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Confirmation Number: 1609025

Template: Full CV

Ms. Vivian Ngoc Tram Mai

Correspondence language: English

Sex: Female

Date of Birth: 10/18

Canadian Residency Status: Canadian Citizen

Country of Citizenship: Canada

Contact Information

The primary information is denoted by (*)

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Ms. Vivian Mai

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
English	Yes	Yes	Yes	Yes	
French	Yes	No	No	Yes	
Vietnamese	No	No	No	Yes	

Degrees

2023/5	<p>Doctorate, Doctor of Philosophy, Mechanical and Mechatronics Engineering, University of Waterloo</p> <p>Degree Status: In Progress</p> <p>Transferred to PhD without completing Masters?: Yes</p> <p>Supervisors: Dr. Carolyn Ren, 2023/5 -</p>
2022/5 (2024/10)	<p>Master's Thesis, Applied Science, Mechanical and Mechatronics Engineering, University of Waterloo</p> <p>Degree Status: In Progress</p> <p>Supervisors: Dr. Carolyn Ren</p>
2016/9 - 2022/6	<p>Bachelor's, Applied Science, Mechanical Engineering, Honours, Cooperative Program, University of Waterloo</p> <p>Degree Status: Completed</p>

Recognitions

2023/9 - 2024/8	<p>Ontario Women's Health Scholars Award - 0 (Canadian dollar)</p> <p>Ontario Ministry of Health and Long-Term Care</p> <p>Prize / Award</p> <p>Funded by the Ontario Ministry of Health and Long-Term Care, a Scholar Awards Program in Women's Health has been established to ensure that Ontario attracts and retains pre-eminent women's health scholars. The community of women's health scholars fostered by this Awards program will excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge about women's health and its translation into improved health for women, more effective health services and products for women, and a strengthened health care system. This award was granted to me, and holds a value of \$25,000, however I decided to decline it.</p>
2022/11	<p>Graduate Scholarship - 400 (Canadian dollar)</p> <p>University of Waterloo</p> <p>Prize / Award</p> <p>Research Disciplines: Mechanical Engineering</p>

2022/5 - 2023/4	Graduate Research Studentship - 21,000 (Canadian dollar) University of Waterloo Prize / Award Research Disciplines: Mechanical Engineering
2022/4	Impact to Society/Policy - 500 (Canadian dollar) Ontario Society of Professional Engineers Prize / Award Research Disciplines:
2022/1 - 2022/4	Engineering Special Grant - 1,445 (Canadian dollar) University of Waterloo Prize / Award Research Disciplines: Mechanical Engineering
2020/1 - 2020/4	NSERC Undergraduate Student Research Award - 4,500 (Canadian dollar) Natural Sciences and Engineering Research Council of Canada (NSERC) Prize / Award Research Disciplines: Mechanical Engineering
2019/5 - 2019/8	NSERC Undergraduate Student Research Award - 4,500 (Canadian dollar) Natural Sciences and Engineering Research Council of Canada (NSERC) Prize / Award Research Disciplines: Mechanical Engineering
2018/5 - 2019/8	David Johnston International Experience Award - 1,500 (Canadian dollar) University of Waterloo Prize / Award Research Disciplines: Mechanical Engineering
2017/1 - 2017/4	Term Dean's Honour List - 0 (Canadian dollar) University of Waterloo Distinction Research Disciplines: Mechanical Engineering
2016/9 - 2016/12	President's Scholarship - 2,000 (Canadian dollar) University of Waterloo Prize / Award Research Disciplines: Mechanical Engineering

User Profile

Research Specialization Keywords: Assistive devices, Biomechanics, Breast cancer, Compression sleeve, Lymphedema treatment, Medical devices, Microfluidics, Rehabilitation engineering, Soft actuators, Soft robotics

Research Disciplines: Biomedical Engineering and Biochemical Engineering, Mechanical Engineering

Areas of Research: Biomedical Technologies, Robotics and Automation

Fields of Application: Biomedical Aspects of Human Health

Employment

2021/9 - 2021/12	3D Print Process R&D Engineering Intern Formlabs, Inc
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2020/5 - 2021/5	Soft Robotics Research Assistant Mechanical and Mechatronics Engineering -- Microfluidics Laboratory, University of Waterloo
2019/5 - 2019/8	Research Assistant Mechanical and Mechatronics Engineering -- Centre for Advanced Materials Joining Laboratory, University of Waterloo
2018/9 - 2018/12	Research Assistant Mechanical Engineering -- in-situ Characterization and Reliability Evaluation Laboratory, Korea Adv Inst of Sci and Tech
2018/1 - 2018/4	Software Quality Assurance Specialist Siemens Healthineers
2017/5 - 2017/8	Quality Control Analyst Infrastructures for Information (i4i)

Courses Taught

2022/11/10	Lab Instructor, University of Waterloo Course Title: ME595 - Special Topics in Mechanical Engineering Course Topic: Microfluidic & MEMS Systems and Applications Course Level: Undergraduate Number of Students: 13 Guest Lecture?: Yes
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Student/Postdoctoral Supervision

Bachelor's [n=1]

2023/1 - 2023/4 Principal Supervisor	Sarah Dykstra (In Progress) , University of Waterloo Degree Name: Bachelor of Applied Science Specialization: Biomedical Engineering Student Degree Start Date: 2019/9 Student Degree Expected Date: 2024/6 Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: Perspective on Microfluidics and Secondary Lymphedema Present Position: Cooperative work term student, University of Waterloo Microfluidics Laboratory
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Mentoring Activities

2022/11	Go ENG Girl Panel Speaker, University of Waterloo Spoke on a panel at an engineering outreach conference for girls ages 11-15 who are interested in engineering as a potential career path. Discussed my experiences as a woman of colour in a predominantly male-dominated field, as well as interesting personal research and internship experiences.
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- 2022/5 Engineering Mentor, University of Waterloo
 Number of Mentorees: 1
 Mentored a first-year mechanical engineering student interested in working for a former employer, Formlabs. Offered guidance and mentorship through three rounds of interviews and challenges, advising the student on how to best prepare for and emphasize their skills and experiences with the interviewers. The student successfully received a job offer from the company, whose engineering teams typically only hire upper-year interns.
- 2022/1 Engineering Society Career Fair Panel Speaker, University of Waterloo
 Spoke at the University of Waterloo's Engineering Society's 2022 Career Fair, on the "What I Would Tell My Fourth Year Self" panel. Shared personal experiences that led to continuing studies in graduate school and offered guidance to an audience of primarily upper-year undergraduate students.

Community and Volunteer Activities

- 2023/4 Women in Engineering Outreach Event Speaker, University of Waterloo
 Alumna representative speaker for University of Waterloo Women in Engineering at an outreach event for high school students with offers to the undergraduate engineering programs.
- 2023/3 Open House Speaker, University of Waterloo
 Laboratory representative at the University of Waterloo's March Open House for prospective undergraduate students. Spoke to high school students and provided demonstrations about ongoing projects to promote the university's graduate studies program.
- 2022/11 Women in Engineering Hackathon Volunteer, University of Waterloo
 Worked as an organizational volunteer at an engineering outreach hackathon event for female and non-binary undergraduate students.
- 2022/10 Women in Engineering Run the World Event Volunteer, University of Waterloo
 Worked as a volunteer at an engineering outreach workshop event for girls grades 5-7 interested in software, electrical, and mechanical engineering.

Presentations

- (2023). Empirically Modelling Compression Garment Pressure on a Lymphedema-Affected Multilayered Tissue Model. Canadian Society of Mechanical Engineering Congress, Sherbrooke, QC, Canada
 Main Audience: Researcher
 Invited?: No, Keynote?: No, Competitive?: No
 Description / Contribution Value: Lymphedema patients often turn to at-home static and active compression devices when daily manual lymph drainage performed by a clinician is not possible. These devices are engineered to replicate the compression administered by clinicians to push lymph fluid away from the extremities and prevent further accumulation in the limbs to reduce swelling. In a typical static or active fabric-based compression garment, the compression is achieved by designing the circumference of the free fabric to be smaller than the arm on which it is to be worn. As a result, when the garment is worn, there is simultaneous tension in the fabric, as well as radial compression administered on the arm at the interface. In this study, a relationship between the exerted pressure on the arm and circumferential difference between the free fabric and arm will be determined from tests on a biofidelic multilayered tissue model.

2. (2022). Microplastic Detection Using Microwave Resonant Frequency. Interdisciplinary Engineering Capstone Symposium, Waterloo, Canada
Main Audience: Knowledge User
Invited?: Yes, Keynote?: No, Competitive?: Yes
Funding Sources: University of Waterloo
3. (2022). Microplastic Detection Using Microwave Resonant Frequency. Electrical and Computer Engineering Capstone Symposium, Waterloo, Canada
Main Audience: Knowledge User
Invited?: Yes, Keynote?: No, Competitive?: Yes
Funding Sources: University of Waterloo

Publications

Journal Articles

1. Run Ze Gao, Vivian Ngoc Tram Mai, Nicholas Levinski, Jacqueline Mary Kormylo, Robin Ward Murdock, Clark R. Dickerson, and Carolyn L. Ren. (2022). A novel air microfluidics-enabled softrobotic sleeve: Toward realizing innovativelymphedema treatment. AIP Biomicrofluidics. 16(3)
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 7
Funding Sources: Canada Research Chairs (CRC); Government of Ontario (Ottawa, ON); Natural Sciences and Engineering Research Council of Canada (NSERC); University of Waterloo; Waterloo Center for Bioengineering and Biotechnology; Waterloo Institute of Nanotechnology; Praxis Spinal Cord Institute

Intellectual Property

Patents

1. Closed-Loop Fluidic Regenerative System and Active Compression Band, Apparel, Device, Footwear and Method. United States of America. 63450660. 2023/03/07.
Patent Status: Pending
Inventors: Run Ze Gao, Carolyn Liqing Ren, Vivian Ngoc Tram Mai, Monica R. Maly, Kendal Marriott, James Tung, Clark R. Dickerson, Amanda Johnson
Disclosed herein are wearable devices for use with closed-loop fluidic regenerative systems comprising closed-loop fluidic regeneration module, fluidic actuators/sensors module, and fluidic transportation module. The system uses human gait combined with closed-loop fluidic regenerative module to enable actuation of fluidic actuators to apply assistive, rehabilitative and/or therapeutic force, compression and/or torque to the human body. Human gait can also enable fluid sensors combined with a close-loop fluidic regenerative module to detect motion, characteristics, and/or positions of anatomical parts of the human body. In addition, disclosed herein are wearable active compression bands enabled by fluidic actuators that can apply smooth sequential gradient compression with cooling/icing effect in a wearable/portable profile. Closed-loop fluidic regenerative system combined with active compression band can achieve electronics-free active compression.

2. Microfluidic Valves and Channels and Minifluidic Valves and Channels Enabled Soft Robotic Device, Apparel, And Method. Canada. PCT/CA2022/051677. 2021/11/14.
Patent Status: Granted/Issued
Year Issued: 2022
Inventors: GAO, Run Ze; REN, Carolyn L.; DICKERSON, Clark R.; KORMYLO, Jacqueline Mary; LEE, Peter S.; MAI, Vivian Ngoc Tram
The present invention generally relates to the field of assistive devices, and more specifically to soft robotics for enhancing rehabilitation, function, sports, recreation, exercise recovery, massage, activities of daily living and increasing quality of life for its users. Even more specifically, the present invention uses microfluidics and minifluidics techniques to enable soft robotic devices and systems. Even more specifically, the present invention uses microfluidic and minifluidic valves and channels and soft fluidic actuators designs and fabrication methods to create soft robotic devices and systems to enhance the users' lives.