Vladimir Misic, PhD

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St Clair Hospital Radiation Oncology
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ACCREDITATION

Certified by the American Board of Radiology in Radiation Therapy Physics.

PROFESSIONAL EXPERIENCE

2008- present **Medical Physicist**, UPMC HILLMAN CANCER CENTER, Pittsburgh, PA

- Regional Chief of Physics for SW Region (Uniontown, Washington, St. Clair, Beaver) (2024-present)
- RSO at St. Clair Hospital Radiation Oncology Cancer Center (2012-present)
- Regional Physics Coordinator for UPMC South Region (2010-present)
- Vice Chair of RO Promotions Committee (2023-present)
- Worked as a solo and paired physicist at a very active radiation center (currently 550+ pt/year, 2 Varian linacs, active SBRT program).
- While a solo physicist successfully guided two UPMC facilities through the initial ACRO accreditation process.

Responsibilities: Regular quality assurance testing of radiotherapy equipment and treatment delivery processes; acceptance, commissioning, and dosimetric calibration of radiation therapy equipment; SBRT treatment planning and delivery; oversight of 4D-CT and gated radiation therapy. Upholds compliance with all regulatory (DEP) guidelines and processes. Maintains the radiation safety program at St. Clair RO department. As a Regional Physics Coordinator: works with Director of Medical Physics Division to annually update current policies and procedures and develop new ones as appropriate. As a Vice Chair of RO Promotions Committee: guides, facilitates, and coordinates academic promotions of UPMC staff at the University of Pittsburgh, School of Medicine.

Equipment: Varian TrueBeam/iX/eX linacs; *EMR:* Varian ARIA; *TPS*: Varian Eclipse; *Gating:* Varian RPM, RGSC, and DIBH. Previous experience with Siemens Oncor linac, Lantis R&V system, Phillips Pinnacle TPS.

2006 - 2008 **Physics Resident / Postdoctoral Research Fellow**, THOMAS JEFFERSON UNIVERSITY, Philadelphia, PA

- *External beam experience:* Elekta and Varian equipment.
- *Brachytherapy experience: HDR* and *LDR*.

2005-2006 **Research Assistant Professor**, UNIVERSITY OF ROCHESTER, Rochester NY

- LDR brachytherapy and image-guided radiation therapy at Strong Memorial Hospital

ACADEMIC AND RESEARCH EXPERIENCE

2010-present **Clinical Assistant Professor of Radiation Oncology**, School of Medicine, Department of Radiation Oncology, UNIVERSITY OF PITTSBURGH, Pittsburgh, PA

2005-2006 **Research Assistant Professor**, Department of Radiation Oncology, UNIVERSITY OF ROCHESTER, Rochester, NY

- Developed and implemented algorithms and software for: (1) automatic in vivo tumor detection using optical spectroscopy measurements (MATLAB); (2) automatic needle and seed detection and positioning algorithms for ultrasound imaging system used in robotic platform for permanent seed brachytherapy of the prostate (VC++).

2005-2006 **Research Associate**, Department of Electrical Engineering, ROCHESTER INSTITUTE OF TECHNOLOGY, Rochester, NY

- Supervised and directed graduate students in externally funded projects on image segmentation and text quality enhancement. Developed algorithms for object tracking in video sequences, image segmentation, image analysis, and edge detection for object-oriented rendering and printing applications.

2004-2006 **Adjunct Assistant Professor**, Department of Electrical and Computer Engineering, UNIVERSITY OF ROCHESTER, Rochester, NY
- Responsible for teaching Digital Image Processing and C++ programming courses.

2002- 2005 **Visiting Professor**, Department of Computer Science, ROCHESTER INSTITUTE OF TECHNOLOGY, Rochester, NY - Responsible for teaching graduate and undergraduate level courses: Genetic Algorithms, Database Concepts and Systems, Java and C++ programming. Digital document management research: (1) created JPEG 2000 based image database system (Oracle), with supporting tools for image conversion, annotation, upload, and content-based search; (2) created plug-in for viewing JPEG 2000 images and reading of embedded XML data for Mozilla-type browsers.

2001 **Research Scientist / Summer Intern,** XEROX CORPORATION, Webster, NY
- Actively participated in the development of the JPM file standard (compression of compound documents), which is part of the JPEG 2000 compression standard. Wrote the (worldwide) first implementation of the JPM document compression standard (later adopted in Adobe).

2000 **Research Scientist / Summer Intern,** XEROX CORPORATION, Webster, NY
- Wrote a codestream wrapper for creation of JPEG 2000 compliant files using object-oriented design, (C++). Designed and implemented algorithms for gray compression of binary MRC mask layer and data filling of MRC background layer (Matlab).

1995-1997 **Lecturer and Teaching Assistant**, Dept. of Computer Science, UNIVERSITY OF NOVI SAD, Novi Sad, Serbia

- Instructed and graded basic and advanced C/C++, Pascal, and Fortran programming courses as well as laboratory works in Numerical Methods of Computation course.

EDUCATION

2008	**Residency**	THOMAS JEFFERSON UNIVERSITY, Philadelphia, PA - Department of Radiation Oncology, Medical Physics Division - CAMPEP accredited Medical Physics residency program
2003	**Ph.D.**	UNIVERSITY OF ROCHESTER, Rochester, NY - Department of Electrical and Computer Engineering - Major: Digital Signal and Image Processing
1999	**M.S.**	UNIVERSITY OF ROCHESTER, Rochester NY - Department of Electrical and Computer Engineering - Major: Digital Signal Processing
1995	**B.S.**	UNIVERSITY OF NOVI SAD, Novi Sad, Serbia - Department of Electrical Engineering - Major: Computer Science and Engineering

PROFESSIONAL ACTIVITIES

- Member of AAPM (American Association of Physicists in Medicine).
- Member of ASTRO (American Society of Therapeutic Radiation Oncology).
- Reviewer for the Medical Physics Journal, Journal of Electronic Imaging, IS&T and IEEE conferences.

PATENTS

- Raster-Order Pixel Dithering, US 7978200, 2011
- Unsupervised Color Image Segmentation by Dynamic Color Gradient, US 7873214, 2011

PUBLICATIONS

- Buzurovic I.M., Salinic S., **Misic V**., "Mathematical Model of Patient Support System in Medical Linear Accelerators for External Beam Radiation Therapy", *Current Problems in Experimental and Computational Engineering*, CNNTech 2021, Lecture Notes in Networks and Systems, vol 323: pp. 361-377, Springer, Cham. https://doi.org/10.1007/978-3-030-86009-7_19, 2021
- **Misic V**., Wilson K., Surgent B., Brandner E, Huq, S, "Implementation of TG-100 in a large network organization: initial physics plan check", *(61st AAPM),* 2019
- Buzurovic I., Debeljkovic D.Lj., **Misic V.**, Simeunovic G., "Stability of the Robotic System with Time Delay in Open Kinematic Chain Configuration", *Acta Polytechnica Hungarica,* 11(3), 2014
- Buzurovic I., **Misic V.**, and Yu Y., "Needle Identification in High-Dose-Rate Prostate Brachytherapy using Ultrasound Imaging Modality", *Proc. of 34th IEEE Engineering in Medicine and Biology (EMBC)*, pp.476-479, San Diego, CA, USA, Aug 28th – Sep 1st, 2012.
- Das, I., Cao, M., Cheng, C., **Misic, V**., Scheuring, K., Schule, E., Johnstone, P., "A quality assurance phantom for electronic portal imaging devices", *Journal Of Applied Clinical Medical Physics, 12*(2), 2011.
- Chew, M., Xue, J., Houser, C., **Misic, V**., Cao, J., Cornwell, T., Handler, J., Yu, Y., Gressen, E.L., "Impact of TRUSand CT-based Seed Localization on Post-Implant Dosimetry in Prostate Brachytherapy", *Brachytherapy*, 8:255-264, 2009.
- **Misic V.**, Houser C., Den R., Valicenti R., "Dosimetry Optimization for Miami Vaginal Applicator", I. J. Radiation Oncology, Biology, Physics Volume 72, Number 1, Supplement, 2008
- **Misic V.**, Doemer A., Harrison A., Fallon K., Yu Y., and Xiao Y., "The Effect of Leaf Transmission on IMRT QA in a MiniMLC Linear Accelerator", *(50th AAPM), Med. Phys.* 35(6):2764, 2008.
- Chew M., Xue J., Houser C., **Misic V.**, Cao J., Cornwell T., Yu Y., Gressen E., and Handler J., "Impact of Seed Localization On Post-Implant Dosimetry in Prostate Brachytherapy", *(50th AAPM), Med. Phys.* 35(6): 2737, 2008
- Doemer A, Gingold E., **Misic V.**, Podder T., Yu Y., and Xiao Y., "Consolidated Image Quality QA for Diagnostic CT and Radiotherapy Cone Beam CT", *(50th AAPM), Med. Phys.* 35(6):2781, 2008.
- Buzurovic I., **Misic V.**, Podder T., Hu Y., Yan K., Valicenti R.K., Dicker A., Yu Y., Messing E., Rubens D., Strang J., Liao L., Ng W.-S., "Real-time control strategy for collision avoidance and seed deposition in EUCLIDIAN brachytherapy robotic system", *International Journal of Computer Assisted Radiology and Surgery (Int J CARS),* 3(Suppl. 1): S30-S31., Barcelona, Spain, 2008.
- Balasubramanian G., Saber E., **Misic V.**, Peskin E. and Shaw M., "Unsupervised color image segmentation using a dynamic color gradient thresholding algorithm", *IS&T/SPIE2008,* San Jose CA, 2008.
- **Misic V.**, Sampath V., Yu Y., Saber E., "Prostate Boundary Detection and Volume Estimation using TRUS Images for Brachytherapy Applications", *International Journal Computer Assisted Radiology and Surgery (Int J CARS)*, 2:87-98, 2007.
- Harrison A., **Misic V.**, Podder T.K., Bednarz G., Cryan G., Fallon K., Galvin J., Houser C., Yu Y., and Xiao Y., "Special Dosimetric/Measurement Considerations in Commissioning a Novel Integrated MiniMLC Linear Accelerator", (*49th AAPM*), *Med. Phys.* 34: 2489, 2007.
- Das I., Cheng C.W., Chopra K., **Misic V.**, Schule E., "Evaluation of Quality Assurance Phantom for Electronic Portal Imaging Device (EPID)", (*49th AAPM*), *Med. Phys.* 34:2371, 2007.
- Podder T.K., Bednarz G., **Misic V.**, Yu Y., and Galvin J., "Penumbra Evaluation of the Synergy-S and Novalis Micro-MLCs", (*49th AAPM*), *Med. Phys.* 34:2480, 2007.
- Reddy M. K., **Misic V.**, Saber E. and Trask J., "A new Adaptive Edge Enhancement Algorithm for Color Laser Printers", *International Conference on Acoustic, Speech and Signal Processing (ICASSP)*, Honolulu HI, 2007.

- Yu Y., Podder T.K., Zhang Y.D., Ng W.S., **Misic V.**, Sherman J., Fuller D., Fu L., Messing E.M., Rubens D.J., Strang J.G., and. Brasacchio R.A., "Robot-assisted prostate brachytherapy", *Int. Conf. no Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Copenhagen, Denmark, 2006.
- Yu Y., Podder T.K., Zhang Y.D., Ng W.S., Sherman J., Fuller D., **Misic V.**, Fu L., Messing E.M., Rubens D.J., Strang J.G., and. Brasacchio R.A., "Robot-Assisted Platform for Intratumoral Delivery (RAPID)", *World Congress on Medical Physics and Biomedical Engineering (WC-BME)*, Seoul, Korea, 2006.
- Yu Y., Podder T.K., Zhang Y.D., Ng W.S., **Misic V.**, Sherman J., Fuller D., Fu L., Messing E.M., Rubens D.J., Strang J.G., and. Brasacchio R.A., "A Robotic Platform for Image-Guided Brachytherapy (IGBT)", *(48th AAPM)*, *Med Phys.* 33(6):2061. 2006.
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- Husain M., Saber E., **Misic V.**, Joralemon S.P., "Dynamic Object Tracking By Partial Shape Matching For Video Surveillance Applications", *International Conference on Image Processing (ICIP)*, IEEE, Atlanta GA, 2006.
- **Misic V.**, F u L., Podder T.K., Liao L., Rubens D.J., Brasacchio R., Messing E.M., Strang J.G., Ng W.S., Yu Y., "Dynamic Planning in Single Needle Brachytherapy Systems", *International Cong. & Exe. on Computer Assisted Radiology (CARS)*, Osaka, Japan, 2006.
- Podder T.K., Liao L., Sherman J. Fuller D., **Misic V.**, Rubens D.J., Brasacchio R., Messing E.M., Strang J.G., Ng W.S., Yu Y., "A Method to Minimize Puncturing Force and Organ Deformation", *International Cong. & Exe. on Computer Assisted Radiology (CARS)*, Osaka Japan, 2006.
- Winey B.A., Liao L., Zhang Y., Helbig J., **Misic V.**, Parker K., Podder T.K., and Yu Y., "A Novel Multi-Modality Image-Guided US-NIR Scanner for Breast Cancer Diagnosis", *World Congress of Medical Physics and Biomedical Engineering* Seoul S. Korea2006: Imaging the Future Medicine. *Series: IFMBE Proceedings*, vol. 14. November 2006.
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- Sampath V., **Misic V.**, Saber S., Liu H., Yu Y., "Seed Localization Using TRUS And GRF Based Gaussian Filtering For Brachytherapy Applications", *International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2006)*, Toulouse, France, 2006.
- Winey B. A., **Misic V.**, Fenton B., Liao L., Parker K.J., and Yu Y., "A Noninvasive Optical Probe for Breast Cancer: Diagnostic use of Acoustically Induced Blood Stasis", *Proceedings of SPIE, vol. 7, note: 60860N, Mar. 6*, 2006.
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- **Misic V.**, Kang J. M., Sissel J., Teredesai A., "Portable Image Archiving: Annotation, Search and Data Retrieval *", IS&T Archiving Conference 2005*, Washington D.C. 2005.
- **Misic V.**, Kang J. M., Sissel J., Teredesai A., "JPEG 2000 – New Paradigm in Image Archiving", *1st CCIS*, Rochester NY, 2005.
- Lallemand S. J. Jr., **Misic V.**, "Genetic Programming in Prediction of Foreign Exchange Rates", *1st CCIS*, Rochester NY, 2005.
- **Misic V.**, Anderson P. G., "Algebraic Masks for Color Halftoning", *SPIE2005,* San Jose CA, 2005.
- **Misic V.**, Kang J. M., Sissel J., "JPEG 2000: Web Services for Image Conversion and Document Database Search", *JPEG 2000 Symposium*, University of Connecticut, Storrs CT, 2004.
- Wheeler P., **Misic V.**, Anderson P., Morse M., "Image Dithering as N-Queens Problem", *Artificial Neural Networks in Engineering* (*ANNIE)*, St. Louis MO, 2004.

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- **Misic V.**, Buckley R., Parker K., "Encoding and Processing of Color Engravings (Using MRC)", *International Conference on Image Processing (ICIP)*, IEEE, Rochester NY, 2002.
- **Misic V.**, Parker K., Buckley R., "MRC For Compression of Colored Engravings", *XI European Signal Processing Conference (EUSIPCO)*, Toulouse, France, 2002.
- **Misic V.**, Buckley R., Parker K., "Enhancement of Colored Engravings*", International Conference on Multimedia and Expo (ICME),* Lausanne, Switzerland, 2002.
- **Misic V.**, Kraus K., Eaves M., Parker K. J., "MRC for Compression of Blake Archive Images*", Applications of Digital Image Processing XXV, SPIE 4790*, Seattle WA, 2002.
- **Misic V.**, Kraus K., "Digital Representation and Compression of William Blake’s Hand-Colored Engravings", *Museums and the Web,* Boston MA, 2002.
- **Misic V.**, "MRC and JPEG2000 file format", Workshop on Teaching With Technology, *CTLTR*, Univ. of Rochester, Rochester NY, 2001.
- Vidakovic M., **Misic V.**, "Dynamic Creation of WWW presentations", *YuInfo ’97*, Yugoslavia 1997.
- **Misic V.**, Konjovic Z., "Object Oriented Approach to Generation of Symbolic Mathematical Models of Robots", *12th International Conference on CAD/CAM Robotics and Factories of the Future*, London, UK, 1996.
- Vidakovic M., **Misic V.**, Konjovic Z., "One Implementation of the WWW Server - External DB System Interface", *YuInfo ’96*, Yugoslavia 1996.