

Oregon State University and SantosHuman Inc. Partner to Create the *“First-Ever Digital Human Modeling Course at OSU”*

Oregon State University (OSU) is now working with the Santos[®] Institute to integrate Santos[®] technologies into product development courses, including with the introduction of a first-ever DHM course at OSU. Here, Santos[®] Pro will be used in semester-long design projects focusing on human-centered product design in a course (and possibly courses) that focus on modern product development and human factors engineering. In addition to graduate level courses, Prof. Demirel is also planning to introduce human-centered design strategies in the [“3D Modeling and Engineering Graphics”](#) course for freshmen and sophomores.

Dr. Onan Demirel, Assistant Professor of Mechanical Engineering at OSU, conducts research that focuses on creating computational design strategies that can include human needs, abilities and limitations during early stages of the design process. Professor Demirel is currently working on the development of a human-in-the-loop design framework, which utilizes Digital Human Modeling (DHM) to integrate three domains: Engineering and Industrial Design, Human Factors Engineering and Systems Engineering. *“We will be exploring the use of Santos[®] technologies to help us understand human and built-environment interactions early in the design phase, computationally”*, says Demirel.

Dr. Jim Potvin, one of SHI’s key technical advisors, says, *“Santos provides an excellent platform for performing proactive ergonomics assessments.”* Potvin goes on to say, *“We can now perform any risk assessment before workstation or parts even exist in the physical world, and Santos allows for realistic work simulation for a variety of human sizes and strengths, so that the optimal ergonomic design can be determine quickly, and at much less cost.”*

Prof. Demirel’s long-term teaching goals include the development of an integrated undergraduate and graduate curriculum focusing on DHM and computational design. These courses will target modern product design methodologies with a human-in-the-loop approach. Although the primary course objectives will focus on human aspects of the design process, course content will be multi-disciplinary and address theory and practice required for product innovation. *“I envision Santos[®] will be critical in helping us understand and explore designing and analyzing human-product interactions”*, say Demirel.

“Onan’s plans for his courses and research could not be more relevant or important in today’s changing product development landscape”, says SantosHuman Inc. President and CEO, Steve Beck. *“We are honored that Onan has chosen Santos technologies to play a significant role in the development of his curriculum and research and we look forward to supporting his efforts”*, says Beck.

Dr. Tim Marler, SHI’s Chief Research Scientist and Director of the Santos[®] Institute which oversees all SHI knowledge development and dissemination activities says, *“It’s exciting to see the increased interest universities are showing to expand the use of DHM tools in the field of human systems integration in their curriculum and research.”* Marler goes on to say, *“We look forward to working with OSU on new DHM applications and R&D efforts.”*

With regards to research, Prof. Demirel says, *“With seven active faculty, the Design Engineering Lab at OSU is one of the largest academic mechanical engineering design research labs in the US. We are envisioning the creation of a Design-Test-Build facility for computational product design.”* Demirel goes on to say, *“Santos® will be used as a foundational part of our computational product design and human performance analysis platform.”* The envisioned Design-Test-Build (DTB) space will include motion capture, 3D scanning and additive manufacturing capabilities. Demirel says, *“I am interested in the use of Santos® as a platform to analyze human-product interactions including motion capture, human subject data collection, occupational health, ergonomics, human factors and other relevant fields.”* Demirel goes on to say, *“My long-term research goals include creating a human-in-the-loop design framework that incorporates strategies to represent humans in product development with the fidelity that can include both the Industrial and Mechanical aspects of human-centric product design.”*

“Most ergonomics software packages predict manual arm strength based on a number of assumptions that I was not comfortable with”, says Potvin. “I am excited that Santos now allows for the use of our Arm Force Field method for more accurate manual arm strength estimates that closely match empirical data from the large number of conditions we have studied in my lab.”, says Potvin who goes on to say, “This adds to an already impressive array of assessment tools within the Santos software.”

Additional information on Prof. Onan Demirel programs, publications and current research projects can be found at <http://www.onandemirel.com/> & at <http://design.engr.oregonstate.edu/demirel>.

Contact the Santos® Institute at institute@santoshumaninc.com for more information and to participate in the Santos® University Program.

SHI’s success is tied directly to our clients’ success and the **Santos® Institute** and its programs represent just a few ways in which we strive to match state of the art, human-centric, virtual product design and analysis methods, technologies, and resources with industry requirements.

Provided through the **Santos® Institute**, the **Santos® University Program** is designed to complement and/or foster projects, courses, and curricula related to:

- Industrial Design
- Computer science
- Digital Human Modeling
- Simulation
- Engineering
- Occupational Health & Safety
- Ergonomics
- Human Factors
- Objective Analysis of Motion Capture
- Biomechanics
- Robotics (the foundation of the Santos® predictive models)

In addition, the **Santos® Institute** can assist in the development of new and related curricula.