**Krzysztof J. Rechowicz**

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**EDUCATION**

**Ph.D. in Engineering with a concentration in Modeling and Simulation**

Old Dominion University, Norfolk, VA, January 2008 – August 2012

Dissertation: *Development and Validation Methodology of the Nuss Procedure Planner*

**M.Eng. in Mechanics and Machine Construction with a concentration in Production Engineering (5-year program)**

Warsaw University of Technology, Faculty of Production Engineering, Dept. of Construction & Biomedical Engineering

Warsaw, Poland, October 1999 – January 2006

Thesis: *Manufacturing Accuracy of SLA Prototypes with Application of Neural Networks*

**AWARDS**

* Teaching and Research Assistantship, Old Dominion University, Spring 2008 – Summer 2012
* Faculty Award in Modeling, Simulation and Visualization Engineering, Old Dominion University, April 2012
* Graduate Student Travel Award, Old Dominion University, November 2010

**PROFESSIONAL EXPERIENCE**

**Research Assistant Professor**, Old Dominion University, Virginia Modeling, Analysis and Simulation Center

Suffolk, VA, May 2014 – present

**Adjunct Assistant Professor**, Old Dominion University, Department of Modeling, Simulation & Visualization Eng.

Norfolk, VA, August 2013 – August 2017

**Postdoctoral Research Associate**, Old Dominion University, Department of Modeling, Simulation & Visualization Eng.

Norfolk, VA, September 2012 – May 2014

**Graduate Research Assistant**, Old Dominion University, Department of Modeling, Simulation & Visualization Eng.

Norfolk, VA, January 2008 – August 2012

TECHNICAL COMMITTEE MEMBERSHIPS:

1. *Technical Advisory Council Member*, Commonwealth Center for Advanced Manufacturing, Disputanta, VA, 2017 – present
2. *Educational Activities Officer*, IEEE, Hampton Roads Section, 2017 – present

**TEACHING EXPIRIENCE**

**Teaching Assistant**, Old Dominion University, Norfolk, VA

* *Engineering Systems Modeling* (Graduate), Fall 2008-2011

Developed homework and quizzes, advised students, graded all written work.

* *Intro to Discrete Event Simulation* (Graduate), Spring 2009, 2011-2012

Advised students, graded all written work.

* *Intro to Discrete Event Simulation* (Undergraduate), Spring 2011

Lab instructor: advised students, developed syllabus and overall course structure including biweekly lab, and administered all grades in lab.

* *Analysis for Modeling and Simulation* (Graduate), Spring 2010

Developed case studies for each class module.

* *Simulation Fundamentals* (Graduate), Summer 2008

Developed a module related to System Dynamics including lectures, case studies, and Vensim tutorials.

**Lecturer**, Warsaw University of Technology, Warsaw, Poland

* *Advanced Manufacturing Techniques* (Graduate), Spring 2007

Developed and taught modules related to Rapid Prototyping/Rapid Manufacturing with emphasis on biomedical applications.

**PROJECTS & GRANTS**

1. (Pending) *Computer-assisted Telehealth Etiquette Training: Healthcare Professional Intent Classification and Virtual Encounter Modeling* (PI)*,* Jeffress Trust, 7/20-6/21
2. (Pending) *Attentional Control and Audio/Visual Retention of Students for the Design of Accessible Classrooms,* Jeffress Trust, 8/20-7/21
3. (Pending) *STTR: Repurposing Computational Analyses of Tactics for Training Assessments Phase II Option I* (PI), Prevailance Inc., 08/20-08/21
4. (Pending) *Distributed Secure Live, Virtual, and Constructive (LVC) Air Combat System Training Environment (SLATE)* (Co-PI), Circadence LLC, 6/20-5/21
5. *Virginia SmallSat Data Consortium* (Co-PI), PI: Saikou Diallo, Virginia Research Investment Fund, 09/19-08/21
6. *Repurposing Computational Analyses of Tactics for Training Assessments Phase II* (PI)*,* Prevailance Inc., 08/19-08/20
7. *Repurposing Computational Analyses of Tactics for Training Assessments Phase I & Option* (PI), Prevailance Inc., 05/18-08/19
8. *Naval Special Warfare Command Modeling and Simulation* (Co-PI), PI: Hector Garcia, Naval Special Warfare Group One, 04/18-05/18
9. *Automation and Testing of In-Situ Tool Wear Prototype* (Co-PI), PI: Kahn Iftekharuddin, Commonwealth Center for Advanced Manufacturing (CCAM), 03/17-12/17
10. *Machining Process Monitoring* (PI), CCAM, 05-09/16
11. *Smartphone-based System for Manual and Semi-Automatic Tool Wear Inspection* *based on 2D images* (PI)*,* CCAM, 06-07/15
12. *Augmented Reality for Process Control* (PI), CCAM, 04/15-02/16
13. *Integration of Visualization and Lava-3DI* (Co-PI), CCAM, PI: Yuzhong Shen, 11/14-02/15

**PATENTS**

* Surgical tool for pectus bar extraction (US Patent US 20130211404 A1)
* Surgical procedure planning and training method (US Patent Application 13/161,093)

**PUBLICATIONS**

**K.J. Rechowicz**, J.B. Shull, M. Hascall, S.Y. Diallo, K.J. O’Brian, “Speech-enabled Internet-of-Things Devices in Support of Development of Echoic Skills Among Children with Autism Spectrum Disorder,” *Journal of American Medical Association* [in review]

C. Tremmel, C. Herff, T. Sato, **K.J. Rechowicz**, Y. Yamani, and D. Krusienski, "Estimating Cognitive Workload in an Interactive Virtual Reality Environment using EEG," Frontiers in Human Neuroscience, vol. 13, p. 401, 2019.

A. Soroczynski, R. Haratym, **K. J. Rechowicz**, “Energy intensity as an ecological factor in the selection of the manufacturing process,” *Welding Technology Review*, 91 (3), 2019.

M. F. Obeid, N. Kidane, **K. J. Rechowicz**, S. Chemlal, R. E. Kelly, and F. D. McKenzie, "Validation of an Objective Assessment Instrument for Non-Surgical Treatments of Chest Wall Deformities," *Stud Health Technol Inform,* vol. 220, pp. 273-80, 2016.

**K. J. Rechowicz**, M. F. Obeid, S. Chemlal, and F. D. McKenzie, "Simulation of the Critical Steps of the Nuss Procedure," *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization,* pp. 1-15,2014.

**K. J. Rechowicz** and F. D. McKenzie, "Development and validation methodology of the Nuss procedure surgical planner," *Simulation*, vol. 89, pp. 1474-1488, 2013.

Y. Yoon, X. Sun, J.-K. Huang, G. Hou, **K. J. Rechowicz**, and F. D. McKenzie, "Designing Natural-Tooth-Shaped Dental Implants based on Soft-Kill Option Optimization," *Computer-Aided Design and Applications*, vol. 10 (1), pp. 59-72, 2013.

**K. J. Rechowicz**, F. D. McKenzie, S. Y. Bawab, and R. Obermeyer, "Evaluation of Fatigue for a Pectus Bar Removal Surgical Tool Design for a Safe Clinical Practice Use Setting," *Computer-Aided Design and Applications*, vol. 10 (1)*,* pp. 78-81,2013.

**K. J. Rechowicz**, F. D. McKenzie, S. Y. Bawab, and R. Obermeyer, "Application of CAD Analysis to Update the Design for a Pectus Excavatum Bar Extraction Tool," *Computer-Aided Design and Applications,* vol. 9, pp. 227-234, 2012.

**CONFERENCE PROCEEDINGS**

Y. Jayawardana, B. Farrow, G. Jayawardena, M. Gray, B. Mahanama, **K.J. Rechowicz**, S. Jayarathna, “Multisensory Data: From Health Sensing to Future Living,” in *Conference on Human Information Interaction and Retrieval*, Vancouver, BC, Canada, 2020. [in review]

S. Y. Diallo, C. J. Lynch, **K. J. Rechowicz**, and G. Zacharewicz, "How to create empathy and understanding: narrative analytics in agent-based modeling," in *Proceedings of the 2018 Winter Simulation Conference*, Goethenburg, Sweden, 2018.

**K. J. Rechowicz**, S. Y. Diallo, D. A. Knowles Ball, and J. Solomon, "Designing Modeling and Simulation User Experiences: An Empirical Study Using Virtual Art Creation," in *Proceedings of the 2018 Winter Simulation Conference*, Goethenburg, Sweden, 2018.

**K. J. Rechowicz**, S. Y. Diallo, H. M. Garcia, J. B. Shull, and B. Cvijetic, "Making digital sense[s]: fundamentals," in *Proceedings of the Annual Simulation Symposium*, Baltimore, Maryland, 2018.

**K. J. Rechowicz**, H. Garcia, “Process Driven Framework for Augmented Reality in a Manufacturing Environment,” in *Proceedings of the 15th International Conference on Modeling and Applied Simulation*, the 13th International Multidisciplinary Modeling & Simulation Multiconference, Cyprus, September 26-28, 2016.

M. F. Obeid, E. Heo, **K. J. Rechowicz**, R. E. Kelly, F. D. McKenzie, “Towards a Hybrid Virtual/Physical Nuss Procedure Surgical Simulator,” in *Proceedings of the International Workshop on Innovative Simulation for Healthcare*, the 12th International Multidisciplinary Modeling & Simulation Multiconference, Bergeggi, Italy, September, 21-23 2015.

M. F. Obeid, S. Chemlal. **K. J. Rechowicz**, E. Heo, R. E. Kelly, F. D. McKenzie, "Improvement of a Virtual Pivot for Minimally Invasive Surgery Simulators using Haptic Augmentation," *Augmented Environments for Computer Assisted Interventions, Lecture Notes in Computer Science*, pp. 70-79, Springer International Publishing, 2014.

M. F. Obeid, **K. J. Rechowicz**, F. D. McKenzie, “Incorporating Reflection for Real-Time Multi-Configuration Haptic-Interactive Virtual Environments,“ in *Proceedings of the 46th Summer Computer Simulation Conference*, Monterey, California, July 6-10, 2014.

S. Chemlal, **K. J. Rechowicz**, M. F. Obeid, R. Kelly, and F. D. McKenzie, "Developing Clinically Relevant Aspects of the Nuss Procedure Surgical Simulator," *Studies in Health Technology and Informatics, Medicine Meets Virtual Reality 21,* vol. 196, pp. 51-55, 2014.

**K. J. Rechowicz**, M. F. Obeid, and F. D. McKenzie, "Patient Specific Modeling of Pectus Excavatum for the Nuss Procedure Simulation," *Bio-Imaging and Visualization for Patient-Customized Simulations, Lecture Notes in Computational Vision and Biomechanics*, vol. 13, J. M. R. S. Tavares, X. Luo, and S. Li, Eds., ed, 2014.

**K. J. Rechowicz** and F. D. McKenzie, "A strategy for simulating and validating the Nuss procedure for the minimally invasive correction of pectus excavatum," in *Biomedical Engineering and Informatics (BMEI), 2011 4th International Conference on*, 2011, pp. 2370-2374.

**K. J. Rechowicz**, R. Kelly, M. Goretsky, F. W. Frantz, S. B. Knisley, D. Nuss, and F. D. McKenzie, "A Design for Simulating and Validating the Nuss Procedure for the Minimally Invasive Correction of Pectus Excavatum," in *Proceedings of Medicine Meets Virtual Reality 18*, Newport Beach, 2011.

**K. J. Rechowicz**, F. D. McKenzie, S. Y. Bawab, and R. Obermeyer, "Optimized surgical tool for pectus bar extraction," in *Engineering in Medicine and Biology Society (EMBC), 2010 Annual International Conference of the IEEE*, 2010, pp. 1254-1257.

**K. J. Rechowicz**, R. Kelly, M. Goretsky, F. Frantz, S. Knisley, D. Nuss, and F. D. McKenzie, "Development of an average chest shape for objective evaluation of the aesthetic outcome in the Nuss procedure planning process," in *Proceedings of Southern Biomedical Engineering Conference*, College Park, MD, USA, 2010.

**K. J. Rechowicz**, F. McKenzie, Z. Yan, S. Bawab, and S. Ringleb, "Investigating an approach to identifying the biomechanical differences between intercostal cartilage in subjects with pectus excavatum and normals in vivo: preliminary assessment of normal subjects," in *Proceedings of SPIE Medical Imaging 2009 Conference*, Orlando, Florida, USA, 2009.

**RESEARCH PAPER POSTER OR PRESENTATION ONLY**

N. Kidane, S. Chemlal, M. F. Obeid, **K. J. Rechowicz**, F. D. McKenzie, R. E. Kelly, “Mobile Application for Objective Measurement of Pectus Excavatum Vacuum Bell Treatment,” presented at the 2015 Spring Simulation Multi-Conference (SpringSim'15), Alexandria, VA, April 12 - 15, 2015.

S. Chemlal, **K. J. Rechowicz**, M. F. Obeid, F. D. McKenzie, “Modeling Insertion Point for General Purpose Haptic Device Simulations for Minimally Invasive Surgeries,” presented at the 2014 IEEE Symposium on 3D User Interfaces (3DUI 2014), Minneapolis, MN, March 29-30, 2014.

**K. J. Rechowicz**, F. D. McKenzie, M. J. Goretsky, R. E. Kelly, and A. N. Deyerle, "Validation of Surface 3D Scanning for Measurement of Postsurgical Improvement following Nuss Procedure for Pectus Excavatum," presented at the 2013 Annual Clinical Congress of American College of Surgeons, Poster presentation, Washington D.C., October 6-10, 2013.

**K. J. Rechowicz**, R. Kelly, M. Goretsky, F. W. Frantz, S. B. Knisley, D. Nuss, and F. D. McKenzie, "Comparison of Pre- and Post-operative Scans as a Means to the Objective Measurement of Improvement of the Nuss Procedure and Validation of the Planning Process," presented at the International Meeting on Simulation in Healthcare, New Orleans, Louisiana, 2011.

**PUBLICATION REVIEWER**

* Simulation: Transactions of the Society for Modeling and Simulation International
* Life
* Computer Methods in Biomechanics and Biomedical Engineering
* Spring Simulation Multi-Conference

**MEMBERSHIPS**

* IEEE, Senior Member
* SCS The Society for Modeling and Simulation, International
* Golden Key International Honour Society

**Community Support Activities**

* Treasurer, IEEE Hampton Roads Section
* Educational Activities Officer, IEEE Hampton Roads Section
* University Representative and Technical Advisory Council Member, Commonwealth Center for Advanced Manufacturing
* Tutorials Chair, The 2020 Spring Simulation Conference, Virtual Conference
* Co-organizer, STEAM on Spectrum 2019
* Co-organizer, Inclusive Gaming: Leveling the Playing Field: Designing Games for Everyone, 2020