



WRIGHT STATE
UNIVERSITY

KEFU XUE, Ph.D.

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EDUCATION

1977	B.S.	Shanghai Jiao Tong University	Electrical Engineering
1980	M.S.	Shanghai Jiao Tong University	Electrical Engineering
1987	Ph.D.	The Pennsylvania State University	Electrical Engineering

PROFESSIONAL EXPERIENCE

1993-present	Associate Professor, Wright State University
1987-1993	Assistant Professor, Wright State University
1982-1987	Graduate Assistant and Lecturer, The Pennsylvania State University
1980-1982	Teaching Assistant, Shanghai Jiao Tong University
1977-1978	Field Testing Engineer, Chuan-Dong Shipyard

PROFESSIONAL MEMBERSHIP

1986-2003 IEEE, member

PROFESSIONAL AWARD

1989 President's Club Award, President's Office, Wright State University

PRINTED SCHOLARSHIP

Patents

1. Kefu Xue, Ann Winans, and Eric Walowit, "Motion Compensated Resolution Conversion System," United States Department of Commerce, Patent and Trademark Office, U.S. Patent Number: 5,341,174, August 23, 1994.
2. Kefu Xue, Eric Walowit, and Ann Winans, "Method for Video-to-Printing Image Resolution Conversion," United States Department of Commerce, Patent and Trademark Office, U.S. Patent Number: 5,131,057, July 14, 1992.
3. Kefu Xue, Eric Walowit, and Cailong Zhang, "Method and Apparatus for Bitmap Rasterization of Page Description Language Using Optical Imaging Memory", United States Department of Commerce, Patent and Trademark Office, Serial Number: 07/494,656, November 15, 1991.
4. Kefu Xue and Ping He, "Apparatus and Method for Generating 3-D Volumetric Images of Limbs and for Designing Prosthetic Sockets for Such Limbs," Patent application filed, 1997.

Articles

1. He, Ping; Xue, Kefu; Fan, Yu and Wang Yiwei, "Test of a Vertical Scan Mode in 3D Imaging of Residual Limbs Using Ultrasound", Journal of Rehabilitation Research and Development, Vol. 36, No. 2, pp. 86-93, April 1999.

2. He, Ping; Xue, Kefu and Murka, Paul, "3D Imaging of Residual Limbs Using Ultrasound," Journal of Rehabilitation Research and Development, Vol. 34, No. 3, pp. 269-278, July 1997.
3. He, Ping; Xue, Kefu; Chen, Qun; Murka, Paul and Schall, Scott, "A PC-Based Ultrasonic Data Acquisition System for Computer-Aided Prosthetic Socket Design," IEEE Transactions on Rehabilitation Engineering, Vol. 4, No. 2, pp. 1-6, June 1996.
4. Xue, Kefu; Winans, Ann and Walowitz, Eric, "An Edge Restricted Spatial Interpolation Algorithm", Journal of Electronic Imaging, Vol. 1, No. 2, pp. 151-161, April 1992.
5. Mahalanabis, A. K. and Xue, Kefu, "An Efficient Two-Dimensional Chandrasekhar Filter for Restoration of Images Degraded by Spatial Blur and Noise," IEEE Transactions on Acoustics, Speech and Signal Processing, Vol. ASSP-35, pp. 1603-1610, November 1987.

Papers Published in Full in Official Proceedings

1. Hong, Lang and Xue, Kefu, "Rigid Body Target Modeling for Tracking and Identification," Proceedings of 2004 IEEE International Symposium on Information Theory, June 27 – July 2, 2004, Chicago, IL.
2. Hong, Lang and Xue, Kefu, "Invariant Filtering of Kinematics and Range Signals for Object Tracking and Identification," Proceedings of the 5th IASTED International Conference on Signal and Image Processing, Aug. 13-15, 2003, Honolulu, Hawaii, pp. 417-422
3. Xue, Kefu, S. Sink, and Greg. J. Power, "Effects of SAR Parametric Variations on the Performance of Automatic Target Recognition Algorithms," Proceedings SPIE Int'l Conf. Algorithm for Synthetic Aperture Radar Imagery X, Orlando, FL, Apr. 2003, Volume 5095, pp. 370-384.
4. Xue, Kefu, Power, G., Gregga, J., "The Evaluation of Synthetic Aperture Radar Image Segmentation Algorithms in the Context of Automatic Target Recognition," Proceedings of SPIE International Symposium on Optical Science and Technology, Seattle, Washington, 8-10, July 2002, Volume 4790, pp. 21-32.
5. Xue, Kefu, Power, G. J., and Gregga, J. B., "The Segmentation of SAR Imagery using Discrete Frame Theory," Proceedings SPIE Int'l Conf. Algorithm for Synthetic Aperture Radar Imagery IX, Orlando, FL, Apr. 2002, Volume 4727, pp. 58-68.
6. Xue, Kefu; Jean, Jack and Hong, Lang, "New Media on the Internet – Instrumentation and Measurement over IP," The First IEEE Pacific-Rim Conference on Multimedia, University of Sydney, Australia, pp. 432-435, December 2000.
7. Xue, Kefu; Wang, Yiwei and He, Ping, "Ultrasound Image Feature Extraction Using Discrete Frames", Proceedings of the International Conference on Image Science, Systems and Technology, Las Vegas, NV, pp. 31-35, June 2000.
8. Xue, Kefu; Cheng, Jin; He, Ping and Zheng, Jun, "A 3-D Visualization Tool for Landmark Allocation," IEEE_BMES / EMBS, Atlanta, GA, p. 651, October 1999.
9. Zheng, Jun; He, Ping; Xue, Kefu and Cheng, Jin, "Image Fusion in 3-D Ultrasound Scan of Residual Limbs", IEEE_BMES/EMBS, Atlanta, GA, p. 1061, October 1999.
10. He, Ping; Xue, Kefu; Wang, Yiwei and Fan, Yu, "A New Strategy for 3-D Imaging of Residual Limbs Using Ultrasound", IEEE/EMB, Hong Kong, pp. 2750-2753, 1998.
11. Xue, Kefu; He, Ping and Wang, Yiwei, "A Motion Compensated Ultrasound Spatial Compounding Algorithm," 19th International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, pp. 818-821, October 1997 (on CD-ROM).
12. He, Ping; Xue, Kefu and Wang, Yiwei, "Effects of Spatial Compounding Upon Image Resolution," 19th International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, October 1997 (on CD-ROM).
13. Xue, Kefu and He, Ping, "Ultrasound Imaging Technique for 3-D Visualization of a Human Leg," Proceedings of the International Conference on Neural Networks and Signal Processing, pp. 1334-1337, December 1995.
14. Power, Gregory J. and Xue, Kefu, "A Non-Linear Transform Technique for a Camera and Laser 3-D Scanner," Proceedings of the IEEE and AESS National Aerospace & Electronics Conference, pp. 843-850, May 1995.

15. He, Ping and Xue, Kefu, "A PC-Based Ultrasound Scanning System for Imaging a Residual Limb," Proceedings of the IEEE 16th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, pp. 480-481, November 1994.
16. Jean, Jack and Xue, Kefu, "Pattern Theory for Character Recognition," (invited paper), Proceedings of the 1994 IEEE International Conference on Neural Networks, pp. 4198-4203, June 1994.
17. He, Ping; Xue, Kefu; Murka, Paul and O'Bleness, Frank, "A PC-Based Ultrasonic Data Acquisition System for Computer Aided Socket Design," Journal of the Proceedings of the AAOP, 19th Annual Meeting and Scientific Symposium, Las Vegas, NV, pp. 22, April 1993.
18. Xue, Kefu; He, P.; Bismar, H. A. and Fu, H., "An Ultrasonic Image Compounding Technique for Prosthetic Socket Design," Proceedings of the 6th Visual Communications and Image Processing'91 SPIE Conference, Boston, MA., Vol. 1606, pp. 675-684, November 1991.
19. Xue, Kefu and Crissey, J. M., "An Iteratively Interpolative Vector Quantization Algorithm for Image Data Compression," Proceedings of the IEEE Computer Society Data Compression Conference, Snowbird, UT, pp. 139-148, April 1991.
20. Xue, Kefu and Breznik, Clay W., "A Neural-Net Computing Algorithm For Detecting Edges in A Gray Scale Image," Proceedings of the 29th IEEE Conference on Decision and Control, Honolulu HI, pp. 2368-2373, December 1990.
21. Eppers, W. C.; Xue, Kefu and Chatto, J., "The Limitations of a Single Mode Optical Fiber Delay Line," Proceedings of the IEEE 1990 National Aerospace and Electronics Conference, pp. 246-249, May 1990.
22. Xue, Kefu; Winans, Ann and Zhang, Cailong, "Spatial Domain Algorithm for Video-to-Printing Image Resolution Conversion," Proceedings 1588-22 of the SPIE/SPSE Symposium on Electric Imaging: Science and Technology, pp. 215-224, February 1990.
23. Xue, Kefu and Zhang, Cailong, "Page Description Language to Bitmap Rasterization Using Optical Imaging Memory," Proceedings 1258-21 of the SPIE/SSE Symposium on Electric Imaging: Science and Technology, pp. 202-214, February 1990.
24. Xue, Kefu and Brecha, Dave, "A 3-D Vision Algorithm for Robot Applications," Proceedings of IEEE International Conference on System Engineering, Dayton, OH, pp. 11-13, August 1989.
25. Mahalanabis, A. K. and Xue, Kefu, "A Window Adaptive Chandrasekhar Filtering Algorithm for Image Enhancement," Proceedings of the 26th IEEE Conference on Decision and Control, Los Angeles, CA, pp. 1984-1989, December 1987.
26. Mahalanabis, A. K. and Xue, Kefu, "A Comparison of Least Squares and Correlation Methods for NSHP Model Parameter Estimation of a Given 2-D Image," Proceedings of the 5th International Conference on System Engineering, Dayton OH, pp. 163-165, September 1987.
27. Mahalanabis, A. K. and Xue, Kefu, "A Two Dimensional Scalar Chandrasekhar Filter for Image Restoration," Proceedings of the Fourth Army Conference on Applied Mathematics and Computing, Connell University (ARO Report 87-1, pp. 1277-1238), May 1986.
28. Mahalanabis, A. K. and Xue, Kefu, "A Study of the 2-D Chandrasekhar Strip Filter for Image Restoration," Proceedings of the Systems Science IX, Warsaw, Poland, September 1986.

GRANTS AND CONTRACTS

External Grants

2004-2005	Principal Investigator: Kefu Xue, "A Radar Signal Processor to Extract Consistent Scattering Centers of a Man Made Target from SAR Range Profile Data," MRLets Technologies Inc. (F33615-030C-1446) (\$59,914)
2001	Principal Investigator: Kefu Xue, "Tissue Bath Protocol Development," Human Health Service Administration and Wright State Medical School (\$8,648)
2001-2002	Principal Investigator: Kefu Xue, "Synthetic Aperture Radar (SAR) ATR Parametric Study" Air Force Research Laboratory, Contract number: F33615-01-C1852, (\$49,946)

- 2001-2002 Principal Investigator: Kefu Xue, "Image Segmentation Evaluation Study" Air Force Research Laboratory, Contract number: F33615-01-C1853, (\$14,612)
- 1996-1999 Co-Principal Investigators: Ping He (50%) and Kefu Xue (50%), "Lower-Limb Prosthetic Socket CAD System", National Institute on Disability and Rehabilitation Research (NIDRR), US Department of Education (\$375,000).
- 1996-1998 Co-Principal Investigators: Jack Jean (66%) and Kefu Xue (34%), "Automatic Target Recognition Module Evaluation," AbTech Corporation, Charlottesville, VA and Department of Defense, STTR Program (\$110,000)
- 1995-1996 Principal Investigator: Kefu Xue, "3D Data Analysis and Display Algorithm", Veda, Inc., Dayton OH (\$9,000).
- 1992-1995 Co-Principal Investigators: Ping He (50%) and Kefu Xue (50%), "Application of Ultrasound and Computer Techniques to Lower Limb Prosthetic Socket Design", National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (\$330,000).
- 1994-1995 Co-Principal Investigators: Jack Jean (50%) and Kefu Xue (50%) "Pattern Theory Based Machine Learning", AbTech Corporation, Charlottesville, VA and the Department of Defense, STTR Program (\$30,500)
- 1993-1995 Principal Investigator: Kefu Xue, "Development of 3D Scanning Technology," MTL Systems, Inc., Dayton, OH (\$20,400).
- 1992-1993 Principal Investigator: Kefu Xue, "3D Data Formation of Real Objects Using Optical Scanner for Synthetic Aperture Radar Automatic Strategic Relocatable Target Identification Systems", Department of the Air Force, Wright-Laboratory, Wright Patterson AFB (\$30,000).
- 1989-1991 Principal Investigator: Kefu Xue, "Exploration of New Applications for Cyclic Technology", Mead Imaging Inc., Mead Corporation, Dayton OH (\$85,000).

External Funding Summary: The current grand total external funding since 1989 is \$1,123,020 among which my share is \$697,920.

Internal Grants

- 2000-2001 Principal Investigator: Kefu Xue, "Multi-sensor Image Registration" OBR Research Challenge Grant, (\$17,100).
- 1997-1998 Co-Principal Investigators: Ping He (50%) and Kefu Xue (50%), "3-D Visualization of Ultrasound Data for Landmark Allocation and Diagnosis," State of Ohio Research Challenge Grant (Total funding: \$18,100).
- 1994-1995 Co-Principal Investigators: Ping He (50%) and Kefu Xue (50%), "Motion Compensation in 3-D Ultrasound Imaging", State of Ohio Research Challenge Grant (\$18,000).
- 1990-1991 Co-Principal Investigators: Ping He (50%) and Kefu Xue (50%), "Application of Ultrasound Tomography Technology to Prosthetic Socket Design and Manufacture", State of Ohio Research Challenge Grant (\$39,000).
- 1989- Principal Investigator: Kefu Xue, "Adaptive Color Image Data Compression", President's Club Award, Wright State University (\$5,000).
- 1989- Principal Investigator: Kefu Xue, "Color Video Image Interpolation for Video Image Resolution Conversion", Research Incentive Award, Wright State University (\$3,000).

Internal Funding Summary: The grand total internal funding since 1989 is \$100,200 among which \$62,650 is my share.

Equipment Grants

- 1995- Recipients: Junghsen Leh, Kefu Xue, and Joseph Slater, "Advanced 3-D Camera System" Ohio Infrastructure Institute (\$80,900)
- 1992- Recipients: Kefu Xue and Ping He, "HP9000 Color Workstation with Solid Model Rendering Unit and Other Related Equipment," Mauch Laboratories inc., Dayton OH (Total estimated funding: \$30,000)

OTHER RESEARCH ACTIVITIES

Instrumentation Innovation and Development

Kefu Xue and Greg Power have created and developed, with support from Wright Patterson Air Force Base, a three-dimensional optical image scanner for larger objects. The scanner is currently undergoing a process to move over to Wright State University for further research and development (video tape production is available for review).

Kefu Xue and Ping He have invented and developed a three-dimensional ultrasound scanner for computer-aided prosthetic socket design and manufacture. This instrument is the only kind in the world. It leads the research in the design of prosthesis using internal and external structural information. Wright State University is currently seeking license agreement with potential manufacture for commercialization (video tape production is available for review).

Industrial Consultant

Dymax Corporation, Pittsburgh PA
Frontier Technology Inc., Dayton OH
Spectra Research Corporation, Dayton OH

Graduate Students Supported

- Fully Supported: Ann Winans (EE-MS), Cailong Zhang (EE-MS), Huimin Fu (EE-MS), Qun Chen (EE-MS), and YiWei Wang (EE-MS), Jin Cheng (EE-MS), Samuel Sink (Ph.D.)
- Partially Supported: Frank O'Bleness (EE-MS), Fan Zou (EE-MS), Youshun Sun (BME< EE-MS)
- Summer full-time Scholarship: Ken Luke (EE-MS), Brian Oskey (EE-MS), Sharla Rohrbacher (EE-MS)

TEACHING

Master Theses Directed as Major Professor

1. Clay Breznik A Neural Network for Detecting Edges in a Gray Scale Image, Winter 1989
2. David Brecha Three Dimensional Object Recognition for an Automated Robotic Workstation, Spring 1989
3. James Crissey An Iteratively Interpolative Vector Quantization Algorithm for Color Image Data Compression, Winter 1991
4. Cailong Zhang Page Description Language to Bitmap Rasterization Using Strip Buffers, Winter 1992
5. Ann Winans An Edge Restricted Spline Under Tension Image Interpolation Algorithm, Spring 1992
6. Huimin Fu An Ultrasonic B-Scan Compound Technique for Computer-Aided Prosthetic Socket Design, Spring 1992
7. Frank O'Bleness Morphologic Boundary Extraction and Contour Tracing Algorithms for Compounded Ultrasound B-Scan Images, Summer 1994
8. Kenneth Luke Active Non-Contract 3D Modeling Using an Accurately Calibrated Camera/Laser System, Summer 1994
9. Qun Chen Fast Image Compounding, Object Extraction Algorithm and Ultrasound B-Scan Transducer Calibration, Summer 1995.
10. Brian Oskey An Alternative Calibration Technique for an Active Non-contact 3D Imaging System, Summer 1996
11. Pankaj Datta An Algorithm for P-Wave Detection, Summer 1997
12. Yiwei Wang A Motion Compensation Algorithm Using Feature-Lets, Spring 1998
13. Michael Kotrlik Evaluation of Optical Flow Estimation Techniques using Optical Flow Streams, Summer 1998
14. Jin Cheng 3-D Volume Visualization of Ultrasound Data for Landmark Allocation, Summer 1999.
15. James Zhang A Personal Satellite Communication System using a Low Orbit Satellite Network, Fall 2001
16. Sebrina Pabon Feature Extraction of Synthetic Aperture Radar Images, Fall 2002

PhD Thesis Directed as Major Professor

17. Ronald Dennis in progress

Engineering Clinic Directed

1995-1996 Suite of Image Processing Algorithms (SIPA), Sponsor: MacCauley-Brown, Inc., Dayton OH

1997-1998 Intelligent Construction Site Wireless Communication System, Sponsor: Spectra Precision Inc. Dayton, OH

Class and Laboratory Development

- Developed a senior/graduate level real-time digital signal processing course and laboratory, EE 436/636. This course teaches students digital signal processing theory as well as real-time realizations a using digital signal processor. EE 436 also serves as an anchor course for the communication and digital signal processing design sequence. Contributions include developing laboratory software and maintaining hardware in the DSP laboratory.
- Developed and renewed the course and computer experimental materials for the graduate level digital signal and image processing sequence (EE 710, EE 711, EE 715). It becomes one of the preferred course sequences for our graduate students.
- Introduced Matlab computer projects to the junior level continuous time and discrete-time linear system and signal courses, EE321/521 and EE 322/522
- Developed a smart sensor course for senior/graduate level "Sensors, Mixed Signal Processing and Embedded DSP systems."

Other Teaching Activities

- Team teaching freshmen electrical engineering course, EE 240
- Participated in team teaching in the summer engineering institute
- Introduced real-world problems generated from industrial engineers to our graduate level classes
- Using the internet to deliver course materials for EE 321 / 322 / 436 / 710 / 715
- Guided industry sponsored senior capstone design projects

SERVICE AND ACADEMIC OUTREACH

University Committees

	Position	Dates
Undergraduate Curriculum and Academic Policy	Member	2001-2002
Campus Climate	Team Member	1994-1995
Campus Morale	Member	1994-1995
Asian American Fest	Member	1995
Building and Grounds	Member	1995-1997
Calendar and Election	Member	1997-1998
Asian Heritage Month 2001	Co-Chair	2001

College Committees

	Position	Dates
Undergraduate Curriculum Committee	Member	1998-2002
Undergraduate Curriculum Committee	Chair	2001-2002
Undergraduate Curriculum Committee	Scribe	1998-2001
Undergraduate Engineering Program	Member	1997-2002
EE Department Chair Search Committee	Member	1994
ME Department Chair Review	Member	1995
EE Department Chair Review	Member	1997
Petitions Committee	Scribe	1991-1993
Petitions Committee	Chair	1990-1991
Petitions Committee	Member	1989-1990
Due Process Committee	Scribe	1995-1997
Promotion and Tenure Committee	Member	1996-2001

Department Committees

	Position	Dates
Curriculum Committee	Chair	1998-2002
Curriculum Committee	Member	2003-2004
GTA and Awards Committee	Member	1994-2001
Faculty Development Committee	Member	1993-present
Laboratory Development Committee	Member	1993-present

Curriculum System Subcommittee	Member	1990-2002
Curriculum Communications/DSP Subcommittee	Member	1992-present
Curriculum Communications/DSP Subcommittee	Chair	2003-present
Seminar / Symposium Committee	Chair	1993-1995
Ad Hoc Computer Committee	Member	1992-1993
Graduate Program Committee	Member	1989-1993
GTA and Awards Committee	Member	1991-1992
Colloquium Committee	Member	1989-1990
Curriculum Committee	Member	1987-1989
Faculty Recruitment Committee	Member	1987-1989

Professional Service

The Signal Processing Sessions of the IEEE National Aerospace and Electronics Conference	Organizer	1992 and 1993
IEEE Dayton Chapter Signal Processing Society	Secretary	1991
	Vice-Chair	1992
	Chair	1993
Dayton Chinese-American Association	Member, BOD	1994, 1995
Greater Dayton Chinese Language School Corp. A non-profit organization	Chair, BOD	1997-1999
IEEE Transactions on Evolutionary Computation	Reviewer	1998
IEEE Transactions on Signal Processing	Reviewer	1998-2002
Book review for Prentice Hall		2001
Greater Dayton Chinese Language School Corp. A non-profit organization	Chair, BOD	2003-Present

TECHNICAL REPORTS

1. Xue, Kefu and Sink, Sam, (2003) Final Report to AFRL "Synthetic Aperture Radar (SAR) ATR parametric study"
2. Xue, Kefu (2002) Final Report to AFRL "Image Segmentation Evaluation Study."
3. Xue, Kefu and Winans, Ann (1989-1991). Periodic reports to Mead Imaging Inc. about the findings of new algorithms and results on color image resolution conversion, video image printing, and motion compensation.
4. Xue Kefu and Zhang, Cailong (1989-1991). Periodic reports to Mead Imaging Inc. about the findings of Post-Script interpretation algorithms using color liquid crystal image memory and drawing algorithms without using a page-memory.
5. Eppers, William and Xue, Kefu (1988-1990), Chromatic Dispersion Induced Distortion of Intensity-Frequency Modulated Chirp Radar Signal. U. S. Air Force, WPAFB.

03/12/05