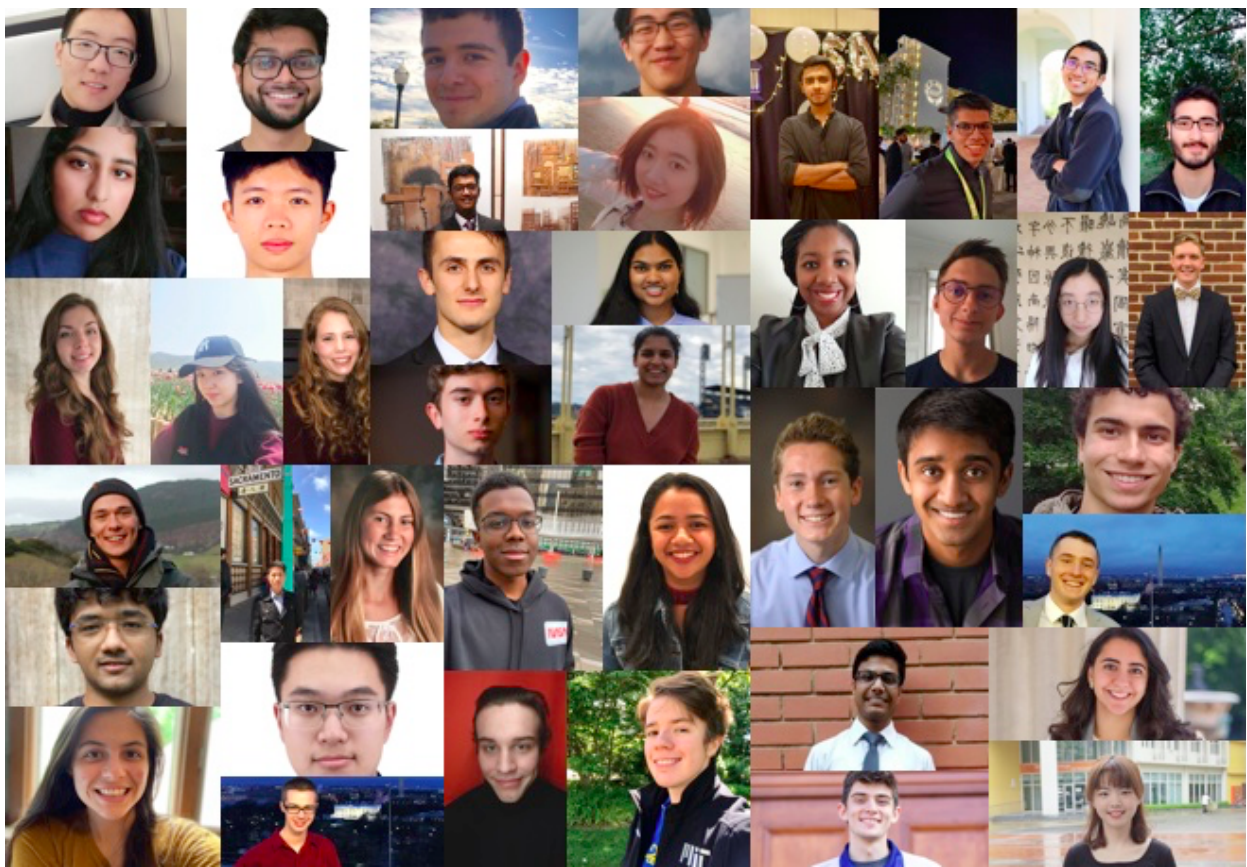


**ROBOTICS INSTITUTE  
SUMMER SCHOLARS**



**Meet the 2020  
RISS Cohort**

## Letter from the Cohort

Just a few months ago, we—the 2020 summer scholars of the Robotics Institute—were fortunate and talented enough to be accepted into this program and were gearing up to spend our summer on the campus of Carnegie Mellon University. However, this paragraph is being written in a very different world from this previous one. With this being said, many people have fought extremely hard to enable us to still experience a summer of research and learning, and we want to demonstrate our excitement for still being able to participate in this program.

With this booklet, we want to introduce ourselves so that we as the summer scholars are able to further the bonds that we make with each other. However, we also want to take this opportunity to indicate how grateful we are to all of the sponsoring parties for allowing us to be a part of the Robotics Institute along with all of the communities and individuals that have helped prepare us for this experience. We cannot wait to connect with all of the members of this program whether that means the faculty, the students, or the sponsors that have made this summer possible.



We are a global community.  
24 US scholars and 19 international scholars.



<p><b>RISS Director</b> Dr. John M. Dolan <i>jdolan@andrew.cmu.edu</i></p>	<p><b>RISS Co-Director</b> Ms. Rachel Burcin <i>rachel@cmu.edu</i></p>		
<p style="text-align: center;"><b>Scholar Editors</b></p> <table border="0"> <tr> <td data-bbox="430 1770 669 1837"> <p>Max Asselmeier Hunter Damron</p> </td> <td data-bbox="911 1770 1240 1850"> <p>Josiah Coad Beverley-Claire Okogwu</p> </td> </tr> </table>		<p>Max Asselmeier Hunter Damron</p>	<p>Josiah Coad Beverley-Claire Okogwu</p>
<p>Max Asselmeier Hunter Damron</p>	<p>Josiah Coad Beverley-Claire Okogwu</p>		

## RISS 2020 Cohort

Scholar	Mentor	Home Institution	Major
Adrian Thinnyun	Reid Simmons	University of Virginia	Computer Science
Ali Albazroun	William Red Whittaker	University of Illinois at Urbana-Champaign	Mechanical Engineering
Arthur Bucker	Sebastian Scherer	University of Sao Paulo	Mechatronics Engineering
Benjamin Kazules	Katia Sycara	United States Air Force Academy	Mathematics & Computer Science
Beverley-Claire Okogwu	Ding Zhao & Mengdi Xu	Dickinson College	Computer Science
Caleb Richardson	Maxim Likhachev	United States Air Force Academy	Computer Science
Eliot Xing	Abhinav Gupta	Georgia Institute of Technology	Computer Engineering & Mathematics
Ellen Mamantov	Henny Admoni	Carleton College	Computer Science
Emma E. Erickson	Artur Dubrawski	University of Illinois at Urbana-Champaign	Electrical Engineering
Ernest Popropek	Artur Dubrawski	Warsaw University of Technology	Computer Science
Ethan Kendall Fahnestock	Maxim Likhachev	University of Rochester	Robotics Engineering
Fausto Vega	Sebastian Scherer	University of Nevada, Las Vegas	Mechanical Engineering
Gargi Nitin Sadalgekar	Aaron Johnson	Princeton University	Mechanical Engineering & Aerospace Engineering
Hunter Damron	John M. Dolan & Christoph Mertz	University of South Carolina	Computer Science & Mathematics
Jiming Ren	Howie Choset	Hong Kong University of Science and Technology	Mechanical Engineering
Josiah Coad	John M. Dolan	Texas A&M University	Computer Science, Statistics & Mathematics
Kaleb Ben Naveed	John M. Dolan	The Hong Kong Polytechnic University	Electronics and Information Engineering
Kathleen Medill	Henny Admoni	United States Air Force Academy	Electrical Engineering
Khush Agrawal	David Held	Visvesvaraya National Institute of Technology	Electronics and Communication Engineering
Lan Wu	Stephen Smith & Isaac Isukapati	Chinese University of Hong Kong, Shenzhen	Electronics Information Engineering
Maxwell Asselmeier	Howie Choset	University of Illinois at Urbana-Champaign	Mechanical Engineering
Nadia AlMatlak	Henny Admoni	Columbia University	Mechanical Engineering

## RISS 2020 Cohort Cont.

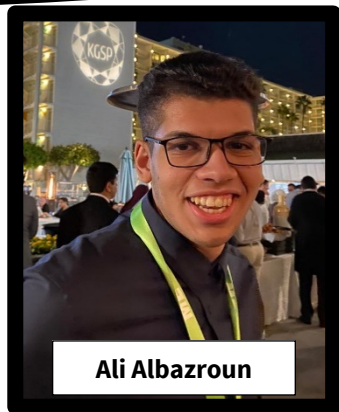
Scholar	Mentor	Home Institution	Major
Nayana Suvarna	Howie Choset	University of Pittsburgh	Computer Engineering
Neehar Peri	Deva Ramanan & Shu Kong	University of Maryland, College Park	Computer Engineering
Oleksandr Koreiba	William Red Whittaker	Kaunas University of Technology	Robotics
Skye Thompson	Oliver Kroemer	Massachusetts Institute of Technology	Electrical Engineering & Computer Science
Rebecca Martin	Stephen Smith & Isaac Isukapati	Arizona State University	Computer Systems Engineering & Mathematics
Renos Zabounidis	Katia Sycara	University of Massachusetts at Amherst	Computer Science
Sahana Kumar	Maxim Likhachev	Johns Hopkins University	Biomedical Engineering
Salva Rühling Cachay	Artur Dubrawski	Technical University of Darmstadt	Computer Science
Samuel Alvares	Carmel Majidi	Rose-Hulman Institute of Technology	Mechanical Engineering
Seth Karten	Katia Sycara	Rutgers University	Computer Science
Shiting Xiao	Maxim Likhachev	Chinese University of Hong Kong, Shenzhen	Computer Science and Engineering
Shivesh Khaitan	John M. Dolan	Manipal Institute of Technology	Computer Science and Engineering
Sombit Dey	John M. Dolan	Indian Institute of Technology, Kharagpur	Electronics and Electrical Communication Engineering
Suhas Raja	Katia Sycara	University of Texas, Austin	Electrical Engineering & Computer Engineering
Thomas Galligani	William Red Whittaker	United States Air Force Academy	Applied Mathematics
Tianjian Huang	Jack Mostow	Chinese University of Hong Kong, Shenzhen	Computer Science and Engineering
Urara Kono	William Red Whittaker	University of Tokyo	Electrical and Electronic Engineering
Willa Potosnak	Artur Dubrawski	Duquesne University	Biomedical Engineering
Yaqian Chen	Sebastian Scherer	Chinese University of Hong Kong, Shenzhen	Computer Science and Engineering
Yu Wu	Stephen Smith & Isaac Isukapati	ShanghaiTech University	Computer Science and Technology
Zeyuan Feng	Maxim Likhachev	Chinese University of Hong Kong, Shenzhen	Electronic Information Engineering



**Adrian Thinnyun**

Hi, my name is Adrian and I am studying Computer Science and Math at the University of Virginia. I am excited to participate in RISS for the opportunity to connect with fellow researchers and hope to build something that leaves an impact long after the summer has ended. This summer I will be joining Dr. Reid Simmons in the Reliable Autonomous Systems Lab, and together we will be working on teachable robots that can learn from and alongside students in a classroom setting to help improve their educational experience. I am glad that this project ties in closely with my ongoing work in CS Education research at UVA. I would like to thank the sponsors of RISS for giving me and the other scholars the chance to work on exciting applications of robotics and welcoming us into the CMU research community.

My name is Ali Albazroun, and I am a mechanical engineering student at the University of Illinois at Urbana-Champaign. I am excited to be a part of the RISS program because I will be able to work on problems related to computer vision, a field I have little experience on. This summer, I am going to work on the localization and mapping for the Iris rover project in the Field Robotics Center which investigates robots that work in remote and dangerous environments such as the moon or the TMI accident site. Lastly, I would like to thank my sponsors for helping me be a part of the RISS program and for helping me succeed both academically and socially.



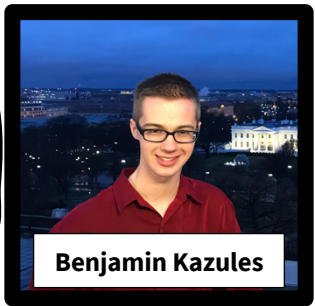
**Ali Albazroun**



**Arthur Buckner**

Hi, I am Arthur Buckner, a Mechatronics Engineering student at the University of São Paulo, Brazil. I am very excited to join the RISS community this summer, and to further develop my research skills at Carnegie Mellon, one of the world's leading centers for robotics technology. I will be joining the AirLab under Prof Sebastian Scherer and will work on a project focused on aerial autonomy within the context of autonomous cinematography using drones. The goal of my project is to empower any individual with the full artistic capabilities of aerial cameras. To achieve this goal, I will develop a multi-drone system capable of tracking and filming a moving actor in cluttered environments, in close proximity to obstacles. This technology presents great potential to impact both the professional filming industry and amateur film-making. I am looking forward to engaging with researchers and students from all over the world during this internship. I am honored to be selected for this unique experience where I can develop technical skills and contribute to cutting-edge research. I would like to thank CMU, the AirLab and the sponsors for making this experience possible.

My name is Ben Kazules, and I am a Cadet at the US Air Force Academy. My academic major is Mathematics with a focus in Computer Science, and I will be working with Dr. Katia Sycara on applications of Artificial Intelligence. I am excited to delve deep into highly advanced Machine Learning algorithms, and I look to bring a uniquely mathematical approach to the team. I am grateful to Carnegie Mellon University and the RISS program for extending an invitation and providing me with this experience.



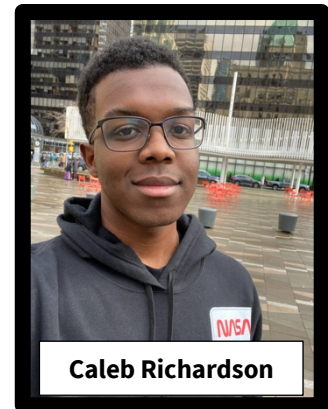
**Benjamin Kazules**



**Beverley-Claire Okogwu**

My name is Beverley-Claire Okogwu. I am currently a junior at Dickinson College, Pennsylvania majoring in Computer Science with a minor in Mathematics. This summer, I will be working under the mentorship of Dr. Ding Zhao and his PhD student, Mengdi Xu, on the utilization of Machine Learning principles in the development of self-driving cars and smart cities -In other words, a city powered on Artificial Intelligence (AI). I am very excited to work on this project primarily because of my growing interest in deep learning and human-robot interaction. In addition, I look forward to not only working with a vast community of scholars and experts in the cohort, but also to expand and develop my skillset that would in turn enable me to help others in their discovery of AI and Robotics. In light of this, I would like to thank the RISS community for giving me the opportunity to be a part of the cohort, and my sponsors for supporting me through this experience. I am truly grateful.

Hello! My name is Caleb Richardson and I am currently a senior at the United States Air Force Academy. I am working on earning my bachelor's degree in computer science, focusing in the areas of artificial intelligence and machine learning. Over the summer I'll be working with Dr. Maxim Likhachev and his team in the Search-Based Planning Lab. I am excited for this experience as I have always had a love for robotics, especially in the realm of UAVs. That is why I am thrilled that my project is working on the problem of persistent coverage with multiple UAVs. This project involves planning for multi-robot coverage of an area while constructing collision free paths without sacrificing efficiency. I would like to thank my sponsors and everyone else who made this possible for supporting me and welcoming me into the Carnegie Mellon community.



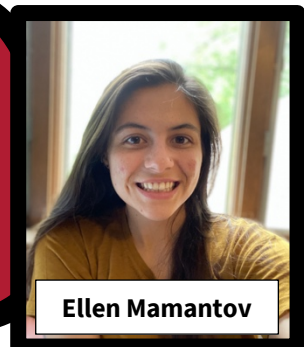
**Caleb Richardson**



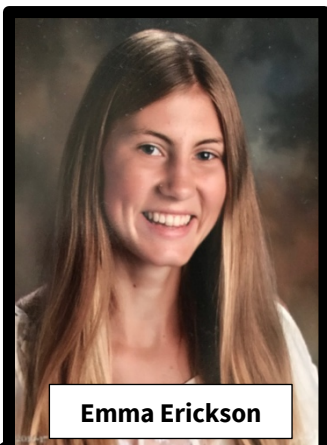
**Eliot Xing**

I am an undergraduate studying computer engineering and math at the Georgia Institute of Technology. This summer, I am working in Prof. Abhinav Gupta's lab as part of the RISS program at Carnegie Mellon University (CMU). At Georgia Tech, I am in the Healthcare Robotics Lab and advised by Prof. Charlie Kemp. My current research interests include reinforcement learning (RL), sim-to-real transfer, and safety for learning robotic tasks. In Prof. Gupta's lab this summer, I am working on using RL to solve long horizon continuous control tasks. Thank you to the sponsors and administrators of the RISS program for developing a wonderful summer research opportunity at CMU.

I am a computer science and psychology major at Carleton College in Northfield, MN. I am passionate about interdisciplinary research that uses technical resources to build tools and psychological knowledge to understand how the technology influences its end-users. At CMU, I will be joining the Human and Robot Partners Lab to work on understanding human preferences related to robotic motions and actions. Specifically, I will be studying how people react to different path trajectories of a robot within a restaurant scenario. I am excited to have the opportunity to learn about both the technical aspects of robotics research and the implications it can have for the world around us. I am extremely grateful for everyone at CMU and my sponsors for their help and support.



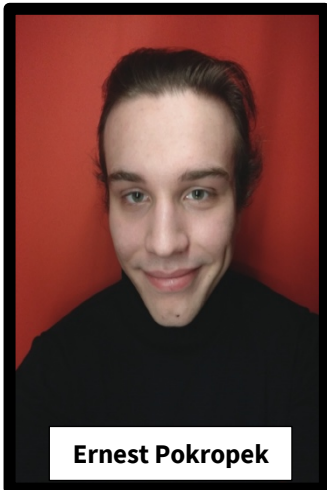
**Ellen Mamantov**



Emma Erickson

Hello, my name is Emma Erickson. I'm a senior at the University of Illinois at Urbana-Champaign, where I study electrical engineering with a minor in computer science. This summer I will be working with the Auton lab under Dr. Dubrawski on a computer vision project analyzing videos of microcirculatory blood flow. Since I have an electrical engineering background, in particular an interest in signal processing, I am excited to combine strategies from this field with the machine learning techniques the Auton lab specializes in. I want to say thank you to all the sponsors who make this opportunity to research and learn possible!

My name is Ernest Pokropek and I am a third-year student of Computer Science at Warsaw University of Technology, Poland. I have been involved in academic research for more than two years already, since with a group of my friends we formed a student research group FiberTeam, based in the area of fiber optics. Later on, I got interested in the field of machine learning, being impressed with the possibilities that artificial intelligence brings to our world - this is why I am especially excited about RISS. Working with one of the best groups of experts in the whole world, around ambitious and hardworking students will surely be the thing I am going to remember for the rest of my life. During the summer I am going to work under mentorship of Dr. Artur Dubrawski in the Auton lab, utilizing machine learning solutions in monitoring the health of intensive care patients in hospitals. I am incredibly thankful both to CMU and the sponsors for making this incredible opportunity available for me. and I cannot wait to start the research!



Ernest Pokropek



Ethan Fahnestock

Hello! My name is Ethan Fahnestock. I attend the University of Rochester and am going into my senior year. I am fascinated with robot autonomy and the challenges of making intelligent decisions in unstructured environments and hope to be able to contribute to problems related to these research areas, as well as contribute to the RI community during this program. This summer I will be working with Prof. Maxim Likhachev and PhD. student Shivam Vats in the Search-Based Planning Laboratory (SBPL). My project will either focus on safe but optimal multi-agent path finding or learning controllers for manipulation. I would like to thank my sponsors for making this opportunity possible, even during these challenging times.

I am a junior at Princeton University majoring in Mechanical and Aerospace Engineering. I'm excited to participate in the RISS program because I want to design innovative robots that can solve real-world problems. I will be joining Dr. Aaron Johnson in the RoboMechanics Lab, where students and faculty investigate the mechanics of how robots interact with complicated environments in order to produce useful behaviors. Their work involves applying research in areas like mechanism design, feedback control, and motion planning to help adapt robots to challenging real-world environments, like rocky hills and cluttered. My project will involve optimizing a probabilistic motion model of a robot traversing uneven terrain. Thank you to all the sponsors and administrators of the RISS program for making this amazing opportunity possible.



Gargi Sadalgekar

I am a rising senior computer science and mathematics double major and member of the Autonomous Field Robotics Lab at the University of South Carolina. This summer, I will be working with Dr. Christoph Mertz to use public bus cameras to detect map changes, such as newly placed road signs, for autonomous car navigation. I am excited to broaden my experience in robotics and apply my background in localization and mapping to autonomous car research. I would like to thank Carnegie Mellon University and the RISS program for their generous support of my research experience.



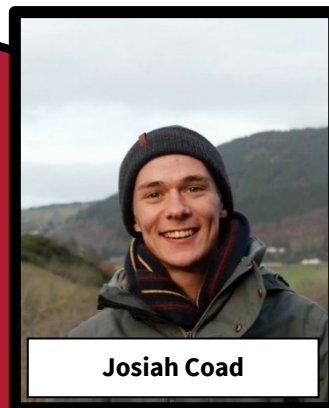
Hunter Damron

I am Jiming Ren, an incoming senior majoring in mechanical engineering and computer science at the Hong Kong University of Science and Technology (HKUST). This summer, I will be with the Biorobotics lab which focuses on design, analysis and control of robots that integrate biological and mechanical systems. My work will compare the performance of existing control policies with a Hexapod robot traversing across uneven terrains. The RISS program offers me a special opportunity to get exposure to state-of-the-art research and collaborating with people having innovative ideas. Therefore, I am very excited to acquaint myself with peers in this cohort who share a great passion in robotics.



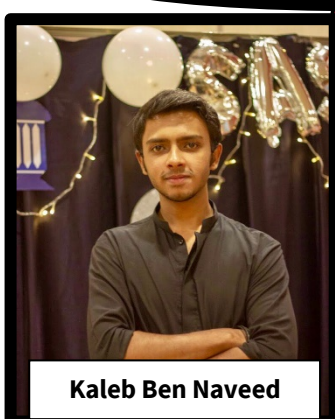
Jiming Ren

This summer, I am mitigating this safety issue through generating trajectories for autonomous vehicles using reinforcement learning. The goal is to map the state the car is currently in to a sequence of future actions the car plans to take. Safety modules can more aptly be applied to the predicted trajectory for the vehicle. I am working under the supervision of Dr. John Dolan in the Argo AI Center for Autonomous Vehicle Research. We build algorithms to bring safe human characteristics to autonomous driving through sensor development, and path and motion planning. I am a senior at Texas A&M University where I study computer science, math, and statistics as a triple major. I hope to expand my experience and skill in research, robotics and reinforcement learning through the RISS program. I would like to thank my sponsors and Carnegie Mellon for making it possible for me to have this amazing opportunity.



Josiah Coad

I am a sophomore at The Hong Kong Polytechnic University majoring in Electronics and Information Engineering. I am excited to join RISS this summer as it will help me to know more about the state-of-the-art research and challenges in the field of robotics and autonomous vehicles. This would also lay down a strong foundation for my graduate studies. I will be working under the research mentorship of Dr John Dolan in the Argo AI centre for Autonomous Research. Research in the Argo AI centre is mainly focused on developing novel perception and decision-making algorithms to enhance the safety, intelligence, and reliability of autonomous vehicles. My research project for this summer is focused on effectively planning the motion of the autonomous vehicles through trajectory prediction at the non-controlled intersections. I would like to thank my sponsor and The Carnegie Mellon University for making it possible for me to attend RISS this summer.



Kaleb Ben Naveed



Hi, my name is Kat Medill and I am a rising senior in electrical engineering at the United States Air Force Academy. I am very passionate about developing devices that help improve people's quality of life and learning about how to optimize the way humans interact with robots. This summer I am working in the Human and Robot Partners Lab under Dr. Henny Admoni. The goal of my project is to use deep learning to classify which step of a multi-step task a user is trying to execute. I will be investigating how the addition of user's eye gaze data can be used to improve the classification model. I am excited and grateful for this opportunity to work with and learn from some of the leaders in robotics!



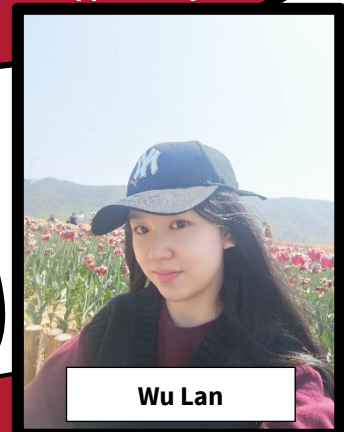
Kat Medill



Khush Agrawal

My name is Khush Agrawal. I am a junior in Electronics and Communication Engineering at Visvesvaraya National Institute of Technology, India. I am interested in developing robots that can learn to perform a task from its experience of interacting with an environment over time. This summer, I will be working under the mentorship of Dr. David Held on teaching robots to perform fabric manipulations like folding, moving, etc. Besides the research project, the opportunity to interact with a cohort broadly sharing my interests excites me. I am looking forward to learning from the cohort's research experience and share mine to come forward as a better researcher after the RISS program. On this note, I would like to thank all the scholarship providers and the organizing committee for providing me this valuable opportunity.

Hi everyone, my name is Wu Lan. I'm a junior from the Chinese University of Hong Kong (Shen Zhen) and my major is Electronics Information Engineering (EIE). In the past few years, I have participated in school lab doing route planning with my instructor and thus feel it interesting to learn modeling and deal with obstacles in different complex environments. This summer I will work with Dr. Smith and Dr. Isukapati on intelligent paratransit. I'm looking forward to understanding more about statistics as well as AI during this precious experience. Many thanks for all support we will receive.

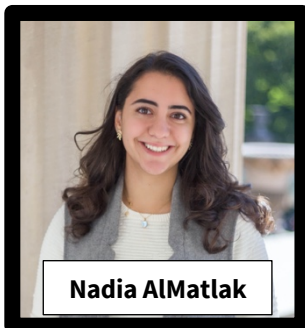


Wu Lan



Max Asselmeier

My name is Max Asselmeier, and I'm a junior majoring in mechanical engineering and minoring in computer science at the University of Illinois at Urbana-Champaign. This summer, I'll be in the Biorobotics Lab, a group that deals with the design, modeling, and planning of robots and frequently utilizes or takes inspiration from biological concepts. Specifically, my project involves the design of modular robots through the use of neural networks. I'm looking at how these networks can be trained to determine parameters such as the type or size of links used in modular robots. I'm excited to embed myself into such an expansive lab and offer mechanical design skills while incorporating computational and biological ideas into my project as well. Thank you so much for letting me be a part of such an illustrious and educational program!



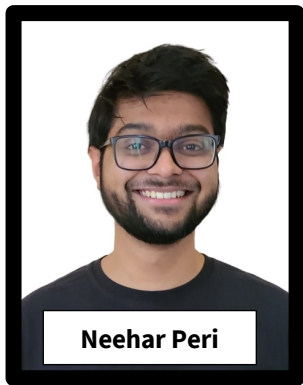
Nadia AlMatlak

I am a Mechanical Engineering student at Columbia University. I'm a returning RISS 2019 alum and I'm excited to be a part of the Human & Robotic Partner (HARP) lab under Dr. Henny Admoni again. Last summer, I was able to learn a lot about conducting research in the field of Human-Robot Interaction. I'm excited to build up more on that experience given what I've learned over the past year and I hope I'll be able to contribute to the experiences of the new RISS cohort. I'm very passionate about designing tools to advance rehabilitation and help people relearn, restore, or improve functional movements to allow them to return to activities of daily living. This summer I'll be working on computing and enhancing the accuracy of goal predictions using a robotic arm in an eating task. This is a continuation of the project I began last summer and part of a larger overall project within the lab. I'm very appreciative of the continued support I've received from the KAUST Gifted Student Program (KGSP), Dr. Admoni, and everyone at the Robotic's Institute at Carnegie Mellon.

My name is Nayana and I'm a senior computer engineering student at the University of Pittsburgh. This summer I'll be in the Biorobotics Lab under Dr. Howie Choset. My project will revolve around multi-agent path planning. This area focuses on efficient path-planning for multiple agents while trying to avoid collisions between them. I'm excited to work in the lab, as it will allow me to dive deeper into my research interests in the field. I'm also looking forward to being able to interact with fellow cohort members as well as esteemed faculty and researchers across the university. I want to extend my gratitude to all the sponsors for making this experience possible and for providing me the opportunity to do research this summer!



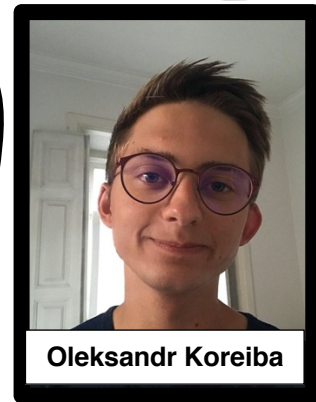
Nayana Survana



Neehar Peri

My name is Neehar Peri and I am currently a junior studying Computer Engineering at the University of Maryland. This summer, I am working with Professor Deva Ramanan and Dr. Shu Kong on open world 3D tracking with applications in self-driving vehicles. This summer, I hope to learn how to formalize the research process when leading a new project, build upon work being done by the larger research community, and effectively communicate my results to other members of the research community. I hope to contribute to the cohort and learning experience by sharing my passion for computer vision and learning from other students about various subdisciplines in robotics research. I'm excited to learn from world renowned leaders in robotics and interact with an international cohort of students that are also interested in robotics research. I would like to thank the RISS community and sponsors for supporting me in my research this summer.

My name is Alex, I'm from Ukraine but I study at the Kaunas University of Technology in Lithuania where I'm majoring in Robotics. I'm very excited to work on a project in space robotics as it's my main field of interest, and I don't have such an opportunity at my university. I will be working in Lunar Robotics Lab on the odometry of the small lunar rover called MoonRanger. It's gonna be a very challenging, yet interesting summer, and I hope not only to improve my technical skills but also learn about communication in such a big team as well as writing research papers. I'm very grateful for this opportunity and want to thank Dr. Whittaker and his team as well as the sponsors as it wouldn't be possible without their support.



Oleksandr Koreiba

My name is Skye Thompson, and I'm a rising senior in EECS and Mechanical Engineering at MIT. I am excited for the opportunity to join this year's RISS cohort in developing our research skills and exploring new perspective in robotics. My primary research interest is robust robotic manipulation. I am particularly interested in combining traditional approaches with modern innovations in robot learning. This summer, I'll be working with Dr. Kroemer in the Intelligent Autonomous Manipulation Lab, developing methods for learning distributed manipulation policies - enabling an array of manipulators to collaborate effectively to achieve a shared goal. I'd like to thank the program sponsors for their support in allowing me to participate as a scholar this summer.



**Skye Thompson**

Hi, my name is Rebecca Martin and I am a rising senior in Computer Systems Engineering and Mathematics at Arizona State University. I am working in the Intelligent Coordination and Logistics Laboratory with Dr. Stephen Smith and Dr. Isaac Isukapati on multi-vehicle routing algorithms for the dynamic Dial-a-Ride Problem. I was a part of RISS in 2019 and am really looking forward to another awesome year! Thank you to everyone who has made this program possible; it is a tremendous opportunity for all aspiring roboticists.



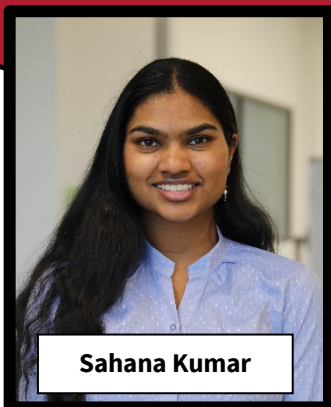
**Rebecca Martin**

My name is Renos Zabounidis, and I am a Computer Science, Mathematics, and Computational Cognitive Science major at the University of Massachusetts Amherst. I am interested in applying techniques from cognitive science and statistics to improve AI approaches. During my time at RISS, I hope to learn more about how AI is used in modern robotics and hope to contribute my own knowledge of Machine Learning to my peers. I will be conducting research under Dr. Katia Sycara and Dr. Dana Hughes, working on developing an agent that can effectively assist humans in a search and rescue scenario.



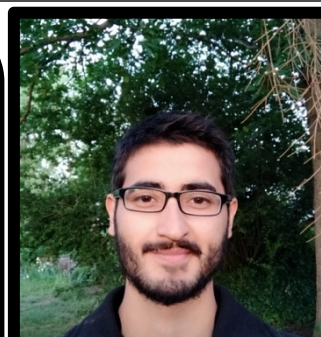
**Renos Zabounidis**

Hello! My name is Sahana Kumar and I'm a rising second year Biomedical Engineering student at Johns Hopkins summer. This summer, I'll be working with the Likhachev lab in artificial intelligence and robotics research. In the future, I hope to work on the integration of robotics and medicine, using microrobotics to create less invasive, lower risk, and higher precision surgical options.

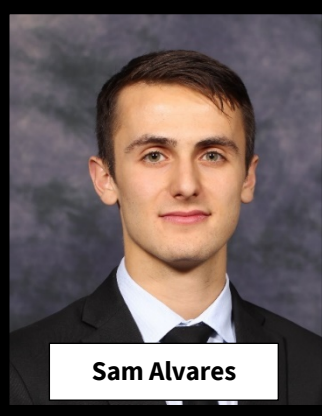


**Sahana Kumar**

Hi all! :D, I'm Salva and study computer science at the Technical University of Darmstadt, Germany. I'll join the Auton Lab and work on structure learning of dependencies for weak supervision models, i.e. how to best learn the dependencies between noisy labeling heuristics. This promises to be an attractive alternative to time-consuming hand labeling. It excites me the most to contribute to a research project from start to finish as well as learn from and interact with like-minded peers. I would like to thank everyone who is facilitating and shaping RISS 2020, especially with regard to the obstacles that arised due to Covid-19.



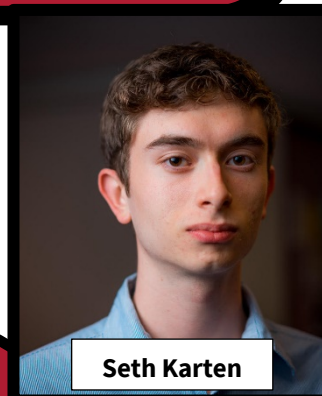
Salva Rühling Cachay



Sam Alvares

I am majoring in mechanical engineering and minoring in robotics at Rose-Hulman Institute of Technology. This summer, I am working in the Soft Machines Lab (SML) under Dr. Carmel Majidi. The SML aims to replace bulky and rigid robot hardware with flexible and compliant materials that allow their robots to behave like soft, biological organisms and safely interact with humans. My research will involve kinematic modeling for state estimation of soft robots. I look forward to collaborating with interdisciplinary roboticists and expanding upon my knowledge of robot kinematics, dynamics, and control. Thank you to Carnegie Mellon University and the RISS program for welcoming me into CMU's Robotics Institute and for supporting my undergraduate research amidst the COVID-19 pandemic.

Hi, I am Seth Karten, a Computer Science major from Rutgers University-New Brunswick. I am very interested in using deep reinforcement learning in simulated environments to learn effective policies. This summer I am working with Dr. Katia Sycara and Dr. Dana Hughes on a search-and-rescue project using deep reinforcement learning with a Theory of Mind approach, a cognitive science technique with influences from psychology. I look forward to expanding my strong robotics and artificial intelligence background with interdisciplinary techniques from cognitive science. Thank you to all sponsors for making this possible.



Seth Karten

Hi! My name is Ginny Xiao. I am graduating from CUHKSZ and have been admitted to Penn's robotics master program. I am fascinated with robotics and the challenges of intelligent decision making. I feel honored to be a member of the RISS cohort and the RI community, because academically, it's really exciting to be among such bright and driven people in the area of robotics, and I believe it's a great feeling to be so intellectually stretched. In the summer I will be working with Dr. Maxim Likhachev's group in the Search-Based Planning Lab (SBPL). The lab mainly works on fast and intelligent decision-making problems by autonomous robotic systems operating in real-world environments. For my research project, our objective is to improve a novel GPU-based perception algorithm for object pose estimation developed by my grad student mentor Aditya Agarwal and the team. We believe this task is interesting because to enable robotic interactions with objects in a reliable manner, it requires fast and accurate identification of object positions and orientations. The algorithm being developed searches for the best explanation of the observed scene using depth and RGB data, and also offers strong guarantees on completeness and accuracy. I would like to thank all the sponsors and colleagues for making this remote program possible. The current circumstances bring a lot of uncertainties and new challenges, and I am so grateful that the summer program has continued to the best extent possible.



Ginny Xiao



Shivesh Khaitan

I am a junior studying Computer Science at Manipal Institute of Technology, India. I have been working with a robotics team on a self-driving car since the beginning of my undergraduate program and am excited to contribute to a similar project for RISS 2020. For the summer program, I am working under Dr. John M Dolan in the Argo AI Center for Autonomous Vehicle Research. The lab, in collaboration with Argo AI, is focused on enabling vehicles to perceive and navigate autonomously in diverse, open-world, urban conditions. My goal for this summer is to build a controller for a self-driving car with the ability to track a reference path while avoiding dynamic obstacles in real-time. The controller would ensure "safety guarantee" by considering uncertainty in its controls and reachability analysis of on-road vehicles. This is a unique learning experience for me which would help me prepare me for my graduate studies and I would like to convey my sincere thanks to the RISS organizers, mentors, and sponsors for giving me this opportunity.

I am a pre-final EE-CS student at IIT Kharagpur, India. For the RISS 2020 internship, I will be working under the guidance of Prof. John Dolan in the Argo AI Centre for Autonomous Vehicle Research. My project involves tracking and detection of objects for autonomous vehicles using sensor fusion. I have always been passionate about robotics and RISS is a great opportunity for me to meet leading researchers in robotics. I want to thank RISS sponsors, mentors and organizers for making this wonderful experience possible.

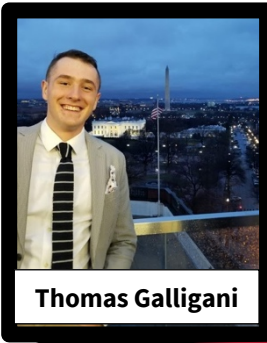


Sombit Dey

I am Suhas Raja, a 4th year student at The University of Texas at Austin studying Electrical and Computer Engineering and Mathematics, with a minor in Economics. At RISS, I am working with Dr. Katia Sycara's lab to develop approaches to make artificially intelligent robots adapt to, and complement, human behavior. We are applying techniques from game theory and machine learning to create a software agent that works cooperatively with humans in strategic interactions. This work is incredibly exciting since it blends my interests in the decision sciences with machine learning to help humans better work with technology. My time at RISS is sponsored by the National Science Foundation Research Experiences for Undergraduates (REU) program, and I am very grateful for their support.

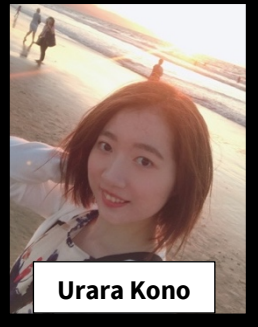


Suhas Raja



My name is Thomas Galligani, a Math major with a Russian minor at the Air Force Academy. I will be working with Dr. Whittaker on the MoonRanger project. MoonRanger is an autonomous lunar rover which will launch in 2022 to search for water in the South pole of the Moon. I am most looking forward to work in a team solving a real problem and creating a NASA deliverable. Additionally, I would like to thank all of the sponsors who make RISS and my participation in it possible.

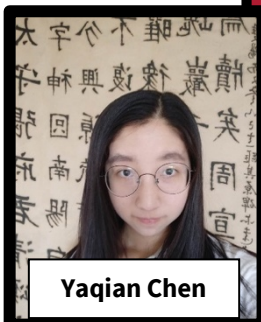
My name is Tianjian Huang. I am a junior student at Chinese University of Hong Kong, Shenzhen, and I am majoring in Computer Science and Engineering. This summer I will be working with Dr. Jack Mostow on Educational Process Mining, which is a subclass of data mining techniques. I am very honored to take part in RISS, since this is the second time I apply. My persistence comes from my eagerness to join an active and inclusive research and learning community just as Aristotle said human beings are social animals. By joining RISS I am not just doing research on my own but contributing to the academic community with all of you. In this summer, I am conducting a research about Educational Process Mining (EPM) on RoboTutor, an Android tutoring app which teaches kids basic numeracy and literacy skills. Currently, RoboTutor have been tested in over 30 villages in Tanzania, providing considerable educational help to kids who did not have enough teachers. My job will be analyzing event logs acquired in those tests and finding interesting patterns in the auto-tutoring process, e.g. where is the bottleneck of learning, and what will be the optimal way that RoboTutor can help kids learn better. I anticipate EPM will reveal key information which can improve RoboTutor as a better intelligent tutor, and thus provide better aids to kids living in countries with little educational resource.



Hello, my name is Urara Kono. I'm a senior at the University of Tokyo, Japan. My major is electrical and electronic engineering. I will work on the localization of Iris rover, which will be launched to the moon in 2021, under Dr. William (Red) L. Whittaker. I will combine wheel odometry and mono SLAM, and use the techniques used in electric vehicles to better estimate the slip ratio. I'm really excited because I can contribute to the real space mission! I appreciate CMU and sponsors for giving us this wonderful opportunity.

I am a Biomedical Engineering major at Duquesne University. I am very excited to participate in the RISS program because I will have the opportunity to work under distinguished professionals in the field of robotics as well as gain valuable knowledge on machine learning. I will be working under Dr. Artur Dubrawski in the Auton Lab, which focuses on using machine learning tools to analyze and model data for improving healthcare, countering human trafficking, outbreak detection, and other fields. Specifically, I will be working on a project to analyze data from patients undergoing cardiothoracic surgery. I hope to contribute to research that will help improve patient healthcare and quality of life. I would like to thank the RISS sponsors and partners as well as the Auton lab for making this opportunity possible!





Yaqian Chen

Hi! My name is Yaqian, a junior student from Chinese University of Hongkong (shenzhen) majoring in computer science and engineering. I have interest in robotics since I was very little and therefore later chose the computer science as my major and joined the robotics and artificial intelligence lab in Chinese University of Hongkong (shenzhen) when I was a sophomore. I feel honored to be a member of the RISS cohort and the RI community this year. Fascinated with the academic atmosphere, I really enjoy learning from and working with great scholars in CMU. I am currently doing the research under the guidance of Dr. Chen Wang from air lab. The lab mainly focuses on developing and testing perception and planning algorithms for unmanned air vehicles. Our project basically has two objectives, train robots to detect novel and interesting scenes in unknown environments and lose interests over time after repeatedly observing similar objects. And the second objective is to train robots to learn from unbalanced data in a short time. Interesting scene prediction is crucial for autonomous exploration, which is one of the most fundamental capabilities of mobile robots. It has a significant impact on decision making and robot cooperation. For example, the finding of a door may affect the future planning, the hole on the wall may attract more attentions. interesting scenes may become uninteresting during robot exploration after repeatedly observing similar scenes or following moving objects. For example, we expect to have high interests on the truck when it appears but loss the interests when it exists for a long time. In this project, I will help to build a system which can train robots to detect novel and interesting scenes in unknown environments. I would really like to thank all the sponsors and colleagues for making this program possible. Thanks a lot for your help and support and thanks for your listening.

I am Yu Wu, a junior student majoring in computer science at ShanghaiTech University, China. I am interested in AI algorithms, especially those focusing on the cognitive level, expecting to improve current AI applications to a more significant level. I will work with Dr. Smith and Dr. Isukapati on intelligent paratransit, which makes great use of AI algorithms to provide the best transportation service to those citizens in need. I hope I can inspire other scholars with my own particular ideas and all the cohort can learn something from each other. Thanks for all the support from our sponsors.



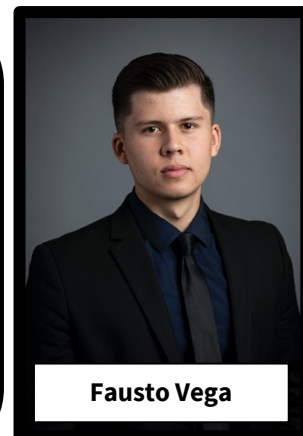
Yu Wu



Zeyuan Feng

Hi! My name is Zeyuan Feng. I'm from CUHKSZ and going to be a senior student in Electronic Information Engineering. I'll be working with Prof. Likhachev and PhD. student Ramkumar in search-based motion planning this summer. My passion is mainly about developing faster or innovative motion planning methods under high dimension and making such methods practical in world world, namely against certain amount of noise. My project topic is still under discussion now, but certainly it will be a brand-new challenge for me. Hopefully I can do well and achieve satisfactory results. Lastly, I would like to thank the whole cohort for making it possible for us to meet together.

My name is Fausto Vega and I am an undergraduate mechanical engineering student at the University of Nevada, Las Vegas (UNLV). I conduct research at the Drones and Autonomous Systems Laboratory at UNLV on several robotics concepts. Yet, this summer 2020 I am excited to be participating in the Robotics Institute of Summer Scholars at Carnegie Mellon University to further develop my research skills and gain more insight in aerospace technologies. I will be joining the Air Lab and working under the direction of Dr. Sebastian Scherer and graduate student Mohammadreza Mousaei. This project focuses on developing an effective multi-robot collision avoidance system for UAV's to reduce the risk of accidents as well as minimizing false notifications. This system will be compared to the current Airborne Collision Avoidance System (ACAS X) software to test its effectiveness. I would like to thank Carnegie Mellon making this program possible as well as the RISS community for allowing me to participate.



Fausto Vega