

Dr.

Marc Snell

PhD, Eur.Erg.

Ergonomic Specialist & Product Owner,
BMW Group

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SECTIONS / NAVIGATION:

- EDUCATION
- PROFESSIONAL DEVELOPMENT
- EMPLOYMENT
- PUBLICATIONS
- PROPOSALS
- TEACHING EXPERIENCE
- SKILLS
- AFFILIATIONS
- HONORS
- SERVICE

CURRICULUM VITAE

STATEMENT OF PURPOSE

I have a passion for improving and maintaining the physical, physiological, and psychosocial health of people. Through the use of modern and digital technologies I strive optimize processes, workplaces, and human-task interactions.

EDUCATION

PhD, Industrial & Systems Engineering, August 2010 - May 2014

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Degree Specialization: Human Factors Engineering and Ergonomics

Dissertation Title: *Biomarkers of Physiological Damage and their Potential for Work-Related Musculoskeletal Disorder Risk Assessment*

Advisor: Dr. Maury Nussbaum

BS, Mathematics, August 2006 - May 2010

The College of Wooster, Wooster, OH

Honors Independent Study Title: *Differential Gene Expression of H. Bacteriophora TT01 in Response to Heat Stress*

Advisor: Dr. Jim Hartman

BS, Biochemistry & Molecular Biology, August 2006 - May 2010

The College of Wooster, Wooster, OH

Honors Independent Study Title: *Differential Gene Expression of H. Bacteriophora TT01 in Response to Heat Stress*

Advisor: Dr. William Morgan

EMPLOYMENT

Principal & Founder, November 2022 - *present*

ergonomos CS UG, Munich, Germany

- Ergonomics evaluations at office workstations for multinational corporations
- Managerial duties, controlling, and business growth

Ergonomics Specialist, July 2017 - present

BMW Group, Munich, Germany

- Product Owner and project lead and development of underlying scientific methods and calculations, development of complete system function, test management, and cooperation with a development team in an agile software project for the whole BMW Group for digital assessments of hazards and stresses at production workplaces
- Chair of the international expert circle for all ergonomic issues across the BMW Group
- Technical project lead on the first fully automated and digital ergonomics assessment in the automobile industry
- Research, development, and validation of complex algorithms for automated sensor data processing and identification of body postures and body forces
- Steering budget and investment costs for a whole main department level
- Longstanding work and deep understanding in agile software development, including completion of the PSM I, Professional SCRUM Master certification and managing various agile development processes
- Carrying out, publishing, and presenting research and deliverables to high-level management, external conferences, and scientific journals
- Developing and presenting trainings and various forms of media regarding expert- and technical-level knowledge for various ergonomic topics using videos, newsletters, and presentations.
- Primarily responsible for research, testing, purchasing, and steering the use of all modern and digital physiological measurement tools in the BMW Group
- Organisation, participation, and communication regarding international and national expert committees and an annual international ergonomics conference
- Deep knowledge and active participation in the recruitment process, followed by onboarding, mentoring, and evaluation of doctoral, masters, and bachelor students and interns

Consultant, April 2017 – July 2017

ALTEN-Technology GmbH, Munich, Germany

- Documented quality defects at Airbus, in the A350XWB
- Authored SOIs (Standard Operating Instructions) for the A319/320/321

Managing Engineer, September 2016 – February 2017

JFAssociates Inc., Vienna, VA, USA

- Provided expertise in ergonomics, product design, user interaction, workplace safety, work measurement, and optimization
- Performed detailed multivariable analysis and reporting of results
- Authored high quality reports for clients presenting project outcomes
- Directly interacted with clients to determine project needs and deliverables
- Managed junior team members by delegating responsibilities and establishing deadlines
- Co-authored requests for proposals to numerous Fortune 500 companies
- Managed company website

Senior Engineer, May 2016 - September 2016

JFAssociates Inc., Vienna, VA, USA

- Provided expertise in ergonomics, product design, user interaction, workplace safety, work measurement, and optimization
- Provided detailed multivariable analysis for projects
- Worked closely with junior team members to complete projects

- Produced high quality reports for clients presenting project outcomes
- Managed company website

Engineer, May 2014 - May 2016

JFAssociates Inc., Vienna, VA, USA

- Collected, analyzed, and reported on data in a timely and reliable fashion
- Acted as translator and consultant on projects with European clients
- Managed and designed new websites for JFA and affiliated societies, ISOES and SISE
- Organized websites and papers for conferences (SISE - West Point 2015, SISE - Nuevo Leon 2015, ISOES - Nashville 2015, SISE - Ft. Lauderdale 2015)
- Co-authored successful responses for Requests for Proposals (RFPs) for work in ergonomics and time studies worth over \$100,000

NIOSH Training Fellow, May 2012 - May 2014

Industrial and Systems Engineering Department, Virginia Tech, Blacksburg, VA, USA

- Awarded competitive fellowship for monthly stipend (\$1,836) and tuition
- Conducted three studies for dissertation related to biomarkers and their use in assessing work-related musculoskeletal disorder risk
- Planned, wrote, and executed biosafety plan with Health and Safety for BSL-2 research

Graduate Research Assistant, May 2011 - August 2011

Industrial & Systems Engineering, Virginia Tech, Blacksburg, VA

- Investigated the effect of axial loads on the spine, on biomarkers of cartilage and muscle injury
- Assisted with other studies concerning repeated lower back flexion and wall panel lifting

Research Intern, May 2009 - August 2009

Department of Entomology, The Ohio State University, Wooster OH

- Managed two projects under Dr. Parwinder Grewal, Dr. Ruisheng An, and Dr. Xiaodong Bai for 10 weeks
- Prepared research proposal, presentations, and reports concerning all the research performed
- Mentored younger researchers on basic techniques and assisted with implementations

Building Security Monitor, August 2008 - May 2010

Chemistry Department, The College of Wooster, Wooster, OH

- Received formal safety training on emergency protocols, waste disposal, and lab techniques
- Provided safe working environment for chemistry students by performing walkthroughs, observing reactions, etc.

Howard Hughes Medical Institute Research Intern, May 2008 - August 2008

Biochemistry Department, The College of Wooster, Wooster OH

- Worked on research with the chair of the Biochemistry and Molecular Biology department
- Prepared research proposal, presentations, and reports concerning all the research performed
- Co-edited a conference poster with advisor

Resident Assistant, August 2007 - May 2010

Residence Life, The College of Wooster, Wooster, OH

- Acted as safety, counseling, and administrative assistant for 30+ students annually

- Worked successfully in 'house', large dormitory and specialized language hall settings
- Provided regular educational activities and weekly meetings for the residents within a constrained budget
- Performed regular 'on call' rounds and provided 24hr telephone assistance for 100+ students
- Trained in student counseling, administrative tasks, and conflict mediation

Departmental Assistant, August 2006 - May 2010

German Department, The College of Wooster, Wooster, OH

- Performed versatile duties such as photocopying, organizing events, hosting coffee-hour, etc.
- Created and maintained departmental website

PROFESSIONAL DEVELOPMENT

PSM I, Professional SCRUM Master

December 2021

Scrum.org

MicroBachelors, Introduction to Databases

August 2020 - December 2020

New York University (edX)

Machine Learning Certificate

January 2020 - April 2020

Microsoft (edX)

Sicherheitsfachkraft (Safety Professional), April 2018 - August 2019

Berufsgenossenschaft Holz & Metal (BGHM), Germany

MicroMasters, Supply Chain Management,

January 2016 - June 2017

Massachusetts Institute of Technology (edX)

PUBLICATIONS

Snell, M., Dehghani, A., Günzkofer, F., & Schreyer, K. (2023). Digital workplace stress management: a system for digital ergonomics assessment in the BMW group. *Zeitschrift für Arbeitswissenschaft*. <https://doi.org/10.1007/s41449-023-00367-5>

Snell, M., Dehghani, A., Günzkofer, F., Kaltenbrunner, S., & Brombach, J. (2022). Validation of an Ergonomics Assessment Method and Identification of Focus Areas through Development of a Novel Statistical Approach for Aggregated Data. *Industrial and Systems Engineering Review*, *10(1)*, 1-9. <https://doi.org/10.37266/ISER.2022v10i1.pp1-9>

Snell, M., Dehghani, A., Günzkofer, F., Schreyer, K., & Kaltenbrunner, S. (2022). Digital Workplace Stress Management: A System for Digital Ergonomics Assessment in the BMW Group. Paper presented at the *The XXXIVth Annual International Occupational Ergonomics and Safety Conference*, Online. https://doi.org/10.47461/isoes.2022_snell

- Günzkofer, F., **Snell, M.**, Dehghani, A., & Schreyer, K. (2022). Digital Workplace Stress Management (DWSM): Digitale Ergonomiebewertung bei der BMW Group. *Arbeitsmedizin Sozialmedizin Umweltmedizin (ASU)*, (12), 750-754. <https://doi.org/10.17147/asu-1-240859>
- Vogel, S. K., Brieden, A., Dehghani, A., & **Snell, M.** (2022). Systematic Literature Review: Predictive Safety Management in the Automotive Industry. Paper presented at the *DOKBAT 2022 - 18th International Bata Conference for Ph.D. Students and Young Researchers*, Czech Republic. <https://doi.org/10.7441/dokbat.2022.44>
- Snell, M.**, Dehghani, A., Guenzkofer, F., Schreyer, K., & Kaltenbrunner, S. (2022). Digital Workplace Stress Management: Ein Projekt zur digitalen Ergonomiebewertung in der BMW Group. Paper presented at the *68. Frühjahrskongress der Gesellschaft für Arbeitswissenschaft*, Online, A.5.8. **(Paper received "Best in Session" award)**
- Snell, M.**, Dehghani, A., Günzkofer, F., & Kaltenbrunner, S. (2021). Safety and Ergonomics Risk Assessment (SERA): A Customized Ergonomics Assessment Tool for Automobile Manufacturing. Paper presented at the *XXXIIIrd Annual International Occupational Ergonomics and Safety Conference*, Online, 69-73. https://doi.org/10.47461/isoes.2021_069
- Dehghani, A., **Snell, M.**, Günzkofer, F., Kaltenbrunner, S., & Fendekova, E. (2021). SERA: A Digital Risk Management Tool as the Basis of OSHM. Paper presented at the *International Conference at the Brno University of Technology*, Online, 57-67.
- Hefferle, M., **Snell, M.**, & Kluth, K. (2020). Influence of Two Industrial Overhead Exoskeletons on Perceived Strain - A Field Study in the Automotive Industry. Paper presented at the *International Conference on Applied Human Factors and Ergonomics*, San Diego, CA, Springer, 94-100.
- Hefferle, M., Lechner, M., Kluth, K., & **Christian, M.** (2019). Development of a Standardized Ergonomic Assessment Methodology for Exoskeletons Using Both Subjective and Objective Measurement Techniques. Paper presented at the *International Conference on Applied Human Factors and Ergonomics*, Washington, DC, Springer, 49-59.
- Christian, M.**, Fernandez, J., & Subramanian, A. (9/3/2017). Environmental Ergonomics in an Office Workplace. EHS Today at <http://ehstoday.com/health/environmental-ergonomics-office-workplace>
- Christian, M.**, & Nussbaum, M. A. (2016). An Exploratory Study of the Diurnal Variation and Reliability of Biomarkers Related to Physiological Damage Experienced in Work-Related Musculoskeletal Disorders. *MYOPAIN*, 1-11.
- Christian, M.**, Fernandez, J.E., Ibarra-Mejia, G., & Marley, R.J. (2016). *Using the Revised NIOSH Lifting Equation in the Mexican Workplace: Biomechanical, Physiological, and Psychophysical Differences*. Paper presented at the *5th Annual World Conference of the Society for Industrial and Systems Engineering*, San Francisco, CA, 283-289.
- Christian, M.**, Fernandez, J., Subramanian, A., & Ware, B. (2016). *The Impact of Government Health and Safety Initiatives on Healthcare and Ergonomics in the United States*. Paper presented at the *2016 Ergonomics and Human Factors Conference*, Northamptonshire, UK, 146-152.
- Barragan, D., Monfort, S., Kelly, S., & **Christian, M.** (2016). Ergonomic Risk Factor Assessment and Mitigation for Employees at a University Gym. Paper presented at the *XXVIIIth Annual International Occupational Ergonomics and Safety Conference*, Chicago, IL, 1-6.

Christian, M., Ware, B., Subramanian, A., & Fernandez, J. (1/4/2016). Single- and Dual-Monitor Computer Setup: Ergonomic Tips. EHS Today at <http://ehstoday.com/health/single-and-dual-monitor-computer-setup-ergonomic-tips>

Christian, M., & Nussbaum, M. A. (2015). An Exploratory Study of the Effects of Occupational Exposure to Physical Demands on Biomarkers of Cartilage and Muscle Damage. *Journal of occupational and environmental hygiene*, 12(2), 138-144.

Christian, M., & Nussbaum, M. A. (2015). Responsiveness of selected biomarkers of tissue damage to external load and frequency during repetitive lumbar flexion/extension. *International Journal of Industrial Ergonomics*, 48(0), 1-9.

Christian, M., Subramanian, A., Ware, B., & Fernandez, J. (2015). *Application of Holistic Process Improvement in Healthcare: A Case Study*. Paper presented at the 4th Annual World Conference of the Society for Industrial and Systems Engineering, Ft. Lauderdale, FL, 44-45.

Christian, M., Subramanian, A., Ware, B., & Fernandez, J. (2015). *The Preponderance of Workplace Injuries in Healthcare Settings and Implications of the Recently Concluded OSHA National Emphasis Program (CPL 03-00-016)*. Paper presented at the 4th Annual World Conference of the Society for Industrial and Systems Engineering, Ft. Lauderdale, FL, 293-298.

Christian, M., & Nussbaum, M. A. (2015). *Biomarker Responses to Static Axial Trunk Loading and Unloading*. Paper presented at the 4th Annual World Conference of the Society for Industrial and Systems Engineering, Ft. Lauderdale, FL, 38-43.

Christian, M. (2015). *The Current State of Biomarkers Related to Low Back Pain and Their Relation to Established Risk Factors*. Paper presented at the The XXVII Annual Occupational Ergonomics and Safety Conference, Nashville, TN, 37-42.

Christian, M., & Nussbaum, M. A. (2013). *Biomarkers as a Potential Tool for Assessing Work-Related Musculoskeletal Disorder Risk*. Paper presented at the The XXV Annual Occupational Ergonomics and Safety Conference, Atlanta, GA, 44-49.

PROPOSALS

Christian, M., & Nussbaum, M. A. Biomarker Changes over a Working Week in High Physical Stress Jobs. Pilot grant from *Occupational Safety and Health Research Center (VT)*.

- Funded: October 2012
- Amount: \$15,600
- Period: October 2012-October 2013

Christian, M., & Nussbaum, M. A. Biomarkers of Tissue Damage: Assessing Diurnal Variation and Sensitivity to Occupational Physical Demands. Pilot grant from *Occupational Safety and Health Research Center (VT)*.

- Funded: March 2012
- Amount: \$8,000
- Period: March 2012-March 2013

TEACHING EXPERIENCE

Graduate Teaching Assistant, Industrial & Systems Engineering, Virginia Tech, Blacksburg, VA
Industrial Ergonomics, January 2012 - May 2012

- Held weekly office hours, assisted with grading, and taught class occasionally

Work Measurement, August 2010/2011 - December 2010/2011

- Taught labs multiple times per week, held weekly office hours, and assisted with grading

Engineering Economy, January 2011 - May 2011

- Held weekly office hours, assisted with grading, and proctored exams

Teaching Assistant, Chemistry Department, Mathematics Department, The College of Wooster, Wooster, OH

Organic Chemistry, August 2008 - May 2010

- Assisted with weekly labs, analyzed HNMR and GC samples

Mathematical Modeling, January 2010 - May 2010

- Assisted with weekly computer modeling based labs

SKILLS

- Ergonomics
 - Workplace evaluations and assessments:
 - Ergonomics
 - Physical capacity
 - Force measurement and evaluation
 - Auditory/noise assessments
 - Lighting assessments
 - Development and implementation of training courses
 - Models:
 - MONKRAS (montagespezifischer Kraftatlas)
 - LMM (Leitmerkmalmethoden)
 - EAWS (Ergonomic Assessment Worksheet)
 - NIOSH Lifting Equation
 - RULA (Rapid Upper Limb Assessment)
 - REBA (Rapid Entire Body Assessment)
 - Borg CR-10
 - ...and many others
- Applied Physiology
 - Biomechanics
 - Work physiology (muscle use, fatigue, and damage)
 - Workplace physical demands and limitations
 - Biomarkers related to physiological damage
 - Individual differences and risk factors
 - Data collection tools:
 - EMG (Electromyography)
 - NIRS (Near Infrared Spectroscopy)
 - Force gauges
 - Dynamometers
 - Heart Rate
- Health and Safety
 - Compliance audit and evaluation
 - Epidemiology of workplace illnesses and disorders

- Developing proactive health and safety programs
- Industry experience: healthcare, manufacturing, research laboratory, food processing, food service, and many other
- Agile Development
 - Professional SCRUM Master I (Scrum.org)
 - Writing user stories
 - Sprint and backlog management
 - Leading international user feedback meetings
 - Functional testing and defect management
 - Programs: HP-ALM, JIRA, Confluence, ITSM
- Statistical Analysis
 - Multivariate
 - Non-parametric
 - Regression
 - Programs: SAS, JMP, Minitab, SPSS, R, Maple
- Experimental Design
 - Factorial
 - Response Surface
 - Repeated Measures
- Computer Programming
 - MATLAB
 - Perl
 - SQL
- Web Design
 - HTML
 - CSS3
 - Dreamweaver CC
- Graphic Design/Video Editing
 - Adobe Photoshop
 - GIMP
- Languages
 - English
 - German

AFFILIATIONS

- Center for Registration of European Ergonomists (CREE), National Accreditation Board (GfA, Germany), October 2021 – *present*
- Center for Registration of European Ergonomists (CREE), Webmaster, October 2021 – *present*
- Center for Registration of European Ergonomists (CREE), European Ergonomist (Eur.Erg.), June 2017 – *present*
- Gesellschaft für Arbeitswissenschaft (GfA), Member, June 2017 - *present*
- International Society for Occupational Ergonomics and Safety (President), September 2022 - *present*
- International Society for Occupational Ergonomics and Safety (Newsletter Editor & Webmaster), May 2016 - *present*
- International Society for Occupational Ergonomics and Safety (Member), May 2013 - *present*
- Phi Kappa Phi, Graduate Honor Society (Member), December 2012 - *present*
- Human Factors & Ergonomic Society, National (Member), August 2010 - August 2016

- Board of Certified Professional Ergonomics, Associate Ergonomic Professional (Cert. #2032), May 2015 – June 2017

HONORS

Graduate Fellowship, Virginia Tech, August 2010 - May 2011

Honors Senior Thesis, The College of Wooster, May 2010

Vivien Chan Prize in Interdisciplinary Sciences, The College of Wooster, April 2010

Foster Prize in Mathematics, The College of Wooster, April 2010

SERVICE

Alexandria Animal Welfare League (Volunteer), September 2015 - February 2017

Human Factors & Ergonomic Society, Local (Treasurer), November 2011 - February 2014

Badminton Club at Virginia Tech (President), August 2010 - May 2014

The College of Wooster Badminton Club (President), August 2008 - May 2010

WCWS Woo 91 Radio (Disc Jockey), January 2008 - May 2010

The College of Wooster Model United Nations (Research Coordinator), August 2007 - May 2008