Claudio Canales D.

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Presentation

Master in Engineering Sciences, specialized in Mechanical Engineering. Researcher in biomechanics and biomaterials focused on experimental and numerical work, employing numerical methods, solid and fluid mechanics, finite element method, and continuum mechanics. Also, I have a profound interest in **machine learning** and optimization problems. I am a proactive, empathetic and responsible person with great learning capacity and used to work under pressure. I really enjoy working in a multidisciplinary team and continue learning more. Currently, programming finite element modules in the code of the laboratory and implementing reduced order model techniques for faster simulations

Education

University of Santiago of Chile — Santiago, CL
Master of Science in Engineering, Mechanical Engineering — *Aug. 2018 – Dec 2020*

- **Scholarship awarded by USACH**
- GPA: 4.0 out of 4.0.
- Dissertation: *Characterization of Hyperelastic Materials with Metaheuristic Optimization Algorithms* **(7/7)**

University of Santiago of Chile — Santiago, CL
Mechanical Engineering ***(6 year program)*** — *March. 2016 – Dec 2020*

- **Maximum Distinction**

University of Santiago of Chile — Santiago, CL
Mining Engineering → Change of career to Mechanical Engineering — *March. 2012 – September 2015*

Research Experience

Research Assistant — October 2019 – Present
Biomaterials - Biomechanics Lab - University of Santiago of Chile

- **CBIO 2020 Virtual Conference** — October 2020
  Chilean Congress of Biomechanics and Biomaterials
  Evolutionary Strategies to Characterize Arteries and Stability of Transverse Isotropy
- **Computational Mechanics Congress** — October 2019
  "XVIII Jornadas de Mecánica Computacional 2019"
  Characterization of Hyperelastic Models Using Inverse Methods, Based on Metaheuristic Optimization
- **XLII Ibero-Latin-American Congress on Computational Methods in Engineering and 3rd Pan American Congress on Computational Mechanics** — Nov 2021
  Machine Learning for Biological Modelling and Simulation
  Evolutionary Strategies and Deep Learning to Characterize Soft Tissue

Evolutionary Algorithms Research Internship — January 2020 – February 2020
Université de technologie de Troyes (Light, nanomaterials & nanotechnologies L2N)

- **International Conference on Metamaterials Photonic Crystals and Plasmonics** — 2021
  University of Warsaw - Poland
  Symbolic regression in nano-optics: characterization of dispersive materials as a case study

Professional Experience

Teacher of *Computational Mechanics* — March 2021 – Present
Undergraduate Course at University of Santiago of Chile

Teacher of *Computational Mechanics Design* — March 2021 – Present
Undergraduate Course at University of Santiago of Chile

Teacher of *Complements of Algebra* — October 2020 – March 2021
Undergraduate Course at University of Santiago of Chile

Teacher Assistant of Computational Mechanics — March 2018 – July 2020
Undergraduate Course at University of Santiago of Chile

Teacher Assistant of Computerized Design March 2018 – July 2020
Undergraduate Course at University of Santiago of Chile
Lions Up Chile Finalist (entrepreneurship contest). September 2016

Programming and Software Skills

Programming Languages: Fortran, Git, Python, Matlab/Octave, C/C++, HTML .
Software: Latex, Ansys, OpenFOAM, Solidworks, Inventor, Autocad, Fusion 360, SAM,Arduino,Paraview,GiD, Matlab, Office, EDEM, Ubuntu.

Computational Mechanics Experience

Finite Element Method
Topology Optimization Machine Learning: Deep Learning Specialization Coursera, ROM, Tensorflow
Hyperelastic Modelling: Isotropic and Anisotropic.
Fluid Simulation: Laminar, Tubulent, Non-newtonian.
Metaheuristic Optimization: Genetic Algorithm, Genetic Programming, PSO, Evolutionary Strategies, MOGP.

About Me

- Full name: Claudio Héctor Canales Donoso
- Chilean ID:18.720.109-8 | Passport: F11725216
- Address: Puerta del sol 180, Las Condes, Santiago, Chile.
- Birth: 11th of April of 1994 | Age: 27 years old
- Languages : Native Spanish | Advanced English

Publications

[1] **(Submitted)** E. Rivera, **C. Canales**, M. Pacheco, C. García. D. Macías, D. Celentano and E. Herrera. Mechanical characterisation of the passive mechanical response of the thoracic aorta in chronic hypoxic newborn lambs.
[2] **(Manuscripts in Progress) C. Canales**, C. García. D. Macías and D. Celentano. Evolutionary strategies to characterize isotropic hyperelastic materials.
[3] **(Manuscripts in Progress) C. Canales**, E. Rivera, C. García. D. Macías and D. Celentano. Evolutionary strategies to characterize hyperelastic anisotropic materials and a stabilization criterion for transversal isotropy.

Academic References

1.- Prof. Claudio García.

- Head of the Department of Mechanical Engineering.
- University of Santiago of Chile.
- Email: claudio.garcia@usach.cl
- Researchgate Link

2.- Prof. Diego Celentano.

- Associate Professor.
- Catholic University of Chile
- Email: dcelentano@ing.puc.cl
- Researchgate Link

3.- Prof. Demetrio Macias.

- Professor (Assistant).
- Université de Technologie de Troyes.
- Email: demetrio.macias_guzman@utt.fr
- Researchgate Link