CURRICULUM VITAE

Huiyi (Cheryl) Wang *Dec 2023*

CONTACT INFORMATION
Phone: (438)-522-0430
E-mail: huiyi.wang@mail.mcgill.ca/cheryl.wang.huiyi@gmail.com
Personal Webpage: https://cherylwang.github.io

RESEARCH INTERESTS
Contact Dynamics; Musculoskeletal Modeling; Muscle Driven Simulation; Reinforcement Learning; Deep Neural Network

EDUCATION

McGill University, Faculty of Engineering *Sep 2023 - Present*
Doctor of Philosophy in Mechanical Engineering, Intended

McGill University, Trottier Space Institute at McGill (TSI) *Sep 2021 – Aug 2023*
MSc Physics with Thesis GPA: 4.00/4.00
Thesis: Constraining the Formation Scenario of Earth through Imprints of Primordial Solar Nebula within the Deep Mantle.

University of California, Los Angeles (UCLA) *Sep 2017 – Mar 2021*
Bachelor of Science in Astrophysics, with Honors GPA: 3.70/4.00
Honor Thesis: Gravitational-Wave Signatures from Compact Object Binaries in the Galactic Center

RESEARCH EXPERIENCE

Ph.D. Researcher with Professor Jozsef Kovecses and Professor Guillaume Durandau
McGill Faculty of Engineering *July 2023 - Present*
- Create temporal model of change in muscle (sarcomergenesis) and tendon (stiffness) due to internal and/or external stimuli
- Implement joint model and increase the degree of freedom of muscle and tendon in Mysuites
- Investigate how reinforcement learning control (RL) and reproduce walking neutral control and aging walking

Summer Researcher with Prof. Nicolas Cowan
Trottier Space Institute at McGill, Montreal, QC *Apr 2023 - Aug 2023*
- Design and introduce a new Figure of Merit (FoM) for phase curve and transmission spectroscopy with the **Atmospheric Remote-sensing Infrared Exoplanet Large Survey (Ariel)**
- Propose a new target selection schema emphasizing high scientific return in a time-limited regime.
- Create and propose specific target list for phase curve observations to maximize scientific output and integration with other telescopes (e.g. JWST).

MSc Researcher with Professor Nicolas Cowan and Professor Eve Lee
Trottier Space Institute at McGill *Sep 2021 – Apr 2023*
- Computing the atmospheric profile of sub-Earth sizes protoplanetary embryos by solving the full equation of state using ODEINT Python.
- Mapping the nebular density of early protoplanetary disk that allows giant impacts of Mars-size embryos.
- Constraining the outgassing rate of Neon within Earth's mantle by computing the partition rate of the magma ocean and iron core

Student Researcher & UCLA Summer REU Program with Prof. Smadar Naoz
UCLA Department of Physics and Astronomy *June 2019 – June 2021*

- Model the time-merger scale of Compact Object Binaries in relation to the eccentricity and semimajor axis of the system.
- Collaborate with Professor Katelyn Breivik on generating the population synthesis of the galactic center with various metallicities by using a stellar evolution code called COSMIC.
- Demonstrate the effect of metallicities on mass loss and Supernova natal kicks, which influence the evolutionary abundance of different compact object binaries.
- Visualize the Signal-to-Noise ratio (SNR) of different types of compact object binaries with LISA sensitivity curve using Python.

AWARDS AND HONORS

MEDA (McGill Engineering Doctoral Award) - McGill Faculty of Engineering *2023 - 2025*
Geoff Hyland Fellowship - McGill Faculty of Engineering *Sep 2023*
Grad Excellence Award in Physics – McGill Physics Department *Sep 2021 – Sep 2023*
Lee Grad Award - McGill Physics Department *2021 - 2023*
Trottier MSI Graduate Award - McCall MacBain Scholarships, McGill University *2021 - 2023*
College Honors Program - UCLA College Honors *Spring 2020 – June 2021*
UCLA Departmental Highest Honor – UCLA Department of Physics and Astronomy *June 2021*
UCLA Dean's Honor List – UCLA College of Letter and Science
Fall 2017, Winter 2019, Winter 2020, Spring 2020, Fall 2020, Winter 2021

PUBLICATIONS

1. **Wang, H.,** Stephan, A. P., Naoz, S., et al. 2021. "Gravitational-Wave Signatures from Compact Object Binaries in the Galactic Center." https://iopscience.iop.org/article/10.3847/1538-4357/ac088d.

POSTERS

Wang, H., Guillaume, D., 2023, NeurIPS Poster Session at MyoChallenge Workshop. "A Reinforcement Learning Approach for Assessing Standing Balance in Sarcopenia"

TALKS AND PRESENTATION

"Ariel Mission Target: A New Design for Phase Curve Observation"
Trottier Space Institute, McGill University Cowan Group Conference, 9th Aug 2023
"Constraining the Earth Formation through Solar Nebular Imprints with Deep Mantle,"
Trottier Space Institute, Lee Research Group Meeting, 7th Dec 2022
"CONSTRAINING THE HUBBLE CONSTANT: From the Tension Between PLANCK (CMB) and SHoES (SnIa) to the Cutting-Edge GW and FRB Detections," *Poster Presentation*, Trottier Space Institute, Bell Room, 6th Dec 2021
"Gravitational Wave Signatures from Compact Object Binaries in the Galactic Center,"
Gulf Coast Undergraduate Research Symposium, Physics and Astronomy Division, Rice University, 31 October 2020
"AstroBash", UCLA, Department of Physics and Astronomy, 5 Nov 2020
"Lightening Talk", CUWiP Conference, 14th Jan 2021
"Gravitational Wave Signatures from Compact Object Binaries in the Galactic Center,"
52nd Annual DDA Meeting Virtual, 18th May 2021.

JOBS AND TEACHING ROLES

Teaching Assistant, Climate Physics, ATOC/PHYS - 404
McGill University, Montreal *Sep 2021 – Dec 2021*
Teaching Assistant, Intro Physics – Electromagnetism, PHYS – 102
McGill University, Montreal *Jan 2022 – April 2022*
Graduate Course Assistant – Classical Mechanics, PHYS – 101/131
McGill University, Montreal *Sep 2022 – Dec 2022*
ANS Platform Specialist
McGill University, Montreal *July 2022 - Aug 2023*

COMPUTER AND TECHNICAL SKILLS

Language: Python, Mathematica, Matlab, C++, Java (basic)
Tools: Git, PyTorch, Tensorflow, Pandas, OpenSim, Gym, Mujoco, Compute Canada
Skills: Numerical Computation, Machine Learning, Reinforcement Learning
Applications: LaTex, Microsoft Suit, Apple Suit
Certificate: AWS Certified Machine Learning - Specialty

PROFESSIONAL EXPERIENCE

Smart Bird ID - Image/Sound Track Classification *May 2023 - Aug 2023*
Internship, Cardinal Jaune inc, Montreal

- Participated in a start-up company to design and self-develop algorithm for image and audio classification
- Integration with Android Applications using Android Studio (Java)
- Research and advance the current machine learning model using Keras, TensorFlow toolkit

MyoSuite & MyoChallenge *Sep 2023 - Present*
Researcher, MyoSuite, Hybrid, Montreal

- Engineered a cutting-edge muscular model (MyoSuite) with temporal dynamics in muscle and tendon, contributing to a more realistic representation of the Mujoco physics simulation.
- Organize and manage communication efforts for MyoChallenge through the Twitter channel, effectively engaging the general public and participants.

Quebec Scientific Entrepreneurship Program (QcSE)
Fall 2023 Cohort, The V1 Studio Team, Montreal *Sep 2023 - Dec 2023*

- Seamlessly integrated Ph.D. research related to aging issues with innovative entrepreneurial solutions, customizing training schemes to address the unique needs of aging individuals.
- Developed and presented a personalized business model, based on thorough customer segmentation within the aging demographic and market analysis, to propose a highly effective and sustainable solution for addressing the challenges of aging.

OUTREACH

Letters to a Pre-Scientist - Connect minority students to STEM profession *Sep 2023 - Aug 2024*
MyoSuite Communication - Coordinator for Twitter Account *Sep 2023 - Present*
AstroMcGill Space Fair Volunteer - Volunteer at McGill Outreach *May 2023*
UCLA Alumni Mentor Program - Mentor undergraduates at UCLA *Oct 2022 - Aug 2023*
Physics Matter Society – Volunteer at Trottier Space Institute *Oct 2021 - Aug 2023*
Space Explorer – Volunteer to teach at Montreal Elementary Schools *Oct 2021 – Oct 2022*
McGill Physics Hackathon - Mentor Undergraduate/Cegap Student *Nov 2022*
AstroMcGill – Volunteer at McGill Bicentennial Space Week *May 2022*
EPOD at McGill – Active Participant *Jan 2022 - Apr 2023*
DiversiTea at UCLA - UCLA Physics Equality *2019 - 2021*
Explore Your Universe – Volunteer *Nov 2019, 2020*