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.

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. *Approximation based on grade scales.*
- Dissertation: *Characterization of Hyperelastic Materials with Metaheuristic Optimization Algorithms*

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

- Only student of the generation that didn't fail any of the 68 undergraduate courses (1 out of 100)

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

Currently working on implementing anisotropic hyperelastic materials models with damage and programming a topological optimization module for the finite element code of this group.

- **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

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** — 2020
  University of Warsaw - Poland
  Symbolic regression in nano-optics: characterization of dispersive materials as a case study
  Delayed to 2021 due to COVID-19

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
Machine Learning: Deep Learning, Tensorflow
Hyperelastic Modelling: Isotropic and Anisotropic.
Fluid Simulation: Laminar, Tubulent, Non-newtonian.
Metaheuristic Optimization: Genetic Algorithm, Genetic Programming, PSO, Evolutionary Strategies.

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