

INVENT THE FUTURE

AI SCHOLARS PROGRAM

July 13 - 24, 2020 | Simon Fraser University, British Columbia



FACULTY OF APPLIED SCIENCES

SCHOOL OF COMPUTING SCIENCE



WELCOME

Welcome AI Scholar!

We are thrilled to welcome you to the Invent the Future community this summer, the first ever to bring together individuals like yourself from across Canada in a digital format.

In the midst of a pandemic, our lives are intertwined with technology more than ever, and we are excited that this online program has opened up amazing new opportunities for you. Top AI professors, industry professionals and alumni mentors from all over North America gathered together to offer this learning experience to you, no matter where you are located.

We have planned two weeks of learning and fun, and now the experience is in your hands. Make the most of this unique opportunity: connect with people, ask questions and dream about how to apply your knowledge to reality. You will learn about artificial intelligence, gain hands-on experience working on your project and join a community of like-minded Change Makers to help shape the future of AI.

Enjoy the experience — here's to a bright future, invented by you!

Angelica Lim
Co-Director, Invent the Future
SFU School of Computing Science

Ouldooz Baghban Karimi
Co-Director, Invent the Future
SFU School of Computing Science



MEET THE TEAM



ANGELICA LIM
Co-director

Assistant Professor of Professional Practice, School of Computing Science

Angelica Lim has worked on social robots for over 10 years in France, Japan and Canada. She leads the SFU ROSIE Lab, focusing on building robots with social intelligence and empathy, particularly using affective and developmental robotics paradigms. Previously, she spent 4 years as a Software Engineering Manager at SoftBank Robotics, where she led the emotion and expressivity team for Pepper the humanoid robot. She has been featured on the BBC, TEDx, hosted a TV documentary on robotics, and was recently featured in Forbes 20 Leading Women in AI. She received her BSc in Computing Science (Artificial Intelligence Specialization) from SFU and a PhD and master's from Kyoto University, Japan.



OULDOOZ BAGHBAN KARIMI
Co-director

Lecturer, Chair of Diversity Committee, School of Computing Science

Ouldooz Baghban Karimi received her PhD from SFU in 2013 and is a data and networks specialist. Earlier in her career, she joined the networking industry at Cyan and Ciena. Her years of industry experience include building network products as a software engineer and customer-facing solution integration, introducing new networking solutions to international telecommunication providers in Asia, Europe, North America and South America. Her current research interests include virtualization at the edge, network anomalies and user privacy in network measurements. In addition to her specialty in data and networks, she is passionate about computing science education and societal problems including fair access and underrepresentation.



DHIVYA MANOHAR
Program Coordinator

Undergraduate Student, School of Computing Science

Dhivya Manohar holds a diploma in Computer Systems Technology from British Columbia Institute of Technology and is currently completing her last year of her undergraduate degree in computing science at SFU. After finding her passion for robotics during her internship with Honda Research & Development in Japan, she hopes to have a career as a software developer that contributes to the advancement of that field. Manohar also has a passion for filmmaking, producing multimedia content, playing the violin and improving her French.

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SPEAKERS



AJUNG MOON • AI ETHICS

Ajung Moon is an experimental roboticist specializing in ethics and responsible design of interactive robots and AI systems. As an Assistant Professor at McGill University, she directs the Responsible Autonomy & Intelligent System Ethics (RAISE) lab at the University. The RAISE lab is an interdisciplinary group currently curious about questions such as “how do our interaction with machines influence our behaviors and decisions?” and “how can we better integrate our societal values in the design and deployment of intelligent machines that influence us in a variety of ways?” Prior to joining McGill, she served as Senior Advisor for the UN Secretary-General’s High-level Panel on Digital Cooperation, CEO of an AI ethics consultancy and founder of the Open Roboethics Institute. Outside the office, you’ll find her either indoor gardening, crocheting or being a foodie.



SARA MOSTAFAVI • COMPUTATIONAL BIOLOGY

Sara Mostafavi is an Assistant Professor at the Department of Statistics and the Department of Medical Genetics at University of British Columbia and a faculty member at the Vector Institute. She holds a Canada Research Chair (CRC II) in Computational Biology, a Canada CIFAR Chair in Artificial Intelligence (CIFAR-AI) and is a CIFAR Fellow in the Child and Brain Development program. Before arriving at UBC, Mostafavi did her postdoctoral fellowship with Daphne Koller at Stanford University. Mostafavi got her PhD in Computer Science from the University of Toronto in 2011, working with Quaid Morris. Her research focuses on developing machine learning methods for understanding the molecular basis of human disease.



ANGEL CHANG • NATURAL LANGUAGE PROCESSING

Angel Xuan Chang is an Assistant Professor in the School of Computing Science at SFU. Her research focuses on the intersection of natural language understanding, computer graphics and AI. Her research connects language to 3D representations of shapes and scenes and addresses grounding of language for embodied agents in indoor environments. She has worked on methods for synthesizing 3D scenes and shapes, 3D scene understanding, and helped to create various datasets for 3D deep learning. She received her PhD in Computer Science from Stanford, under the supervision of Chris Manning. She also received the SGP 2018 Dataset Award for her work on the ShapeNet dataset, is a recipient of the TUM-IAS Hans Fischer Fellowship and a Canada CIFAR AI Chair.



DIANA CUKIERMAN • ARTIFICIAL INTELLIGENCE

Diana Cukierman is a University Lecturer at SFU’s School of Computing Science and a Faculty of Applied Sciences Teaching Fellow. She earned an Engineer in Computing Systems degree at the University of the Republic of Uruguay and MSc and PhD degrees at SFU in the area of AI. Cukierman has held teaching positions at the university level for more than 18 years and has been awarded an SFU Faculty of Applied Sciences Teaching Excellence award. She is actively engaged in computing science education research and is the co-developer and co-coordinator of the Academic Enhancement Program, a program that helps students succeed in their university studies by incorporating learning activities and reflection within their courses. Cukierman is passionate about teaching, learning and pedagogy. She searches to incorporate a variety of tools and multidisciplinary concepts and theories in her courses, looking forward to motivating students in their studies.



SANJA FIDLER • COMPUTER VISION

Sanja Fidler is an Associate Professor at the Department of Computer Science, University of Toronto. In 2018, she took a role of Director of AI at NVIDIA and was appointed as the Canadian CIFAR AI Chair. She completed her PhD in computer science at University of Ljubljana in 2010 and was a postdoctoral fellow at University of Toronto during 2011-2012. She has served as a Program Chair of the 3DV conference, and as an Area Chair of CVPR, ICCV, EMNLP, ICLR, NIPS and AAAI, and will serve as Program Chair of ICCV’21. She received the NVIDIA Pioneer of AI award, Amazon Academic Research Award, Facebook Faculty Award and the Connaught New Researcher Award. She has been ranked among the top 3 most influential AI female researchers in Canada by Re-WORK. Her research interests are scene parsing from images and videos, interactive annotation, 3D scene understanding, 3D content creation and multimodal representations.



ELISSA STROME • NEUROSCIENCE

Elissa Strome was appointed Executive Director of the CIFAR Pan-Canadian AI Strategy in January 2018 and Associate VP Research in March 2019. In her role, she works with Canada’s three national AI Institutes in Edmonton (Amii), Montreal (Mila) and Toronto (Vector Institute), and researchers across the country to advance Canada’s leadership in AI research and Innovation. She is a member of the federal government’s AI Advisory Council, the Joint Ministers’ (Ontario) Roundtable on AI and health data, and the OECD Network of Experts on AI. Strome completed her PhD in Neuroscience from the University of British Columbia in 2006. Following a post-doc at Lund University in Sweden, she decided to pursue a career in research strategy, policy and leadership. From 2008-2015 she held senior leadership positions at University of Toronto’s Office of the Vice-President, Research and Innovation, advancing major institutional strategic research priorities, including establishing and leading the SOSCIP research consortium.



CARMEN RIDDEL • ENVIRONMENT

Carmen Riddel is a student in SFU’s Professional Master’s of Science in Computer Science program, specializing in Big Data. She received her BSc degree from the University of Alberta in Environmental and Conservation Sciences and conducted soil, vegetation and water assessments for years before discovering her passion for data. Riddel is currently completing a co-op term with Innovation, Science and Economic Development Canada where she uses data science and machine learning to help plan the best implementation of telecommunications resources, with the goal of providing internet access to all Canadians. After graduation, Riddel aspires to combine her talents and work as a data scientist for one of BC’s many environmental tech companies.



ALEXANDRA GREENHILL • MEDICINE

Dr. Alexandra T. Greenhill is one of Canada’s leading physicians in digital health innovation and the cofounder CEO and Chief Medical Officer of Careteam Technologies, the digital health platform solving the fragmentation of healthcare that was the recipient of the Canadian Medical Associations’ Joule Innovation Award. After having implemented health innovation at scale and practicing medicine in Quebec, Ontario and BC, she now leads and advises Canada’s most promising technology companies. Her work has received many recognitions, including Startup Canada’s Woman Entrepreneur of the Year Award, YWCA Woman of Distinction - Entrepreneurship, WXN’s Top 100 Most Powerful Women in Canada, BIV Top 40 under 40 and the Queen Elizabeth II Diamond Jubilee Medal of Service.



SARAH LUBIK • INNOVATION & PITCH

Sarah Lubik is an award-winning educator, entrepreneur, researcher and intrapreneur. She is the Executive Director of the Charles Chang Institute for Entrepreneurship and SFU’s first Director of Entrepreneurship, promoting the power of, and need for, interdisciplinary teams, experiential education and empathy to solve the wicked problems currently facing our world. She is co-Champion of the Technology Entrepreneurship @ SFU program, a lecturer in Entrepreneurship and Innovation in Beedie School of Business and a researcher in innovation ecosystems & entrepreneurial mindset. Sarah has been named one of Business in Vancouver’s Top 40 under 40 and an Innovation Leader by the Government of Canada in 2016 and 2018. She has been noted in BC Business magazine’s Women of Influence and been a finalist for the 2017 YWCA Women of Distinction in Education, Training & Development. Sarah holds a BBA (honours) from SFU and a master’s and PhD from the University of Cambridge.

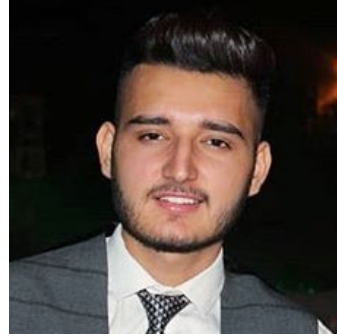
PROGRAM MENTORS



DORSA DADJOOITAVAKOLI

MASTER'S STUDENT WITH RESEARCH INTERESTS IN ROBOTICS AND COMPUTER VISION

Dorsa is an MSc student in the School of Computing Science at SFU and a member of the Multi-Agent Robotic Systems (MARS) lab. Her research interest lies at the intersection between machine learning, computer vision and control at their application in robotic systems.



MRINAL GOSAIN

MASTER'S STUDENT WITH RESEARCH INTERESTS IN CLOUD COMPUTING AND NATURAL LANGUAGE PROCESSING

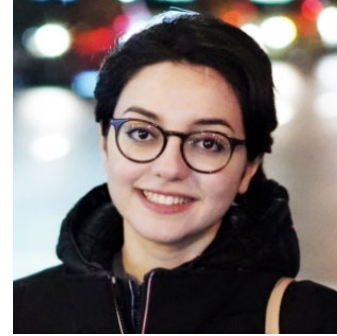
Mrinal is a data science enthusiast who loves to explore cutting edge tools and techniques in order to solve problems faced by humanity. He has profound interests in psychology and human purchasing patterns apart from building new things.



ALICE LIN

UNDERGRADUATE STUDENT IN COMPUTER SCIENCE WITH A FOCUS IN MACHINE LEARNING

Alice is a second degree computing science student at SFU. She obtained her first bachelor's degree in Economics from the University of British Columbia. She is interested in all things related to AI and has experience with computer vision, natural language processing and reinforcement learning.



GHAZAL SAHEB JAM

MASTER'S STUDENT WITH RESEARCH INTEREST IN AFFECTIVE COMPUTING

Ghazal is working in the ROSIE lab. Her research focuses on affective computing and her research goal is to improve emotion labeling by using AI techniques. She has two years of industry experience. Apart from work, she enjoys hiking and traveling.



JANAKI SATHISH

MASTER'S STUDENT IN COMPUTER SCIENCE WITH A FOCUS ON VISUAL COMPUTING

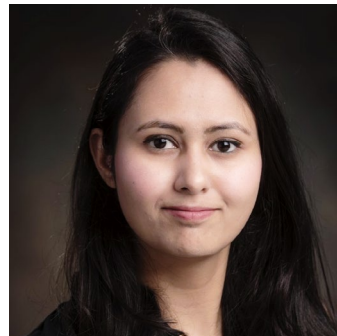
Janaki's interests include deep learning and game development. She is currently interning at the Medical Image Analysis Lab, working on human cell image segmentation and localization for COVID-19 classification. She is passionate about music and loves to sing!



RAQUEL AOKI

PHD CANDIDATE WITH RESEARCH INTERESTS IN MACHINE LEARNING AND BIOINFORMATICS

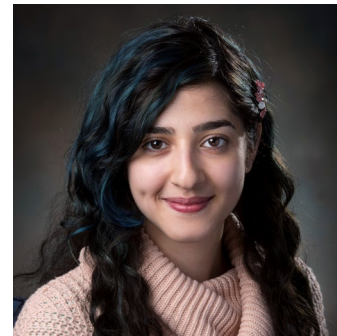
Raquel works with causal inference applied to computational biology. The machine learning techniques she works with have several applications. In her free time, she likes hiking during the summer and watching TV shows during the winter.



NEHA SHARMA

PHD CANDIDATE WITH RESEARCH INTERESTS IN MULTIMEDIA NETWORKING, COMPUTER VISION AND MACHINE LEARNING

Neha Sharma's current research focuses on hyperspectral imaging using deep learning models for mobile applications. She enjoys travelling to different places with family and friends. In her free time, she loves to paint and watch movies.



BITAZ AZARI

PHD CANDIDATE WITH RESEARCH INTERESTS IN AFFECTIVE COMPUTING

Bitaz was born in Iran. Her research is in affective computing, computer vision and machine learning. She likes digital drawing and is also passionate about gender equality and the environment.

ALUMNITAS



ALLISON DU

Allison is looking forward to attending the University of Michigan for computer engineering in the Fall. She hopes to explore the applications of machine learning and robotics in improving the accessibility of senior and disability care in her future education.



CHINENYE OLUKE

Chinenye is a sophomore at the University of British Columbia. She intends to complete a combined major in computer science and statistics. Her hobbies include singing and playing the ukulele.



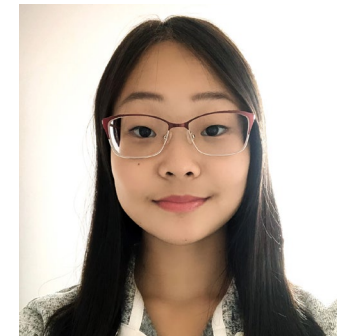
ELIZABETH WONG

Elizabeth enjoyed collaborating with 23 like-minded, yet incredibly diverse students to explore the rapidly advancing world of artificial intelligence last year. She looks forward to applying everything she has learned while studying systems design engineering at the University of Waterloo in September.



HARIM CHANG

Harim has focused her time since last year's event to helping other young girls find a passion for coding through clubs and creating connections with new people. She also likes to play the violin and go for runs every now and then.



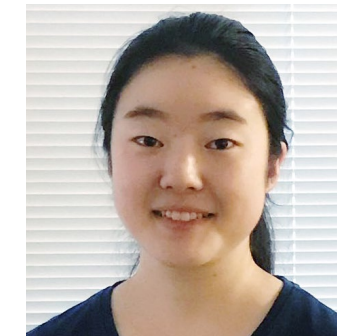
HELEN GENG

Helen plans to study biomedical engineering and data analysis at the University of Minnesota. She dedicates her time to teaching code, tutoring at Kumon and volunteering for various non-profit organizations. She is currently working to mitigate algorithmic bias in AI performance by using synthetic data.



LAUREN YIP

Lauren is a 2019 Invent the Future alumna and is heading into grade 12. She intends to pursue STEM as she moves forwards with her undergraduate degree. She loves experimenting, trying new things and travelling.



SOPHIE ZHAO

Sophie is a STEM enthusiast entering her senior year at Pinetree Secondary School. In her spare time she works on coding projects, especially with respect to data collection. Her passions revolve around further improving society in the technological fields and continuing her journey as a passionate learner.



TAYLOR WALTERS

Since attending the Invent the Future Program in 2018, Taylor has co-led the AI4ALL AI Ethics Special Interest Group and taken on machine learning projects and internships that have inspired her to study the relationship between tech and society. This fall, she will be attending Quest University.

SCHEDULE - WEEK 1

	13 MON	14 TUE	15 WED	16 THU	17 FRI
08:30 AM	Program overview	Mon. review	Tues. review	Wed. review	Thurs. review
09:00 AM	Introduction to Artificial Intelligence Diana Cukierman	Robotics Angelica Lim	Computer Vision Sanja Fidler	Natural Language Processing Angel Chang	Computational Biology Sara Mostafavi
09:30 AM	Video: Intro to AI Slides: Intro to Machine Learning	Video: Clustering	Video: Classification Slides: Classification	Video: Naive Bayes	Video: Neural Networks Slides: Neural Networks
10:00 AM		Slides: Clustering		Slides: Probability and Naive Bayes	
10:30 AM		Intro to Pepper Programming	AI4ALL Industry Panel		
11:00 AM					
11:30 AM	LUNCH BREAK AND SOCIAL	LUNCH BREAK	LUNCH BREAK AND SOCIAL	LUNCH BREAK	LUNCH BREAK
12:00 PM					
12:30 PM					
01:00 PM	P1: Introduction to Python and Machine Learning	P2: Clustering Practice Problem	P3: Classification Practice Problem	P4: Bayes Classifier Intro and Practice Problems	P5: Accuracy, Precision, Recall
01:30 PM	BREAK				
02:00 PM	P1: Coding	P2: Clustering and/or Pepper Coding	P3: Computer Vision Basics	P4: NLP	P5: Computer Vision Deep Learning
02:30 PM					
03:00 PM	Show and Tell	Show and Tell	Show and Tell	Show and Tell	Show and Tell
03:30 PM	BREAK				
04:00 PM	Mentor Office Hours	Mentor Office Hours	Mentor Office Hours	Mentor Office Hours	Mentor Office Hours
04:30 PM					

Online
 Offline Study
 Coding on Your Own
 Coding Collaboration
 Public Talks
 Breaks

SCHEDULE - WEEK 2

	20 MON	21 TUE	22 WED	23 THU	24 FRI
08:30 AM	Set Up	Set Up	Set Up	Set Up	Set Up
09:00 AM	Projects' Overview	Mentor-Led Project Time	Mentor-Led Project Time	Mentor-Led Project Time	Mentor-Led Presentations & Feedback
09:30 AM	Project Briefing in Teams with Mentors				
10:00 AM	BREAK				
10:30 AM	Mentor-Led Project Time	AI4ALL Alumni Panel	Pathways to AI Panel Elissa Strome, Carmen Riddel and Alexandra Greenhill	Innovation Sarah Lubik	Mentor-Led Presentations & Feedback
11:00 AM					
11:30 AM	LUNCH BREAK				
12:00 PM					
12:30 PM					
01:00 PM	Ethics of AI AJung Moon	Project Time	Project Time	Project Wrap-Up, Presentations	PUBLIC EVENT: FINAL DAY!
01:30 PM	BREAK	BREAK + SOCIAL ACTIVITY		BREAK	
02:00 PM	Project Time	Project Time	Project Time	Project Wrap-Up, Presentations	
02:30 PM	Project Time				
03:00 PM	SNACK BREAK				
03:30 PM					
04:00 PM	Mentor Project Office Hours	Mentor Project Office Hours	Mentor Project Office Hours	Mentor Project Office Hours	
04:30 PM					

All times are in Pacific Daylight Time.



INVENT THE FUTURE: AI SCHOLARS PROGRAM

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