Wesley D. Turner
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Education:

12/00 **Rensselaer Polytechnic Institute, Troy NY**
Obtained a Ph.D. in Computer Science. Dissertation, *Multilevel Preconditioning Methods for the Parallel, Iterative Solution of Large Sparse Systems of Equations.* Completed the *Computational Science and Engineering* program as part of my Ph.D. work. Recipient of University fellowship during first year and of the Founders award of excellence.

1/94 **Pennsylvania State University, State College, PA**
Master of Science in Computer Science.

5/85 **Rensselaer Polytechnic Institute, Troy, NY**
Bachelor of Science in Computer Science with minors in Philosophy and Management. Graduated magna cum laude with a 3.78/4.0 GPA. Member of Phi Mu Epsilon Math Honors Society.

Employment:

07/18-present **Director, Rensselaer Center for Open Source, Rensselaer Polytechnic Institute, Troy, NY**
08/16-present **Senior Lecturer, Rensselaer Polytechnic Institute, Troy, NY**
01/16-06/16 **Adjunct, Rensselaer Polytechnic Institute, Troy, NY**
Taught CS1 (CSCI-1100) as an adjunct and then CS-1, Operating Systems (CSCI-4210), RCOS (CSCI-4963) and Open Source Software (CSCI-49XX) as a Senior Lecturer. Focus on open source, large course development and presentation.

12/14-08/16 **Computer Scientist, SimQuest, LLC, Boston, MA**
Research into surgical simulators and finite element approaches to virtual environments and force feedback. Implemented sparse matrix approaches to linear algebraic solutions along with designing measurement strategies for surgical metrics. PI on Phase I SBIR to map Burn Wounds onto a 3D, segmented model for critical burn treatment and rehabilitation.

5/06-12/14 **Technical Leader, Kitware, Inc., Clifton Park, NY**
Research in multiple aspects of computer vision and visualization as a member of the Medical Imaging Group at Kitware. Responsible for grant and proposal submissions, technical direction, and code development on multiple medical and scientific applications. Project areas include part visualization and data mapping for a LASER Ultrasound inspection system; bone segmentation and statistical characterization; lesion segmentation and volume mapping; dual energy bone removal; blood component characterization from microscope images; dual energy bone removal; and others. Served as a Principal Investigator on initiatives to study statistical analysis of genomics, proteomics and metabolomics data, and as certification and testing expert and technical staff for OSEHRA as part of the Open Source VistA project.

1/01-4/06 **Computer Scientist, General Electric Global Research, Niskayuna, NY**
Research in multiple aspects of computer vision and visualization. Served as project leader on a six person project using statistical modeling techniques to detect potential lung and colon cancers at an early stage. The project spanned multiple entities within the research center to include both Niskayuna and Bangalore. Duties included technical direction, staffing and funding oversight, development of external, clinical and government relationships and yearly project deck planning. Project resulted in a number of applications delivered to GE Healthcare including a new product introduction scheduled for 2005.

Researched deformable registration and atlas based segmentation methods in the pursuit of anatomical understanding of the complete human body. Implemented a deformable registration aligning a human heart to a human atlas for sub-organ segmentation. Researched methods of fusing multiple biometric measurements such as facial images and fingerprints. Research demonstrates a unique technique that improves performance over both single biometrics and current algorithms for fused biometrics in terms of true recognition rate at a given false positive rate.

Researched methods of computer aided forensic facial reconstruction. Responsible for the implementation of a feature based deformable registration technique used to place a CT data set of human heads into a common framework. The common framework was used to generate a set of statistical measures that could predict the likely distribution of flesh on a bare (unidentified) skull in order to aid recognition. Researched methods for visualizing ultrasonic inspection data on computer models of airframe parts. Project required precise modeling of inspection device optical path, registration of computer models to range data describing the part in situ, and the development of techniques for fusing multiple sets of inspection data into one map. Tool included a virtual environment in which an operator could model all aspects of a scan including the visualization of scan coverage and quality.

08/93-12/00   **Research Assistant, Rensselaer Polytechnic Institute, Troy NY**
Research in the use of preconditioned iterative methods to solve linear systems arising from finite element methods.

08/85-09/93   **Senior Engineer, HRB Systems, State College PA**
Designed and implemented the front-end hardware interface for a pipeline data acquisition and processing system. Provided substantial support during hardware testing and integration including the development of informal interface and test software. Investigated next generation Digital Signal Processing (DSP) systems based on the distribution of DSP functions across high powered front-ends and graphical display back ends. Task required the integration of various commercial off-the-shelf products comprising the processing environments, as well as the design and implementation of DSP algorithms.

Implemented various spread spectrum processing algorithms and evaluated their performance on a variety of board level DSP processors. Task required extensive algorithm analysis to ensure both accuracy and throughput on the resulting system. Provided software maintenance support to a multiple rack processing system. Task required familiarity with both system control software and the firmware resident within the hardware units. Developed software for the control of a phased array antennae system. Task required proposal support and software task management in addition to traditional engineering responsibilities.

Teaching:
O8/16-present   **Senior Lecturer, Rensselaer Polytechnic Institute, Troy, NY**

CSCI 4210, *Operating Systems,* **Responsible for lectures and assignments teaching approximately 200 majors in a Junior/Senior level course. Course is taught in C and covers operating systems concepts such as caching, scheduling, file systems, and processes.**

CSCI 4966, *Open Source Software,* **Responsible for lectures and labs teaching approximately 50 majors in a Junior/Senior course in computer science. Course is an interactive exploration of concepts and developments in Open Source Software including basic tools such as git, open source libraries such as VTK/ITK, Tensor Flow, CMake, and others.**

CSCI 1100, *Introduction to Computer Science,* **Co-teaching with Chuck Stewart. Responsible for lectures and labs teaching approximately 250 majors and non-majors an introductory**

Teaching (cont'd):

course in computer science. Course is taught in Python and covers CS basics such as data types, loops, functions, and recursion.

CSCI-4965, *RCOS,* Faculty advisor to the Rensselaer Center for Open Source along with Professor Krishnamoorthy. Responsible for mentoring open source projects and providing administrative functions for RCOS.

O1/16-05/16   **Adjunct Faculty, Rensselaer Polytechnic Institute, Troy, NY**
CSCI 1100, *Introduction to Computer Science*. Co-teaching with Chuck Stewart.

O8/14-2/14   **Adjunct Faculty, College of Saint Rose, Albany, NY**
CSC 111, *Introduction to Computer Science,* Responsible for lectures and labs teaching approximately 25 non-majors an introductory course in computer science. Course covered the history of CS and basic hardware and introductory skills in HTML, Java, Excel.

08/99-12/99   **Instructor, Rensselaer Polytechnic Institute, Troy, NY**
CSCI-2300, *Data Structures and Algorithms,* Responsible for lectures and labs for teaching approximately 120 students and supervising 3 teaching assistants. Course was the third in the CS sequence and covered more advanced C++ topics such as trees, queues and basic graph algorithms.

08/98-12/98   **Instructor, Rensselaer Polytechnic Institute, Troy, NY**
Co-instructor for CSCI-6800/MATH-6800, *Computational Linear Algebra,* Responsible for 20 hours of lecture and associated course assignments in the use of iterative solution methods and parallel computing.

08/97-12/97   **Adjunct Faculty, Hudson Valley Community College, Troy, NY**
Instructor for 06121, *Computer Science II*. Responsible for presentation, test development, and grading of material for a second sequence course on C++ and data structures.

08/96-05/97   **Adjunct Faculty, Siena College, Loudonville, NY**
Lab Instructor for CS15, *Introduction to Computer Applications for Non-Majors*. Responsible for presentation, oversight, and grading of lab exercises. Topics included computer applications such as *Word Perfect, Excel, and Microsoft Access.*

08/94-12/94   **Teaching Assistant, Rensselaer Polytechnic Institute, Troy, NY**
CSCI-6270 Computational Vision. Introductory course on computer vision algorithms.

Publications:

G. Braught, J. MacCormick, J. Bowring, Q. Burke, B. Cutler, D. Goldschmidt, M. Krishnamoorthy, W. Turner, S. Huss-Lederman, B. MacKeller, and A. Tucker, *A Multi-Institutional Perspective on H/FOSS Projects in the Computing Curriculum*, ACM Transactions on Computing Education, Vol. 0, No. 0, Article 0. Publication date: 2017.

R. Beasley, H. Wang, H. Scheirich, W. Turner, G. Sathyaseelan, P. Novotny, J. Lenoir, and T. Kelliher, *Accelerating Surgical Simulation Development via OpenSurgSim: Burr Hole Trainer,* Studies in health technology and informatics, Jan 2016

M. Jermyn, H. R. Ghadyani, M. A. Mastanduno, W. Turner, S. C. Davis, H. Dehghani, and B. W. Pogue, *Fast segmentation and high-quality three-dimensional volume mesh creation from medical images for diffuse optical tomography,* Journal of Biomedical Optics 18(8):86007, August 2013 DOI10.1117/1.JBO.18.8.086007

W. Turner, T. Kelliher, J. Ross, J. Miller , *An analysis of early studies released by the Lung Imaging*

Publications (cont'd):

Database Consortium (LIDC), Lecture Notes in Computer Science, MICCAI 2006.

W. Turner. R. Brown, T. Kelliher, P. Tu, M. Taister, K. Miller, *A novel method of automated skull registration for forensic facial approximation*, Forensic Science International, 154, (2005)

W. Turner, T. Drake, M. Osterkamp, D. Kaiser, J. Miller, P. Tu, C. Wilson, *Using computer vision to map LASER ultrasound onto CAD geometries,* Review of Quantitative Nondestructive Evaluation, 22, American Institute of Physics (2003)

W. D. Turner, *Multilevel preconditioning methods for the parallel, iterative solution of large sparse systems of equations.* Rensselaer Polytechnic Institute, Troy, NY Dissertation (2000).

W. D. Turner, J. E. Flaherty, S. Dey, and M. S. Shephard, *Multilevel preconditioned QMR Methods for unstructured mesh computation,* Comput. Methods Appl. Engrg. 149 (1997) 339-351.

Liu X., Helba B., Krishnan K., Reynolds P., McCormick M., Turner W., Ibáñez L., Yankelevitz D., Avila R. *Fostering Open Science in Lung Cancer Lesion Sizing with ITK module LSTK.* The Insight Journal, (2012)

Basharat A., Turner W., Stephens G., Badillo B., Lumpkin R., Andre P., Perera A. *Tracking Flow of Leukocytes in Blood for Drug Analysis.* Proceedings of SPIE, 7871, Jan-2011.

H. Cline, K. Krishnan, S. Napel, G. Rubin, W. Turner, R. Avila, Automated Coronary Angiography Plaque-Lumen Segmentation, Proceedings of SPIE Medical Imaging 2009

J. Ding, D. Stoianovici, D. Petrisor, R. Avila, L. Ibanez, W. Turner, D. Yankelvitz, F. Banovac, K. Cleary, Needle steering for computer-aided lung bi*opsy: model development and initial results using a robotic needle driver*, MICCAI 2008 Workshop on Needle Steering: Recent Results and Future Opportunities

J. Ross , J . Miller , W . Turner , T . Kelliher, *An Analysis of Early Studies Released by the Lung Imaging Database Consortium (LIDC),* Academic Radiology , Volume 14 , Issue 11 , Pages 1382 – 1388 (2007)

R. Bhotika, P. Mendonça, S. Sirohey, W. Turner, J. McCoy, R. Brown, J. Miller , *Part-based Local Shape Models for Colon Polyp Detection,* Lecture Notes in Computer Science, MICCAI 2006

P.R.S. Mendonça, R. Bhotika, Saad A. Sirohey, Wesley D. Turner, James V. Miller, Ricardo S. Avila, *Model-Based Analysis of Local Shape for Lesion Detection in CT Scans*, Lecture Notes in Computer Science, Volume 3749, Pages 688 - 695, (2005)

J.K. Leader, T.E Warfel, C.R. Fuhrman, S.K Golla, J.L. Weissfeld, R.S. Avila, W.D. Turner, B. Zheng. *Pulmonary nodule detection with low-dose CT of the lung: agreement among radiologists.* AJR Am J Roentgenol, 185(4):973-978 (2005).

R. Bhotika, D. Blezek, P. Mendonça, J. Miller, W. Turner, *Model based approaches to medical image analysis,* IEEE Computer Society International Conference on Computer Vision and Pattern Recognition, Tutorial (2005)

R. Brown, T. Kelliher, P. Tu, W. Turner, M. Taister, K. Miller, *A survey of tissue-depth landmarks for facial approximation,* Forensics Science Communications, 6, (2004)

C. McCulloch, C. Henschke, E. Kazerooni, J. Leader, W. Turner, R. Avila, *CAD-assisted radiologist sensitivity improvement in the detection of solid and subsolid nodules in lowdose CT lung cancer screening exams,* Proceedings of the RSNA, Radiological Society of North America (2004)

C. Hammond, M. Matsusako, K. Oikado, W. Turner, J. Sekiguchi, Y. Numaguchi, *Integration of*

computer aided detection into the workflow at St Luke's International Hospital Center for Preventive Medicine, (InfoRad), **Proceedings of the RSNA, Radiological Society of North America (2004)**

K. Oikado, M. Matsusako, J. Sekiguchi, C. McCulloch, Y. Imai, W. Turner, *The characteristics of lung nodules missed by radiologists and detected by computer-aided detection (CAD) in lung cancer screening: CT exams at the Center of Preventive Medicine, St Luke's International Hospital,(scientific poster),***Proceedings of the RSNA, Radiological Society of North America (2004)**

Patents Granted:

Method and system for identifying regions in an image (United States Patent #8,923,577 B2, Granted December 30, 2014)

Device and method for identifying occlusions (United States Patent #7,965,810 Granted June 21, 2011)

System, program product, and related methods for registering three-dimensional models to point data representing the pose of a part (United States Patent #7,865,316 Granted January 4, 2011)

System, apparatus and method for forensic facial approximation (United States Patent #7,693,564 Granted April 6, 2010)

System and method to calibrate multiple sensors (United States Patent #7,681,453 Granted March 23, 2010)

Patents Filed:

Innovative methods of visualization and detection of anatomical shapes using post processing of 3D filtering for both virtual and actual suppression of false responses (2005)

Method for fusing multiple biometrics for person authentication (2005)

Professional Services/Honors:

Outstanding Teacher in the School of Science, Rensselaer Polytechnic Institute (2019-2020)

Teaching Open Source Award from Red Hat (Spring 2018)

Mentor, Shenendehowa Team 20 Rocketeers, FIRST Robotics Team (2013 – Present)

Co-Chair Tutorial Session, OSEHRA Annual Summit (2013)

Reviewer for *IEEE Transactions on Medical Imaging.* **(2012)**

Elected Senior Member of SPIE (2011)

Reviewer for *Applied Numerical Mathematics.* **(2004)**

Reviewer for *SIAM Journal on Scientific Computing.* **(1998)**

Reviewer for the *International Conference on Algorithms and Architectures for Parallel Processing.* **(1997)**

Reviewer for *Scientific Programming.* **(1995)**

Reviewer and student volunteer for the *Third Workshop on Languages, Compilers and Run-Time Systems for Scalable Computers.* **(1995)**