research, Professor Munson's group has developed new, improved methods for 2-D phase unwrapping, with applications to SAR topographic mapping and to MRI medical imaging. He now is working on optimization-based approaches to the longstanding SAR autofocus problem. There, he and his students have shown that the problem can be posed as one of multi-channel deconvolution and solved explicitly within a linear algebraic framework.

Professor Munson has advised more than 50 MS and PhD thesis students and served on committees of many others. He has supervised dozens of undergraduate research projects. His research has been supported by numerous agencies and corporations, including the National Science Foundation, Office of Naval Research, Army Research Office, U. S. Air Force, DARPA, Lockheed Martin, and Ford Motor Company.

Publications

Books

G. C. Orsak, R. Athale, S. C. Douglas, D. C. Munson, Jr., J. R. Treichler, S. L. Wood, and M. A. Yoder, Multimedia Information Engineering: Preliminary Version, Prentice-Hall, Upper Saddle River, NJ, 2001.

G. C. Orsak, S. L. Wood, S. C. Douglas, D. C. Munson, Jr., J. R. Treichler, R. Athale, and M. A. Yoder, Engineering Our Digital Future, Prentice-Hall, Upper Saddle River, NJ, 2004.

E. Kudeki and D. C. Munson, Jr., Analog Signals and Systems, Prentice-Hall, Upper Saddle River, NJ, 2009.

Chapters in Books

D. C. Munson, Jr., Revision of "Fourier Waveform Analysis," Ch. 7, Reference Data for Engineers: Radio, Electronics, Computer, and Communications, Seventh Edition, E. C. Jordan, Ed., Howard W. Sams & Co., Inc., Indianapolis, IN, 1985.

D. C. Munson, Jr., J. D. O'Brien, and W. K. Jenkins, "A tomographic formulation of spotlight mode synthetic aperture radar," Proc. IEEE, vol. 17, Aug. 1983; reprinted in Imaging Technology, H. Lee and G. Wade, eds., IEEE Press, 1986; also reprinted in Multidimensional Digital Signal Processing, MDSP Technical Committee, ed., IEEE Press, 1986.

O. Arikan and D. C. Munson, Jr., "A Tomographic Formulation of Bistatic Synthetic Aperture Radar," in Advances in Communications and Signal Processing, W. A. Porter, Ed., Springer-Verlag, New York, 1989.

W. E. Higgins and D. C. Munson, Jr., "Infinite Impulse Response Digital Filter Design," Ch. 5, Handbook for Digital Signal Processing, S. Mitra and J. F. Kaiser, Eds., John Wiley & Sons, Inc., New York, 1993.

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Articles in Journals

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D. C. Munson, Jr., "On finite wordlength FIR filter design," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-29, p. 329, April 1981.

D. C. Munson, Jr. and B. Liu, "Floating point roundoff error in the prime factor FFT," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-29, pp. 877-882, Aug. 1981.

D. C. Munson, Jr., "Accessibility of zero-input limit cycles," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-29, pp. 1027-1032, October 1981.

D. C. Munson, Jr. and Y. K. Hwang, "Verification of quantization error formulas for ROM/ACC filters: Comment on 'low-noise realizations for narrow-band recursive digital filters," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-30, pp. 660-661, August 1982.

W. E. Higgins and D. C. Munson, Jr., "Noise reduction strategies for digital filters: Error spectrum shaping versus the optimal linear state-space structure," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-30 pp. 963-973, Dec. 1982.

B. Liu and D. C. Munson, Jr., "Generation of a random sequence having a jointly specified marginal distribution and autocovariance," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-30, pp. 973-983, December 1982.

D. C. Munson, Jr., J. D. O'Brien, and W. K. Jenkins, "A tomographic formulation of spotlight mode synthetic aperture radar," Proceedings of the IEEE, vol. 71, pp. 917-925, Aug. 1983.

A. C. Bovik, T. S. Huang, and D. C. Munson, Jr., "A generalization of median filtering using linear combinations of order statistics," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-31, pp. 1342-1350, December 1983.

D. C. Munson, Jr., J. H. Strickland, Jr., and T. P. Walker, "Maximum amplitude zero-input limit cycles in digital filters," IEEE Trans. Circuits and Systems, vol. CAS-31, pp. 266-275, March 1984.

W. E. Higgins and D. C. Munson, Jr., "Optimal and suboptimal error spectrum shaping for cascade-form digital filters," IEEE Trans. Circuits and Systems, vol. CAS-31, pp. 429-437, May 1984.

D. C. Munson, Jr., and J. L. C. Sanz, "Image reconstruction from frequency offset Fourier data," Proceedings of the IEEE, vol. 72, pp. 661-669, June 1984.

A. C. Bovik, T. S. Huang, and D. C. Munson, Jr., "Edge-sensitive image restoration using order-constrained least-squares methods," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-33, pp. 1253-1263, October 1985.

D. C. Munson, Jr., "Minimum sampling rates for linear shift-variant discrete-time systems," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-33, pp. 1556-1561, December 1985.

D. C. Munson, Jr. and J. L. C. Sanz, "Phase-only image reconstruction from offset Fourier data," Optical Engineering, vol. 25, pp. 655-661, May 1986.

A. C. Bovik, T. S. Huang, and D. C. Munson, Jr., "Nonparametric tests for edge detection in noise," Pattern Recognition, vol. 19:3, pp. 209-219, 1986.

A. C. Bovik and D. C. Munson, Jr., "Edge detection using median comparisons," Computer Vision, Graphics, and Image Processing, vol. 33, pp. 377-389, 1986.

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A. C. Bovik, T. S. Huang, and D. C. Munson, Jr., "The effect of median filtering on edge estimation and detection," IEEE Trans., Pattern Analysis and Machine Intelligence, vol. PAMI-9, pp. 181-194, March 1987.

W. E. Higgins and D. C. Munson, Jr., "A Hankel Transform approach to tomographic image reconstruction," IEEE Trans. Medical Imaging, vol. 7, pp. 59-72, March 1988.

D. C. Munson, Jr. and R. L. Visentin, "A signal processing view of strip-mapping synthetic aperture radar," IEEE Trans. Acoustics, Speech, and Signal Processing, vol. ASSP-37, pp. 2131-2147, Dec. 1989.

E. J. Diethorn and D. C. Munson, Jr., "A linear, time-varying system framework for noniterative discrete-time bandlimited signal extrapolation," IEEE Trans. Signal Processing, vol. 39, pp. 55-68, Jan. 1991.

J. L. H. Webb and D. C. Munson, Jr., "Reduced-rate block truncation coding of images using error diffusion," IEEE Signal Processing Letters, vol. 2, pp. 68-69, April 1995.

G. Calvagno and D. C. Munson, Jr., "A frequency-domain approach to interpolation from a nonuniform grid," Signal Processing, vol. 52, pp. 1-21, 1996.

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H. Choi and D. C. Munson, Jr. "Direct Fourier reconstruction in tomography and synthetic aperture radar," Int. J. Imaging Systems and Technology, vol. 9, pp. 1-13, Jan. 1998.

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