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Areas of Specialization

Virtual Simulation • Experiential Learning • Learning Management Systems • Virtual Reality • 3D Modelling & Animation • Web and Mobile Design and Development • Internet of Things • Wireless Sensor Network • Data Fusion • Precision Agriculture

Professional Experience

2020-present **Ontario Tech University**, Ontario, Canada
Graduate Research Assistant
Conducting research studies related to gamification, experiential learning, virtual simulation, and learning management systems, and also providing support to undergraduate and graduate students in their research work.

2015-present **Federal University of Ceará** (UFC), Ceará, Brazil
Assistant Professor at Digital Systems and Media (SMD)
On official leave of absence during Ph.D.
Faculty member of the Digital Systems and Media (Sistemas e Mídias Digitais - SMD) program, focused on digital animation and 3D.

2018-2020 **Ontario Tech University**, Ontario, Canada
Teaching Assistant
Responsible for laboratory and tutorial sessions for undergrad courses in the Game Development and Entrepreneurship program at the Faculty of Business and Information Technology (FBIT).

2020 **Palomino Sys**, Ontario, Canada
Research and Development - Collaborative Learning of Usability Experiences (CLUE) internship
Explored immersive visualization in virtual and augmented reality based on retail data and created a proof-of-concept application for the Oculus Quest.

2019 **Public Services Health and Safety Association**, Ontario, Canada
Research and Development - Collaborative Learning of Usability Experiences (CLUE) internship
Worked on a project to create a virtual reality application to be used as part of the working-at-heights training program.

2011-2015 **Federal University of Ceará** (UFC), Ceará, Brazil
Accessibility and New Web Technologies Researcher
Drafted, designed and implemented the specs for Solar 2 UI (Solar 2 is a Virtual Learning Environment created by UFC developed in Ruby on Rails), created the UI design of various mobile apps for Android and iOS and created and maintained UI tests for Solar 2.

2012   **Studio PO**, Ceará, Brazil
CG Artist
Researched and implemented 3D effects to be used in the new transitions, intros and programs for TV Jangadeiro. Also worked in optimizing assets (objects, scenarios, materials) and improving the network render structure.

2005-2011   **Federal University of Ceará** (UFC), Ceará, Brazil
Webdesigner
Developed layouts used by Distance Learning courses, improved usability, accessibility and implemented new technologies (e.g., HTML5, augmented reality) into Distance Learning material.

2008   **André Grieser Architecture and Acoustic Consulting**, Ceará, Brazil
Architecture Internship
Assisted in the design of acoustic-related residential and commercial architecture projects.

2007   **César Fiuza Projetos**, Ceará, Brazil
Architecture Internship
Assisted in the design of commercial architecture projects and created 3D renders.

Academic Experience

Teaching Assistant

2018-2020   **Ontario Tech University, Canada**
Modelling & Animation System II
Computer Architecture
Game Design Workshop II
Cinematic Systems Design
Game Design Workshop III
Industrial Design for Game Hardware

Professor

2015-2018   **Federal University of Ceará, Brazil**
Visual Communication I
Visual Communication II
History of Design
Three-dimensional Modelling Tools I
Digital Animation Techniques I
Motion Graphics
Programming for Mobile Devices (Swift for iOS)

Education

2018-2022   **Ph.D. (Candidate; expected completion November 2022) in Computer Science, Ontario Tech University**
Research Topics: *Virtual and Augmented Reality, Serious Games, Gamification, Virtual Simulation*

2015-2017   **M.Eng. in Teleinformatics Engineering, UFC**
Dissertation: *Multilevel Data Fusion for Internet of Things in Precision Agriculture*

2003-2011   **B.Arch. in Architecture and Urbanism, UFC**
Dissertation: *Modular Architecture*

Scholarly and Professional Academic Activities

2020-present   **DiSIMinate 2 Build - maxSIMhealth**
Steering Comittee - Information Technology Chair.
https://d2b.maxsimhealth.com/

2019-present   **Cureus - Annals of Simulation - maxSIMhealth**
Deputy Editor.
https://www.cureus.com/channels/simulation-archives

Grants, Honors & Awards

2021-2022   C. da Silva, B. Kapralos, A. Dubrowski, **A. Torres**, S. Coffey, C. Anyinam, L. Graham, E. Peisa-chovich, G. Maheux-Pelletier, *"International Educated Nurse-Centered Virtual Serious Game."* eCampus Ontario - Virtual Learning Strategy - Content, Ontario. May 2021 - February 2022. $77,396.

A. Dubrowski, B. Kapralos, **A. Torres**, *"Enhancing Educators' Experience with a Collaborative Learning Management System (GEN-LMS)."* Social Sciences and Humanities Research Council Small Grants Program (Ontario Tech University). March 2021 - March 2022. $ 6,914.

2020-2021   A. Dubrowski, B. Kapralos, P. Mutombo, **A. Torres**, *"Using an innovative tool to teach and test cultural competencies to enhance age-friendly communities."* Teaching City Grant, City of Oshawa. August 2020 - July 2021. $20,000.

2018-2022   **A. Torres**, *Ontario Trillium Scholarship (OTS)* $40,066 yearly.

Technical Skills

Web Development (Vue.js, Django, HTML5, CSS3)
3D Game Development (Unity, C#)
3D Software (Blender, Modo)
Scientific Computing (Python, Matlab)
Scripting Languages (Python, Shell Script, JavaScript)
Video Editing/Compositing (After Effects, Nuke, Fusion)
Revision Control (Git, Subversion)
Digital Typesetting (LaTeX)

Languages

Portuguese (native)
English (professional proficiency - CLB 9+)

Volunteer Work

2021 **Haiku (Operating System)**
Brazilian Portuguese translator and language manager.

2015 **App Run - First Android App Marathon**
Co-creator of the project, leading communication efforts, guiding volunteers and presenting part of the lectures.

2015 **Introduction to Unity 3D Workshop - Mediaweek Event**
Workshop lecturer and organizer.

2000-2003 **Mandrake Linux (Mandriva)**
First Brazilian Portuguese translator. Worked on the initial versions of the graphical installer and system configuration tools.

Publications & Talks

Journal articles

2022 M. Sivanathan, J. Micallef, K. M. Clarke, B. Gino, S. Joshi, S. Abdo, D. Buttu, M. Mnaymneh, S. Siraj, **A. Torres**, G. Brock, D. Button, C. Pereira, A. Dubrowski. "The Development and Initial End-Point User Feedback of a 3D-Printed Adult Proximal Tibia IO Simulator". Technical Report. *Cureus*, May 2022, vol. 14(5), e25481, doi: 10.7759/cureus.25481

B. Nguyen, **A. Torres**, W. Sim, D. Kenny, L. Beavers, D. Campbell, W. Lou, B. Kapralos, E. Peter, A. Dubrowski, S. Krishnan, V. Bhat, "Digital Interventions to Reduce Distress Among Health Care Providers at the Frontline: Protocol for a Feasibility Trial," *JMIR Research Protocols*, Feb. 2022, vol. 11(2), p. e32240, doi: 10.2196/32240.

2021 M. Habti, F. Bénard, A. Arutiunian, S. Bérubé, D. Cadoret, L. Meloche-Dumas, **A. Torres**, B. Kapralos, F. Mercier, A. Dubrowski, E. Patocskai, "Development and Learner-Based Assessment of a Novel, Customized, 3D Printed Small Bowel Simulator for Hand-Sewn Anastomosis Training,". Technical Report. *Cureus*, Dec. 2021, doi: 10.7759/cureus.20536.

E. S. Junqueira, C. Silva, **A. Torres**, E. Teixeira, "Análise, Através da Técnica de Rastreamento Ocular, de Interfaces de Fórum Virtual que Favorecem a Aprendizagem On-line (Analysis, Through the Eye Tracking Technique, of Virtual Forum Interfaces Features that Raise On-line Learning)," *Cadernos de Pesquisa*, vol. 28, no. 3, pp. 181-202, Jul-Sep. 2021.

A. Dubrowski, B. Kapralos, E. Peisachovich, C. Da Silva, and **A. Torres**, "A Model for an Online Learning Management System for Simulation-Based Acquisition of Psychomotor Skills in Health Professions Education," Cureus, Mar. 2021, doi: 10.7759/cureus.14055.

2020 **A. Torres**, A. R. da Rocha, T. L. Coelho da Silva, J. N. de Souza, and R. S. Gondim, "Multilevel

Data Fusion for the Internet of Things in Smart Agriculture," *Computers and Electronics in Agriculture*, vol. 171, p. 105309, Apr. 2020, doi: 10.1016/j.compag.2020.105309.

2018   C. M. S. Ferreira, M. J. P. Peixoto, P. A. S. Duarte, **A. Torres**, M. L. Silva Junior, L. S. Rocha, and W. Viana, "An Evaluation of Cross-Platform Frameworks for Multimedia Mobile Applications Development,", *IEEE Latin America Transactions*, vol. 16, no. 4, pp. 1206-1212, 2018, doi: 10.1109/TLA.2018.8362158.

2016   J. C. S. Carvalho, A. R. da Rocha, F. R. C. Sousa, **A. Torres**, and J. N. De Souza, "Management of Multiple Applications for Shared Sensor and Actuators Networks,", *IEEE Latin America Transactions*, vol. 14, no. 10, pp. 4358-4366, 2016, doi: 10.1109/tla.2016.7786316.

Book Chapters

2021   **A. Torres** and maxSIMhealth Group, "An interconnected collective of manufacturing, design, and simulation labs to advance medical simulation training." In: A. L. Brooks, S. Branham, B. Kapralos, A. Nakajima, J. Tyerman, and l. Jain (Eds.). *Recent Advances in Technologies for Inclusive Well-Being: Virtual Patients, Gamification and Simulation*, Cham: Springer International Publishing, pp. 141–176, 2021, doi: 10.1007/978-3-030-59608-8_8.

2017   M. F. Bonates and **A. Torres**, "Modelagem 3D: Conceitos Básicos e o Estado da Arte." In: Edgar Marçal et al. (Org.). *Sistemas e Mídias Digitais: Uma Introdução*, 1 ed., São Paulo: Pontes Editores, Campinas, pp. 61-87, 2017.

2016   A. R. da Rocha, F. R. C. Sousa, **A. Torres**, and J. N. De Souza, "Internet of Things: Architecture, Technologies and Applications". In: Silvia Watts. (Org.). *The Internet of Things (IoT): Applications, Technology, and Privacy Issues*, 1st ed., S. Watts, Ed. Hauppauge, New York: Nova Publishers, pp. 1–21, 2016.

Conference Papers

2022   C. da Silva, **A. Torres**, B. Kapralos, E. Peisachovich, C. Anyinam, S. Coffey, L. Graham, and A. Dubrowski, "International Educated Nurse-Centered Virtual Serious Game Framework." In: *The Thirteen IEEE International Conference on Information, Intelligence, Systems and Applications (IISA 2022)*, Online, July 18-20, 2022.

2021   **A. Torres**, B. Kapralos, C. da Silva, E. Peisachovich, and A. Dubrowski, "A Scenario Editor to Create and Modify Virtual Simulations and Serious Games for Mental Health Education." In: *The Twelfth International Conference on Information, Intelligence, Systems and Applications (IISA 2021)*, Online, July 12-14, 2021, doi: 10.1109/IISA52424.2021.9555531.

2020   **A. Torres**, C. Carmichael, W. Wang, M. Paraskevakos, A. Uribe-Quevedo, P. Giles, and J. L. Yawney, "A 360 Video Editor Framework for Interactive Training." In: *2020 IEEE 8th International Conference on Serious Games and Applications for Health (SeGAH)*, Vancouver, BC, Canada, pp. 1-7, 2020, doi: 10.1109/SeGAH49190.2020.9201707.

2019   S. V. Cruz, G. de Castro Quintino, **A. Torres**, and W. Viana, "Providing Sense of Embodiment with Mobile Virtual Reality Devices: A Case Study using the 'Lamp-Head's Laboratory' Animation." In: *2019 21st Symposium on Virtual and Augmented Reality (SVR)*, Rio de Janeiro, Brazil, pp. 1-9, 2019, doi: 10.1109/SVR.2019.00017.

A. **Torres**, B. Kapralos, A. Uribe-Quevedo, E. Z. Quero, and A. Dubrowski, "A Gamified Educational Network for Collaborative Learning,". In: Auer M.E., Tsiatsos T. (eds) *Internet of Things, Infrastructures and Mobile Applications. IMCL 2019. Advances in Intelligent Systems and Computing*, vol 1192. Springer, Cham., doi: 10.1007/978-3-030-49932-7_26.

K. Wilcocks, A. **Torres**, A. Uribe-Quevedo, B. Kapralos, S. Hunt, K. Slade, and G. Cullen, "Development of a Virtual Reality-Based Working at Heights Safety Awareness Framework." In: *Proceedings of the 23rd Annual IEEE International Symposium on Consumer Technologies (ISCT 2019)*, June 19-21, Ancona, Italy, doi: 10.1109/ISCE.2019.8901011.

2017 A. **Torres**, J. Adriano Filho, A. R. da Rocha, R. S. Gondim, and J. N. De Souza, "Outlier detection methods and sensor data fusion for precision agriculture." In: *Anais do IX Simpósio Brasileiro de Computação Ubíqua e Pervasiva (SBCUP)*, São Paulo, 2017, doi: 10.5753/sbcup.2017.3316.

2016 A. **Torres**, A. R. da Rocha, and J. de Souza, "Análise de Desempenho de Brokers MQTT em Sistema de Baixo Custo." In: *Anais do XV Workshop em Desempenho de Sistemas Computacionais e de Comunicação*, Porto Alegre, pp. 2804-2815, 2016, doi: 10.5753/wperformance.2016.9727

P. de T. C. Pequeno Filho, W. W. F. Sarmento, A. **Torres**, J. M. Soares, G. C. Barroso and G. A. L. Paillard, "u-LabPA: A framework based on ubiquitous computing for laboratory activities.". In: *2016 8th Euro American Conference on Telematics and Information Systems (EATIS)*, Cartagena, pp. 1-5, 2016, doi: 10.1109/EATIS.2016.7520146.

2014 M. J. P. Peixoto, A. **Torres**, W. W. F. Sarmento, R. S. Freire, and H. S. L. Pequeno, Mathpost: A Integração de Uma Ferramenta Gráfica Utilizando LaTeX para Discussões em Webforum. In: *Congresso Brasileiro de Educação em Engenharia (COBENGE)*, Juiz de Fora, 2014.

A. de L. Coutinho Junior, A. **Torres**, M. J. P. Peixoto, C. M. A. Bezerra, Y. V. S. Albuquerque, D. A. A. Gurgel, L. L. C. Pequeno and W. W. F. Sarmento, "Utilização de robótica livre com dispositivos móveis no ensino de lógica de programação para alunos do Ensino Fundamental". In: *XIX Conferência Internacional sobre Informática na Educação (TISE)*, Fortaleza, p. 10, 2014.

2013 W. W. F. Sarmento, G. A. L. Paillard, W. S. Lima, K. F. Rabelo, A. **Torres**, H. O. O. Gomes, P. M. B. Costa and M. C. Pequeno, "extMobilisTTS: Uma Arquitetura de Aplicação Móvel para Suporte a Fóruns usando Text-to-Speech em Ambientes Virtuais de Aprendizagem". In: *XXXI Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos*, Brasília. Anais do 31º Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos. SBC, pp. 1068-1075, Porto Alegre, 2013.

2011 W. W. F. Sarmento, C. L. Harriman, K. F. Rabelo, and A. **Torres**, "Avaliação de Usabilidade no processo de desenvolvimento contínuo em Ambientes Virtuais de Aprendizagem: um estudo de caso com o ambiente SOLAR". In: *XXII Simpósio Brasileiro de Informática na Educação e o XVII Workshop de Informática na Escola (SBIE - WIE)*. Anais do Simpósio Brasileiro de Informática na Educação, pp. 781-791, Aracaju, 2011.

ABSTRACTS AND POSTERS

2022 N. Guérard-Poirier, M. Beniey, L. Meloche-Dumas, A. **Torres**, B. Kapralos, M. Dhane, F. Mercier, A. Dubrowski, E. Patocskai, "Exploration of Remote Peer-to-Peer Learning in Preparation for Acquisition of Fundamental Surgical Skills: a Pilot Randomized Controlled Trial," *The 22nd International Meeting on Simulation in Healthcare (IMSH 2022)*, Los Angeles, California, USA. Jan. 15-19, 2022.

2021   P. Mutombo, **A. Torres**, B. Kapralos, B. Gamble, B. Momand, C. Adams, L. Lawson, C. da Silva, A. Dubrowski, "Using Community-Based Participatory Research to build an Innovative Virtual Environment to Enhance Age-friendly Cultural Competencies," *IFAs 15th Global Conference on Ageing "Rights Matter"*, Niagara Falls, Ontario, Canada, Nov. 10-12, 2021.

N. Guérard-Poirier, M. Beniey, L. Meloche-Dumas, **A. Torres**, M. Dhane, B. Kapralos, F. Mercier, A. Dubrowski, E. Patocskai, "Virtual Simulation in Medical Education for the Acquisition of Fundamental Surgical Skills: a Randomized Controlled Trial," *The Royal College Simulation Summit*, Virtual, Nov. 4-5, 2021.

P. Mutombo, **A. Torres**, B. Kapralos, B. Gamble, B. Momand, C. Adams, L. Lawson, C. da Silva, A. Dubrowski, "Seniors Cultural Competency Virtual Learning Environment (SCCVLE): An Innovative Education Tool to enhance Competencies". *MEI 2021 4th International Conference on Medical Education Informatics*, Virtual, The University of Nottingham, UK and the University of Malaya, Malaysia, Jul. 12-15, 2021.

C. da Silva, **A. Torres**, B. Kapralos, E. Peisachovich, C. Anyinam, S. Coffey, L. Graham, A. Dubrowski, "Co-Designing Mental Health Virtual Reality Education," *MEI 2021 4th International Conference on Medical Education Informatics*, Poster, Virtual, The University of Nottingham, UK and the University of Malaya, Malaysia, Jul. 12-15, 2021.

D. Buttu, **A. Torres**, B. Kapralos, A. Dubrowski, B. Gino, A. Benson, "Preliminary data results regarding the development of a virtual education simulation of an adult proximal tibia model for intraosseous insertion simulators to train pre-hospital healthcare providers," *MEI 2021 4th International Conference on Medical Education Informatics*, Virtual, The University of Nottingham, UK and the University of Malaya, Malaysia, Jul. 12-15, 2021.

P. Mutombo, **A. Torres**, B. Kapralos, B. Gamble, C. Adams, L. Lawson, A. Dubrowski and C. da Silva, "An Innovative Virtual Learning Environment to Enhance Age-Friendly Cultural Competencies," *COMPSAC 2021: Intelligent and Resilient Computing for a Collaborative World*, Jul. 12-16, 2021, doi: 10.1109/COMPSAC51774.2021.00195.

C. da Silva, **A. Torres**, B. Karalos, E. Peisachovich, A. Dubrowski, V. Baltazar, B. Qureshi and N. Caraballo, "Person-centered Virtual Serious Games: Mental Health Education," *COMPSAC 2021: Intelligent and Resilient Computing for a Collaborative World*, Jul. 12-16, 2021, doi: 10.1109/COMPSAC51774.2021.00196.

A. Dubrowski, B. Kapralos, E. Patocskai, **A. Torres**, A. Arutiunian, S. Wahab, T. Weber, M. Mnaymneh, "Virtual Health Experiential Learning Platform (HELP) - Utilizing Gamified Educational Networking and Three-Dimensional Printing for Distance Training," *The Learner: Twenty-eighth International Conference on Learning*, Krakow, Poland, Jul. 9-11, 2021.

N. Guérard-Poirier, M. Beniey, L. Meloche-Dumas, **A. Torres**, M. Dhane, F. Mercier, A. Dubrowski, E. Patocskai, "La Pédagogie Chirurgicale en temps de COVID-19: l'enseignement des points de suture avancés entre pairs à travers une plateforme en ligne," *L'Association Québécoise de Chirurgie (AQC) – 51e Congrès annuel 2021*, Virtual, Montréal, QC, May 21, 2021.

N. Guérard-Poirier, M. Beniey, L. Meloche-Dumas, **A. Torres**, M. Dhane, F. Mercier, A. Dubrowski, E. Patocskai, "La Pédagogie Chirurgicale en temps de COVID-19: l'enseignement des points de suture avancés entre pairs à travers une plateforme en ligne," *Journée annuelle de la recherche du*

Centre de pédagogie appliquée aux sciences de la santé (CPASS), Université de Montréal, Virtual, Montréal, QC, May 19, 2021.

2020   S. Wahab, D. Smeeton, **A. Torres**, B. Kapralos, A. Dubrowski, "Application of hierarchical task analysis to construct experiential task analysis hands-on and on-line training modules to teach microtomy: A pilot study," *2020 Canadian Health Workforce Virtual Conference*, Dec. 9-10, 2020.

N. Guérard-Poirier, M. Beniey, L. Méloche-Dumas, **A. Torres**, M. Dhane, B. Misheva, A. Dubrowski, F. Mercier, E. Patocskai, "A Gamified Network for Surgical Education during COVID-19: A Randomized Controlled Trial," *Canadian Conference for the Advancement of Surgical Education (C-CASE)*, Oct. 29-30, 2020, doi: 10.1503/cjs.021920.

2019   **A. Torres**, B. Kapralos, A. Uribe-Quevedo, E. Zea, A. Dubrowski, "A gamified educational network for collaborative learning," In: *Proceedings of the 2019 SIM-one SIM Expo*, Montreal, Canada, Oct. 21-22, 2019.

Research Projects

2021-present   **Could Digital Interventions Help Understand And "Flatten The Curve" Of Distress Due To Moral Injury Among Health Care Workers During The COVID Pandemic: A Pilot Study**
Interdisciplinary project in partnership with members of Ryerson University, University of Colorado, St. Michael's Hospital, Unity Health Toronto, University of Toronto, funded by a Department of National Defense grant. Acting as researcher and developer creating virtual reality scenario, dialogues, as well as performing experiment sessions and collecting data.

- News article: Virtual reality helps unmask impact of moral distress on health-care workers during the pandemic.

- Video: Virtual Reality Scenario demo.

2020-present   **Person-Centered Serious Games for Mental Health Education.**
Interdisciplinary project in partnership with members of the Health Science department from York University, funded by an SSHRC grant. Acting as researcher and developer creating the 3D assets and dialogue editor and player.

- News article: York collaborates on development of virtual educational tool for nursing students.

2018-present   **GEN: Gamified Educational Network**
Researcher and developer of GEN, focusing on web development and the application of gamification concepts.

- Video: GEN features demo.

2020-2022   **Using an innovative tool to teach and test cultural competencies to enhance age-friendly communities**
A collaboration between TeachingCity Oshawa, Oshawa Senior Community Centres (OSCC55+), the City of Oshawa, and Ontario Tech University. Researcher and developer of the technology components.

- News article: A videogame that aims to enlighten.

2016-2019 **SmartGreen: An Internet-of-Things Framework for Intelligent Agriculture**
Researcher and developer (software and hardware), worked in implementing data fusion algorithms in a sensor network based on low-end hardware.

2010-2011 **Virtual Shooting Training System**
Director of 3D environments and models.

2007-2009 **Use of Mediatic Languages in Distance Learning Courses**
Researcher of new technologies to improve distance learning.