LUIS DE CUNTO

Mechanical Engineer | M.Sc. in Mechanical Engineering

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PROFILE

Mechanical Engineer with a strong background in **physical simulations, numerical methods, and mathematical modeling**, complemented by extensive **programming expertise**. Skilled in solving complex problems using techniques such as **nonlinear optimization, machine learning, and surrogate modeling**. With experience across diverse industries, I adapt quickly to challenges and collaborate effectively in team-driven or independent settings. Passionate about applying programming and numerics to optimize and predict system behavior.

WORK EXPERIENCE

Research assistant

Aarhus University

January 2021 – Present Aarhus, Denmark

- Worked as part of the *Mechanics and Geometry of Solids* (MGS) Lab under supervision of PhD Souhayl Sadik.
- *KurvedWind Project*: Development of FEM simulation of thermoforming process of foam core materials. Development of a surrogate/Machine Learning model for spring-back prediction. Writing of technical reports.
- *Elasto Capillari Kirigami Project*: Development of mathematical models of geometrical metamaterials. Conducting experiments on Kirigami metamaterials. Design and fabrication of specimens for experiments. Postprocessing and analysis of experimental data.

Teaching assistant

Aarhus University

March 2020 – January 2021 Aarhus, Denmark

- Courses: Mechanical Vibrations - Dynamics Systems with Applications - Physics and Mechanics - Continuum Mechanics.
- Presentation of lectures. Preparation of study materials for students. Grading of assignments. Helping students with questions regarding exercises and practical project work during on and off course hours.

Research assistant

Aarhus University

July 2019 – January 2021 Aarhus, Denmark

- Worked as part of the *Mechanical Metamaterials and Soft Matter* (MMSM) research group under supervision of PhD Marcelo Dias.
- Development of numerical simulations of thin sheet materials with the commercial software ABAQUS. Programming of Python routines in order to run simulations using parallel computing. Development of postprocessing routines in Python and MATLAB to analyse simulation results.

Young Graduate Trainee Program

CONUAR FAE

June 2017 – August 2018 Ezeiza, Argentina

- Technical Support in Projects related with nuclear fuels production. Technical Documentation in Projects involving nuclear power plants components. Development of simulations of Cold Pilgering and Bending of Zircaloy and Titanium tubes. Development of technical projects related with tubes production. Budget development for technical projects.

KEY COMPETENCES

- Mathematical Modeling
- Numerical Simulations (FEM/CFD)
- Nonlinear Optimization
- Surrogate Modeling (GP/ML)
- Data Science
- Decision Making

IT SKILLS

Microsoft Office	●●●●●
Python	●●●●●
MATLAB	●●●●●
Abaqus	●●●●○
Siemens NX	●●●○○
ANSYS	●●●○○
COMSOL	●●●○○
CATIA	●●●○○
Mathematica	●●●○○

LANGUAGES

Spanish	●●●●●
English	●●●●●
Italian	●●●○○
Danish	●●○○○
German	●○○○○

Laboratory assistant

Instituto Tecnológico de Buenos Aires (ITBA)

October 2013 – December 2014 Buenos Aires, Argentina

- Worked as CAD designer and helped in the development of experiments in the area of aerospace propulsion (Publication: Pedreira, P. H., J. R. Lauretta, and S. D'hers. "*Planar Nozzles for Controllable Microthrusters.*" Journal of Aerospace Engineering (2016): 06016007).

Teaching assistant

Instituto Tecnológico de Buenos Aires (ITBA)

August 2012 – July 2013 Buenos Aires, Argentina

- Providing practical and academic support to students in programming, with a focus on MATLAB.

EDUCATION

M.Sc. in Mechanical Engineering

Aarhus University

January 2019 – January 2021 Aarhus, Denmark

- **Master thesis**: "*Numerical Study of Stress Localization in Thin Shells*". Development and analysis of 2 stress localization cases in thin shells using a Finite Element approach. Development of a curvature calculation method based on Finite Element data and differential geometry. Supervisor: PhD Marcelo A. Dias.

Mechanical Engineer

Instituto Tecnológico de Buenos Aires (ITBA)

March 2011 – March 2018 Buenos Aires, Argentina

- **Final Project**: "*Numerical Implementation of a Hydraulic Fracturing model using XFEM*". Development of a MATLAB code able to simulate the Fluid-Structure Interaction occurring in the process of Hydraulic Fracturing. The code solves simultaneously the deformation of the solid rock and the pressure field of the fluid confined in it, while predicting the crack growth on the solid generated by the fluid pressure. Supervisor: PhD Sebastián D'hers.

VOLUNTARY WORK

Event Coordinator

UngdomsKulturHuset (UKH)

January 2019 – February 2023 Aarhus, Denmark

World Kitchen: Weekly dinner events for 50 international participants, encouraging cultural exchange by cooking and sharing meals from different countries.

- Organizing and overseeing all aspects of the event, including planning, execution, and post-event evaluation, in order to improve the experience for the participants.
- Creating a workflow to ensure an appropriate execution of the event.
- Managing Social Media (Instagram, Facebook) regarding internal (among volunteers) and external (public in general) communication.

Team Leader

AUS Basketball

August 2023 – Present Aarhus, Denmark

- Responsible for internal communication among volunteers and for onboarding new members.
- Scheduling games and managing communication with other teams.
- Assigning responsibilities to team members.

PERSONAL INTERESTS

- Basketball
- Cooking
- Foreign languages and cultures
- Traveling
- Photography

REFERENCES

Professor Souhayl Sadik

@ sosa@mpe.au.dk

Department of Mechanical and Production Engineering, Aarhus University, Denmark

Professor Marcelo A. Dias

@ Marcelo.Dias@ed.ac.uk

Institute for Infrastructure and Environment, School of Engineering, The University of Edinburgh, Scotland