2020 Undergraduate Summer Research Program Projects
BIOMEDICAL ENGINEERING

Professor Weiqiang Chen wchen@nyu.edu

Research Project(s):

- **Engineering Cancer Microenvironment in vitro Models for improving cancer immunotherapy:**
  - With our collaborators at the NYU Langone Brain Tumor Center, our research group has established a line of novel, integrated microfluidic-based microphysiological systems that reconstitute the dynamic in vivo pathology of tumor niches for patient-specific therapy screenings in vitro. Our research team is now further engineering a novel biomimetic ex vivo tumor immunity model, termed 'Leukemia-on-a-Chip', to dissect the leukemia bone marrow immune microenvironment and validate a personalized CAR T-cell immunotherapy regimen for improving efficacy and safety in relapsed and refractory leukemia patients.

- **Microfluidic Biosensing Technologies for Multiplex, Real-time Immunophenotyping:**
  - An accurate and real-time measurement of immune cell functions for patients is critical yet challenging in disease diagnosis and prognosis and personalizing immunotherapy regimens. We will develop and implement our microfluidic nanoplasmonic biosensor to provide detailed, time-dependent mechanisms of patient-specific CAR T-cell responses, at a single cell resolution for preclinically screening of optimal, effective and safe CAR T-cell therapy.

- **Exploring Single-cell Mechanobiology using 'Ultrasound Tweezers':**
  - Biologists have assembled considerable knowledge of how biochemical factors, signaling pathways, and transcriptional networks regulate human stem cell behaviors. However, it has recently become clear that the coexisting biophysical properties in the stem cell niche, such as substrate rigidity can provide potent control over a variety of cell behaviors, including the self-renewal and differentiation properties of stem cells. Our research has been oriented towards engineering synthetic micro/nano-scale biomaterials to explore critical regulatory roles played by the dynamic biophysical signals in the local stem cell microenvironment (such as cell shape and geometry, matrix mechanics, external mechanical forces, and nanotopographical features of the ECM) that regulate the downstream stem cell self-renewal and differentiation.

*Note: GPA>3.5*
C2SMART

Kaan Ozbay
kaan.ozbay@nyu.edu

Other Mentor(s):
Abdullah Kurcku (ak4728@nyu.edu)
Junaid Khan (jak930@nyu.edu)

Research Project(s):

- Use of drone-collected vehicle trajectory data to develop simulation models for connected/autonomous vehicle technologies
  - C2SMART is leading the USDOT/NYCDOT Connected Vehicle pilot project and students will work on this project with the collected data
- Measuring the impacts of planned special events on vehicular and pedestrian traffic
  - We have pedestrian and vehicular traffic data including travel times, volumes etc. during planned special events such as concerts, sports events and so on. We would like to do an analysis of such data and use it to predict the impact of future events.
Professor Rastislav Levicky  
rl1306@nyu.edu

Other Mentor(s):  
Vlad Frenkel  
Yuxiang Gao

Research Project(s):

- **Biosensors for Food Allergies**
  - Design sensors capable of monitoring interactions between proteins from foods and immune system components that recognize them

- **Optically Resonant Biosensors**
  - Develop guidelines for fabricating highly sensitive light-based sensors with desired sensitivity and multiplexing capabilities

*Note: Participants will need to complete a lab safety course*

Professor Miguel Modestino  
modestino@nyu.edu

Other Mentor(s):  
Andrea Angulo  
Adlai Katzenberg  
Daniela Blanco

Research Project(s):

- **Sustainable Production of Nylon 6,6**
- **Materials for Hydrogen Fuel Cell Applications and CO2 capture**
- **Electrochemical Microfluidic Energy Conversion Devices**
Professor Ayaskanta Sahu
asahu@nyu.edu

Other Mentor(s):
Steven Farrell (sf2957@nyu.edu)
Haripriya Kannan (hk2629@nyu.edu)

Research Project(s):
- Catalysis using earth-abundant nanomaterials
- X-ray detectors for breast cancer imaging
- Wearable and thin-film flexible electronics

Note: GPA above 3.5; Interest in Synthetic Materials Chemistry, Nanocrystals, Catalysis, Electronics

Professor Andre Taylor
andre.taylor@nyu.edu

Other Mentor(s):
Jason Lipton (jsl762@nyu.edu)
Jason Rohr (jasonrohr@nyu.edu)
Jaemin Kong (jk182@nyu.edu)

Research Project(s):
- Non-Fullerene acceptors for organic solar cells
- Fast-charging lithium-ion batteries
- Underwater solar cells
Professor Eray Aydil
aydil@nyu.edu

Research Project(s):

- **Quantum Cutting for Increasing the Efficiencies of Solar Cells**
  - The project focuses on discovery of thin films that when deposited on silicon solar cells can increase their efficiencies by converting photons with wavelengths shorter than 480 nm to photons at 980 nm by a phenomena called quantum cutting. Students will learn how to evaluate candidate materials synthesized by graduate students using optical absorption, photoluminescence, and quantum yield measurements.

- **Synthesis and characterization of metal halide perovskites**
  - This project focuses on synthesis and optical characterization of Ruddlesden-Popper type metal halide perovskites for making light emitting diodes. Students will work with a graduate student on depositing these materials and characterize them using x-ray diffraction, optical absorption and photoluminescence spectroscopies.

Bruce Garetz
bgaretz@gmail.com

Other Mentor(s):
Omar Gowayed (gowayed@nyu.edu)
Xin Wang (mattwang@nyu.edu)

Research Project(s):

- **Alignment of urea crystals in laser-induced nucleation of supersaturated aqueous urea solutions**
- **Nucleation of dipeptides using optical tweezers**
- **Diblock polymer-salt mixtures as electrolytes for lithium batteries**
Jin Ryoun Kim
jin.kim@nyu.edu

Research Project(s):

- **Amyloid aggregation in neurodegenerative diseases**
  - We study aggregation of amyloid proteins implicated in neurodegenerative diseases, such as Alzheimer's and Parkinson's diseases. We also examine molecular consequences of interactions between the amyloid proteins or their fragments.

- **Amyloid aggregation of enzymes**
  - We study amyloid aggregation of enzymes under non-denaturing conditions and develop peptide inhibitors for modulation of the aggregation and for improved stability of enzymes.

Nathalie Pinkerton
nathalie.pinkerton@nyu.edu

Research Project(s):

- **Exploring ionic Flash NanoPrecipitation for the controlled formation of inorganic-organic hybrid nanoparticles for medical imaging**

- **Understanding the role of PEGylated block-copolymers on the reconstitution of drug-loaded nanoparticles after lyophilization**

- **Exploring ionic Flash NanoPrecipitation for the formation of calcium phosphate nanoparticles for bone healing**

*Note: GPA > 3.5*
Professor Li Jin  
lijin@nyu.edu

Other Mentor(s):  
Xi Xiong (xi.xiong@nyu.edu)  
Yu Tang (tangyu@nyu.edu)  
Qian Xie (qianxie@nyu.edu)

Research Project(s):  
- Coordinated platooning of connected and autonomous vehicles  
- Resilient highway traffic control under cyber disruptions  
- Cyber-physical security analysis of public transit systems

Note: Knowledge of Python coding required

Professor Semiha Ergan  
semiha@nyu.edu

Other Mentor(s):  
Daniel Lu (dbl299@nyu.edu)  
Keundeok Park (kp2393@nyu.edu)  
Zhuoya Shi (zs1110@nyu.edu)

Research Project(s):  
- Flexible data representation in BIM
  - Facade condition assessment is essential to public safety in densely populated cities. A model-guided inspection can help inspectors with what defects and components to check and comply with codes given a facade type. This proposed research for undergraduates focuses on the first step: to visualize the required façade inspection information on a BIM model with respect to the inspector's preference. Students will learn about
building information models and a standard data specification for buildings (i.e., IFC) to do 3D modeling and data visualizations.

- **Change detection using point cloud data**
  - This research focuses on the change detection between the 3D point cloud data on facades collected at different times. Image processing and computer vision algorithms will be used to process the captured point clouds and undergraduate students will be part of the data collection using laser scanners, and data processing using point cloud processing tools.

  *Note: Experience in 3d BIM tools such as Revit is a plus*

---

Professor Joseph Chow
**joseph.chow@nyu.edu**

**Research Project(s):**

- **Microtransit network design with optimal learning**
  - This NSF CAREER work deals with design of service networks that incorporate reinforcement learning into the sequential virtual stop siting for adaptive mobility-on-demand services. Skills learned: some GIS, network optimization tools, simulation

- **Day-to-day simulation for portfolio design of Mobility-as-a-Service operations**
  - This tentative C2SMART project will pair TWO students with graduate researchers to implement day-to-day simulations and data collection for a cross-sectional data set to be provided by Via across multiple cities around the world to simulate alternative operating schemes. This will support modeling efforts to create a knowledge base for MaaS portfolio design for providers.

- **Relating time-use dependencies of different city fleets to electric vehicle charging**
  - In this VIP-supported tentative C2SMART project, we will have a student work with our team to analyze and develop optimization models to provide NYC DCAS agency the decision support to determine the impact of a DC fast charging station investment on different types of fleets.
Professor Andrea Silverman
andrea.silverman@nyu.edu

Other Mentor(s):
Fiona Dunn (fbd222@nyu.edu)
Mwanarusi Mwatondo (MHM405@nyu.edu)
Mwale Chiyenge (mc6716@nyu.edu)

Research Project(s):
- Decay of microbial contaminants during water treatment and in the environment
  - Undergraduate student researchers in the Silverman Laboratory will work on projects related to the (i) decay of antibiotic resistance genes and bacteria in the environment or (ii) resistance of indigenous wastewater bacteria to common disinfectants. Both topics are critical public health challenges that have environmental engineering applications. Both projects involve the use of molecular and culture-based microbiological laboratory methods, in addition to environmental engineering concepts. Note: Preference given to students familiar with environmental engineering concepts or microbiological laboratory experience, or an enthusiastic willingness to learn.

Chen Feng
cfeng@nyu.edu

Other Mentor(s):
Ruoyu Wang (ruoyuwang@nyu.edu)
Siyuan Xiang (siyuan@nyu.edu)
Wenyu Han (wenyuh@nyu.edu)
Xuchu Xu (xuchu.xu@nyu.edu)

Research Project(s):
- Mobile Robots for 3D Printing
○ This project is a sub-project from our recent NSF award (see https://engineering.nyu.edu/news/teams-mobile-3d-printing-robots-could-fix-bridges-earth-and-build-them-mars). Depending on the candidate’s interests and background, s/he will work with my group and focus on investigating and implementing any one or a combination of the following: visual simulation (FEM, materials, and robotics), baseline localization algorithms, and mobile manipulator platform development. Students with a background in either robotics, civil/mechanical/materials engineering, electrical engineering, or computer science are all welcome to apply. More positions on this project could also be available for highly self-motivated volunteers.

- **Deep Learning for Soft Robots**
  ○ This project is a continuation of our lab’s 2019 project in collaboration with CMU. In summer 2019, this project’s undergraduate participant had developed a Baymax-shaped soft robot that is able to sense its own 3D shape accurately in real-time, and became a co-author of our paper submitted to ICRA and RA-L (https://arxiv.org/abs/1904.03820). Depending on the candidate’s interests and background, s/he will work with my group and focus on investigating and implementing any one or a combination of the following: develop a product-level smart Baymax-shaped portable human-robot/computer interface, further extend our work to other types of soft robots, improve our deep learning algorithm. Students with a background in either robotics, mechanical/materials engineering, electrical engineering, or computer science are all welcome to apply. More positions on this project could also be available for highly self-motivated volunteers.

- **Image-based Navigation for Self-Driving**
  ○ This project aims to investigate and implement new methods for self-driving cars/robots that rely on only cameras and low-cost inertial sensors to navigate within indoor and/or outdoor environments. Depending on the candidate’s interests and background, s/he will work with my group and focus on investigating and implementing any one or a combination of the following: reproduce baseline methods on our self-driving platforms, incorporate related new algorithms into baseline methods, develop and implement new methods, prepare for conference papers. Students with a background in either robotics, computer science, or mechanical/electrical engineering are all welcome to apply. More positions on this project could also be available for highly self-motivated volunteers.
Note: GPA>=3.7 and with a good balance between hands-on ability and theoretical knowledge. Students with good coding ability is a plus (not necessarily required for all topics).

Debra Laefer
debra.laefer@nyu.edu

Other Mentor(s):
Evan O'Keeffe (EO52@nyu.edu)

Research Project(s):
- Urban Data Testbed
  - Today, remote sensing data informs the underlying structure of all mapping, planning, and urban engagement activities. In fact, 80% of all data produced have a spatial component. Yet, effective use of such data in real applications from post-disaster recovery, to district energy modeling, pedestrian wind comfort prediction, and tunneling risk assessment are impeded by 4 challenges: (1) the size of today's datasets; (2) the siloed nature of most data storage and processing approaches; (3) the inability of current distributed computing systems to support all data types, as well as standard querying and analysis; and (4) the lack of existing best practice and data standards for many data types and integrations. To overcome these problems an urban testbed is proposed. The test bed aims to illustrate the viability of more comprehensive data amalgamation and integration in a system that requires only internet access. This will be done for a 1km2 area of lower Manhattan. The focus will be on subsurface construction and seek to integrate boreholes, groundwater readings, historical stream information, old trolley route lines, old elevated train abutments, and current MTA and DOT assets (i.e. roads, ramps, subway stations and subway tunnel alignment).
  - The work is suitable for either civil engineering students with some coding abilities or computer science students interested in data integration problems.
- **BIM for Subways - Creating an Initial Ontology**
  - This project builds on some initial work in the cataloging of subway platforms. Based on surveys of 8 stations, we propose to develop an ontology of subways more generally. This would allow commercial Building Information Modeling (BIM) based systems to be extend to support the storage of subway station information. Herein a subway is defined as any intracity, track-based, mass transportation system that has at least a portion of its network underground. Creation of the ontology involves the identification of relevant entities, the attribution of their properties, and the determination of their relationships. The initial work will be done in three parts: (1) extending the inventorying efforts; (2) generalizing the data collected to date; and (3) exploring historical and/online resources to understand to what extent the information can be generalized beyond New York City's transit system. The student will begin to propose an actual ontology.

  - The work is suitable for either civil engineering students interested in mass transit or computer science students interested in database topics

- **Graphical User Interface for large LiDAR datasets**
  - Light Detection and Ranging (LiDAR) is a technique that collects geospatial information by illuminating the target with pulsed laser light and analyzing the reflected path with a sensor. LiDAR is prominently used for scientific discoveries, urban applications, and natural disaster forecasts due to its low cost and high resolution. While collecting LiDAR data over large areas can be achieved, the subsequent processing steps can have high computational demands as cutting-edge data sets now exceed 1 TB/km² containing billions of points. Efficiently storing, processing, and visualizing LiDAR data are prerequisite steps for advanced LiDAR-based applications.

  - While applications and application programming interfaces (APIs) exist for point-cloud data storage, querying and visualization individually, few are designed for the distributed computing needed to support the coming data sets and the existing ones are not well-integrated together. To break this bottleneck, this project integrates such applications and APIs into a framework and supports it by expanding the capabilities of an in-house graphical user interface (GUI). The applications and APIs used include: Hbase (a non-relational, distributed database that provides efficient data storage and querying), Apache Zeppelin (a web-based notebook that
supports data exploration and visualization), and Potree (a web-based point cloud renderer that provides fast visualizations of large 3D datasets).

○ This project envisions a framework that’s modular, scalable, and portable. Currently the focus is on creating an easy to use but high functionality graphical user interface. Some functionalities include querying data based on a bounding box, distance measuring tool, and density function calculations. The summer's work will be either in clustering algorithms or level of detail (LOD) support depending upon the student's interest and abilities

○ The work is suitable for a computer science student
Professor Eugene Callahan  
ejc369@nyu.edu

Research Project(s):
- Agent-Based Modeling

Professor Justin Cappos  
jcappos@nyu.edu

Research Project(s):
- In-toto: Securing the software supply chain.
  - Secure CI/CD systems, build farms, etc. so that software companies produce the software they mean to
- Uptane:
  - Making over-the-air automotive software updates resilient against nation-state actors.
- Isolating software to prevent zero day kernel flaw exploitation
  - Requires some OS knowledge.

Note: Reasonably strong programming skills required

Professor Torsten Suel  
torsten.suel@nyu.edu

Research Project(s):
- Load Balancing and Query Routing in Large Search Architectures
  - This project focuses on algorithms for routing search requests to shard that achieve high throughput while also meeting realistic service level agreements on latency and quality. Student would work on designing new
algorithms, implementing them in a simulation environment, and comparing them experimentally.

- **Efficient Candidate Generation in Search Engines**
  - State of the art search engines use highly complex ranking functions to return high-quality search results to users. However, for efficiency reasons, this is done by first identifying a larger group of promising results using a much simpler ranking function -- this step is called candidate generation. The goal of this project is to implement and maybe extend a recently proposed approach to candidate generation using either Lucene (for Java programmers) or the Pisa framework (for people who can work in C++).

- **Document Reordering and Clustering for Faster Selective Search**
  - Selective search is a recently proposed search architecture where documents are first clustered or reordered by topic or other form of similarity, and then queries are only evaluated on the most relevant topics, saving query processing time. The goal in this project would be to investigate better methods of reordering or clustering of large document collections, including methods that take query distributions into account.

*Note: Students should be excellent programmers, preferably in C++ and/or Java, and have very good algorithms skills. Previous experience in machine learning or related topics is a plus but not required. 3.5 GPA minimum.*

---

**Professor Enrico Bertini**  
[enrico.bertini@nyu.edu](mailto:enrico.bertini@nyu.edu)

**Research Project(s):**
- **Visualizing ArXiv.org**
  - ArXiv is the most important open archive of scientific papers in the world. Every day tens if not hundreds of computer science papers are published there. The goal of this project is to develop a data visualization tool to monitor and understand the latest trends in computer science research. What are researchers focusing on? How does the focus change by time and research community? Can we identify significant shifts and trends?
- **Visualizing 100 Years of Science**
  - The goal of this project is to analyze the figures and graphs used in the highly prestigious journal Science to see how they evolved over time.

- **Visualization for Interpretable and Explainable Machine Learning**
  - This project focuses on the development of interactive visual interfaces to help data scientists and domain experts understand machine learning model decisions through data visualization.

*Note: All projects require the students to be more than comfortable with programming. There will be substantial amount of coding and data analysis to do.*
ELECTRICAL AND COMPUTER ENGINEERING

Professor Quanyan Zhu
qz494@nyu.edu

Research Project(s):

- **Modeling and Learning for Control at the Brain-Machine Interface**
  - This project explores the modeling approaches for brain-machine interface which would be used to provide ways to assist people by understanding human intentions and controlling motor functions.

- **Mathematical Modeling of Human Behaviors**
  - This project aims to leverage mathematical modeling to understand human behaviors and their decisions when interacting with engineering systems.

- **Urban Data and Resilient City**
  - This project aims to build data-driven models and tools to improve urban resilience to natural disasters and human-induced disruptions.

  *Note: Students with GPA above 3.7 and have a strong mathematical background*

---

Yao Wang
yaowang@nyu.edu

Research Project(s):

- **360 degree video streaming: viewpoint adaptive video coding and delivery**
- **Understanding brain functions through analyzing neural activity signals.**

  *Note: US citizens required for the NSF REU funding. Proficient in programming in Python or MATLAB, experience with machine learning tools such as PyTorch or Keras*
FACULTY INNOVATIONS IN TEACHING AND LEARNING

Yona Jean-Pierre
yjeanpie@nyu.edu

Other Mentor(s):
Nicole Johnson (nj417@nyu.edu)
Nicholas DiZinno (nad291@nyu.edu)
Abheshik Sharma (as10686@nyu.edu)

Research Project(s):

- **Tutoring Management Application (Tracker)**
  - Research and develop a component in the application, frontend and backend option. Technical Requirements: Python, HTML, Javascript, Django, React, Bootstrap and others.

- **Automated Grading Platform (AGP)**

MAKERSPACE

Professor Victoria Bill
victoria.bill@nyu.edu

Research Project(s):

- **3D Printed Biomedical Devices**
MECHANICAL AND AEROSPACE ENGINEERING

Professor Joo H. Kim  
joo.h.kim@nyu.edu

Other Mentor(s):  
William Peng (william.peng@nyu.edu)  
Hyunjong Song (hs3927@nyu.edu)  
Hyun Seok Shin (hss379@nyu.edu)

Research Project(s):

- Robotic Balance and Gait: Modeling, Control, and Experiment  
  - Activities will include programming, hands-on building and experiments,  
    and/or data processing, as related to the locomotion and stability of a  
    biped robot.

- Robotic Energy Expenditure: Electronics and Mechanics  
  - Activities will include data processing and hands-on building,  
    instrumentation, and experiments, as related to the energetics of a robotic  
    arm and a biped robot.

Note: Minimum GPA: 3.4

Maurizio Porfiri  
mporfiri@nyu.edu

Other Mentor(s):  
Peng Zhang (pzhang@nyu.edu)  
Alain Boldini (ab7825@nyu.edu)  
Mert Karakaya (mk6420@nyu.edu)

Research Project(s):

- Response of composite structures to hydrodynamic loading at low temperature
Understanding the dynamic response of composites structures at freezing temperature is essential to the design of marine vessels operating in extreme environmental conditions. In this project, the selected undergraduate student will design an experiment to quantify the structural response of composite panels to hydrodynamic loading in ice water. Working with senior lab members in the Dynamical Systems Laboratory, the student will design an experimental platform that affords experimental measurements at low temperature. The student will use advanced visualization techniques to understand the fluid dynamics and the structural deformation associated with the fluid-structure interaction phenomenon. Through this project, the student will be trained in experimental design, fluid and solid mechanics, and data analysis.

- **Three-dimensional analysis of fish swimming in the wake of a pitching airfoil**
  - Full-body reconstruction of a fish swimming uncover dynamics that are masked in two-dimensional view. In this project, we seek to capture and analyze the response of a fish swimming in the wake of a pitching airfoil, by reconstructing its full-body motion with stereo cameras. Working with senior lab members in the Dynamical Systems Laboratory, the student will build an experimental setup, learn about camera models for refractive mediums, conduct experiments with animals, and reconstruct the three-dimensional model of fish swimming in a flow visualization tunnel. Using this model, the student will investigate changes in body shape relative to the pitching airfoil and use information-theoretic tools to quantify the effect. Through this project, the student will learn about experimental design, fluid mechanics, camera calibration and 3D reconstruction, and data analysis through information-theoretic methods.

- **Building a virtual reality platform to test haptic devices for the visually impaired**
  - Haptic feedback, integrated with a computer vision system, could provide a powerful solution for navigation and obstacle avoidance for the visually impaired. Improving haptic actuators' control strategy would guarantee good performance and hinder users' sensory overload. However, such
control optimization would require a series of potentially harmful experiments. Additionally, testing should be performed on a broad spectrum of visual impairments, making recruitment challenging. The goal of this project is to design a virtual reality (VR) platform that simulates several forms of visual impairment. Under the supervision of senior laboratory members, the student will implement a simple VR environment that artificially-impaired users have to navigate with the aid of a wearable haptic device previously developed in our lab, providing feedback on the VR environment. Through this work, the student will gain hands-on experience with VR simulations, integration of physical and virtual systems, and experiments with human subjects.
Professor Jonathan Bain  
jon.bain@nyu.edu  

Research Project(s):  

- **ER=EPR? Topology and Quantum Entanglement**  
  - Maldaceno & Susskind's (2013) "ER=EPR" hypothesis claims that two physical systems in a quantum entangled ("EPR", or Einstein-Podolsky-Rosen) state are connected by an Einstein-Rosen ("ER") wormhole. More generally, it claims that spacetime topology is the "dual" of quantum entanglement. In this project, we will consider the extent to which the physics of wormholes contributes to our understanding of quantum entanglement, and vice-versa. For instance, there are different measures of quantum entanglement: do these correspond to different measures associated with wormholes? Quantum entanglement is relative to system decomposition: does this mean wormhole formation is similarly system decomposition-relative? Quantum entanglement obeys "monogamy": a physical system can be maximally entangled with at most one other system: do wormholes obey "monogamy" too? Finally, systems in quantum entangled states exhibit a particular type of non-local correlation: do wormholes exhibit a similar type of non-locality?

Professor Danya Glabau  
dag16@nyu.edu  

Research Project(s):  

- **Feminist Cyborgs**  
  - A student assistant will support literature review and manuscript preparation for a dual-authored book on feminist cyborg theory. The book, tentatively titled "Cyborg," is co-authored with Illinois Institute of
Technology Associate Professor Laura Forlano. It has been solicited by the MIT Press Essential Knowledge Series and the proposal will be under review by the end of 2019.

- The student’s role in Summer 2020 will be to assist with editorial tasks in the mid to late stages of writing, potentially including literature review research and compiling a glossary of key terms. It is anticipated that the full manuscript will be under review by the end of 2020. The authors will work with the student to determine the appropriate formal credit they will receive upon publication.

- **Wakanda University**
  - Wakanda University is a project spun out of Elizabeth Chin’s (Professor, Art Center College of Design) Laboratory of Speculative Ethnology in 2018. It is a speculative design collaboration and experimental space that facilitates imaginings of technological and cultural futures based in Afrofuturism, feminist futurism, and Indigenous futurism. To date, it has consisted of an experimental design installation and temporary makerspace at the annual meeting of the American Anthropological Association (San Jose 2018, Vancouver 2019). In 2019, the installation received $4000 in funding from the Society for Visual Anthropology for materials, participant expenses, and other project costs. Following the completion of the second installation, there is a need to document the project to date and to develop infrastructure and research practices for future data management.

---

**Professor R. Luke DuBois**

dubois@nyu.edu

**Research Project(s):**
- Working with the IDM audio lab on analog synthesizers, their documentation and design, towards creating an open-source library for developing arduino-based synthesizer modules.

Professor Amy Hurst
amyhurst@nyu.edu

Research Project(s):
- Sensory Tools: Museum Access
  - In this project students will work to help increase the accessibility of museum exhibits and content. They will work to refine existing technology prototypes to make museum and historic site content accessible to visitors with motor, sensory, and/or cognitive impairments. These prototypes will be exhibited at the Intrepid Museum in August 2020.
  - This project is part of a larger collaboration between the Ability Project and the Intrepid Museum.
  - Students can learn more information here: https://sites.google.com/view/sensory-tools-project/home

- NYU Dentistry Oral Health Center for People with Disabilities
  - In this project, students will work to design, and/or evaluate calming technologies in the multisensory room at the NYU Dentistry Oral Health Center for People with Disabilities. Depending on interest, students will have the opportunity to build calming technologies using electronics, digital fabrication, sewing, craft, documentation, and programming skills.
  - Learn more about this project here.
    - https://dental.nyu.edu/patientcare/ohcpd.html
TECHNOLOGY MANAGEMENT AND INNOVATION

Professor Oded Nov
onov@nyu.edu

Research Project(s):

- Human-computer interaction for personal genomics
- Human-computer interaction for health apps

*Note: Coding experience; app development; web development required*