RODRIGO DURAN

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Mechanical engineer with experience in scientific computing, robotics, control theory, machine learning, and artificial intelligence. Seeking full-time entry-level position applying scientific and mathematical principles to solve complex engineering problems.

Work & Research Experience

Lecturer & Graduate Teaching Associate – University of Central Florida, May 2018 to May 2021
• Delivered concepts using Python, Julia, Matlab, and C programming languages for the EML 3034C undergraduate course.
• Solution methods, optimization, computational thermofluids, inverse problems, boundary elements, and meshless methods.

Research Engineer – WEAR Lab, University of Central Florida, Jan 2020 to Dec 2020
• Developed upper-body cable-driven assistive soft exoskeleton which implemented surface electromyography technology.
• Designed novel high-level controller that regulated the magnitude of assistance to accomplish activities of daily living.
• Extensive testing with inertial measurement unit sensors reflected accurate results when predicting user's intent of motion.

Graduate Research Assistant – Computational Biomechanics Lab, University of Central Florida, May 2019 to Dec 2019
• Research lead for thin shell elasticity theory applied to the maturation of viral capsids constructed with Kirigami techniques.
• Designed folding and unfolding algorithm for convex and non-convex polyhedral-like aerospace shell structural elements.
• Developed fluid-structure-interaction software using Salome's YACS module, Code_Aster, and Code_Saturne numerical solvers.

Automated Robotic Flange Assembly (Senior Design Project) – Siemens Energy, Aug 2018 to May 2019
• Developed robotic device to reduce worker's manual effort and cycle time for the bolted flange assembly process.
• Device provided improved quality by achieving a consistent operation with repeatable results
• Reduced work-related injuries and risks by implementing motion sensor awareness of human workers
• Designed affordable torque sensing system implementing both current driven (open loop) and strain gauge sensor (closed loop).

Director Bid Management & STEM@Siemens Work Experience Program – Siemens Energy, May 2017 to Sep 2017
• Mechanical Engineer responsible for coordinating overall proposal process, including both technical and commercial components.
• Directly Interfaced with thermal cycle, process engineering, controls, mechanical, and electrical engineering organization teams.
• Lead engineer responsible for the development of a reduced-scale combined cycle power plant, electric generator, and fuel pump.

Education

University of Central Florida – Department of Mechanical and Aerospace Engineering, May 2021
Master of Science Degree in Mechanical Engineering (MSME), Mechanical Systems Track, 3.50 GPA

University of Central Florida – Department of Mechanical and Aerospace Engineering, August 2019
Honors Bachelor of Science Degree in Mechanical Engineering (BSME), Computer Science Minor, 3.80 GPA

Software & Programming Languages

- MATLAB and Simulink
- C, C#, and C++
- Python (SciPy)
- Java
- Julia
- Mathcad
- R
- Fortran
- Abaqus CAE
- Unity (XR)
- Blender
- LaTeX
- HPC
- NI LabVIEW
- Linux Environment
- Microsoft Office Suite

Extra-Curricular Activities

University of Central Florida – Camp Connect: UCF STEM, Jun 2019
Presentation on recent advances in the areas of robotics, machine learning, and smart structures applied to biomedical engineering. Topics were delivered to an audience of all age groups in the hope of inspiring the next generation of engineers and scientists.

University of Central Florida – STEM Day, Oct 2019
Presentation on deployable shell structures elaborated using the Caspar-Klug construction. Elementary, middle, and high school students worked together to replicate the complex geometry of a viral capsid. This allowed them to learn more about how bio-inspired structures are changing everyday objects. Students were awarded their own 3D-printed replica of a viral capsid as a prize.

Honors & Awards

Graduate Teaching Assistantship: Full tuition coverage for Master of Science Degree in Mechanical Engineering degree.

Burnett Honors College Award: Full tuition coverage for Bachelor of Science in Mechanical Engineering degree.