Gerardo Tibamoso Pedraza

Last updated: June, 2022

Email: gtibap@gmail.com
Phone number: (+1) 514-677-7029

Montréal, Québec
Canada

Education

2016 – 2022 **PhD in Applied Engineering**, École de technologie supérieure (ÉTS), Université du Québec, Canada.
Thesis: Guidance in the hybrid cardiovascular procedure for ventricular septal defect closure.
Research group: Interventional Imaging Lab (LIVE, ÉTS), in collaboration with Cardiology, Department of Pediatrics, CHU Sainte-Justine.

2007 – 2011 **MSc in Biomedical Engineering**, Universidad Nacional de Colombia (UNAL).
Thesis: Simultaneous segmentation and reconstruction of liver volume from CT scans.
Research group: Bioingenium (Computer Imaging and Medical Application Laboratory [CIM@LAB]).

1999 – 2006 **BSc in Electronic Engineering**, Universidad Pedagógica y Tecnológica de Colombia (UPTC).
Thesis: Characterization of the QRS complex in electrocardiograms.
Research group: Grupo de Investigación en Procesamiento de Señales (DSP-UPTC).

Research and Teaching Experience

2016 – 2022 Doctoral studies
Worked with cardiologists evaluating solutions for intervention guidance.
Developed pediatric heart phantoms for ultrasound imaging.
Integrated virtual reality in a perventricular cardiac intervention.
Developed a semi-automatic method for cardiac motion estimation in ultrasound imaging.
Implemented the proposed methods using 3D Slicer, Python, and an Aurora NDI.
Mentored students during their internships.

2012 – 2015 Research assistant
Worked in the Virtual Reality Centre in collaboration with the School of Medicine of the Universidad Militar Nueva Granada (UMNG), Bogotá, Colombia.
Studied biomechanics of soft tissues and developed virtual and haptic simulation systems for palpation and puncture of soft tissues in pediatric patients.
Lectured fundamentals of Computer Graphics and Virtual Simulation in the UMNG.

2007 – 2011 Master studies
Worked with radiologists for the analysis and annotation of diagnostic images of the liver in Computed Tomography (CT) scans.
Developed a semi-automatic method for the estimation of the liver's volume in CT using deformable surfaces.
Implemented the proposed method using ITK and VTK in C++.
Lectured fundamentals of Computer Programming in the Universidad Nacional de Colombia.

1999 – 2006 Bachelor studies
Worked with clinicians and cardiologists to analyze electrocardiograms (ECG).
Developed an automatic method to identify the QRS complex in ECG.
Implemented the proposed method using Octave/Matlab and annotated data from Physionet.org (the research resource for complex physiologic signals).

Awards & Scholarships

2019 – 2021 Fonds de Recherche du Québec - Nature et Technologies (FRQNT) **PhD Research Scholarship**

2019 École de technologie supérieure (ÉTS) **Scholarship for a research stay in the Universidad Nacional Autónoma de México (UNAM)**

2018 – 2019 École de technologie supérieure (ÉTS) **PhD Research Scholarship**

2008 Universidad Nacional de Colombia (UNAL) **MSc Research Scholarship**

2005 Universidad Pedagógica y Tecnológica de Colombia (UPTC) **BSc Research Scholarship**

Publications

Peer-reviewed Papers

2022 **Tibamoso-Pedraza, G.**, Amouri, S., Molina V., Navarro I., Raboisson M.J., Miró J., Lapierre C., Ratté S., & Duong L. Navigation guidance for ventricular septal defect closure in heart phantoms. *International journal of computer assisted radiology and surgery* (under review).

2022 Amouri, S., **Tibamoso-Pedraza, G.**, Navarro I., Raboisson M.J., Lapierre C., Miró J., & Duong L. Characterization of blood-mimicking fluids for echocardiography imaging of ventricular septal defects. *International journal of computer assisted radiology and surgery* (accepted for publication).

2022 **Tibamoso-Pedraza, G.**, Navarro, I., Dion, P., Raboisson, M. J., Lapierre, C., Miró, J., Ratté, S., & Duong, L. Design of heart phantoms for ultrasound imaging of ventricular septal defects. *International journal of computer assisted radiology and surgery*, 17(1), 177–184. doi:10.1007/s11548-021-02406-0.

2014 **Tibamoso, G.**, Perez-Gutierrez, B., & Uribe-Quevedo, A. Liver biomechanical model for virtual palpation. *Studies in health technology and informatics*, 196, 430–432. doi:10.3233/978-1-61499-375-9-430

2013 **Tibamoso, G.**, Perez-Gutierrez, B., & Uribe-Quevedo, A. 3D liver volume reconstructed for palpation training. *Studies in health technology and informatics*, 184, 450–452. doi:10.3233/978-1-61499-209-7-450

2010 **Tibamoso, G.**, Rueda, A., & Romero, E. Semi-Automatic Liver Volume Segmentation in Computed Tomography Images. *Acta Biológica Colombiana*, 15(3), 261–274. Retrieved from revistas.unal.edu.co/index.php/actabiol/article/view/18367

2007 **Tibamoso-Pedraza, G.** Reducción de interferencias en señales ECG mediante filtros digitales IIR. *Ingeniería Investigación y Desarrollo*, 5(2), 33-40. Retrieved from revistas.uptc.edu.co/index.php/ingenieria_sogamoso/article/view/858

Peer-reviewed Conference Proceedings

2017 **Tibamoso, G.**, Ratté, S., and Duong, L. Left Ventricle Wall Detection from Ultrasound Images Using Shape and Appearance Information. *In: Karray F., Campilho A., Cheriet F. (eds) Image Analysis and Recognition. ICIAR 2017*. Lecture Notes in Computer Science, vol 10317. Springer, Cham. doi:10.1007/978-3-319-59876-5_8.

2016 **Tibamoso, G.**, Medina-Papagayo, S., Vega-Medina, L., Perez-Gutierrez, B., & Uribe-Quevedo, A.J. 3DUI Electronic Syringe for Neonate Central Venous Access Procedure Simulation. *In: Lackey S., Shumaker R. (eds) Virtual, Augmented and Mixed Reality*. Lecture Notes in Computer Science, vol 9740. doi:10.1007/978-3-319-39907-2

Non-peer-reviewed Papers

2009 **Tibamoso, G.**, & Rueda A. Semi-automatic Liver Segmentation From Computed Tomography (CT) Scans based on Deformable Surfaces. *Segmentation of the Liver Competition 2007 (SLIVER07)*. https://sliver07.grand-challenge.org/

Miscellaneous

Languages

Spanish	Native language
English	Advanced level
French	Beginner

Software and Computer Skills

Python, Octave/Matlab, C++, VTK, ITK, Plus Toolkit, 3D Slicer, Autodesk Meshmixer, MeshLab, LaTeX