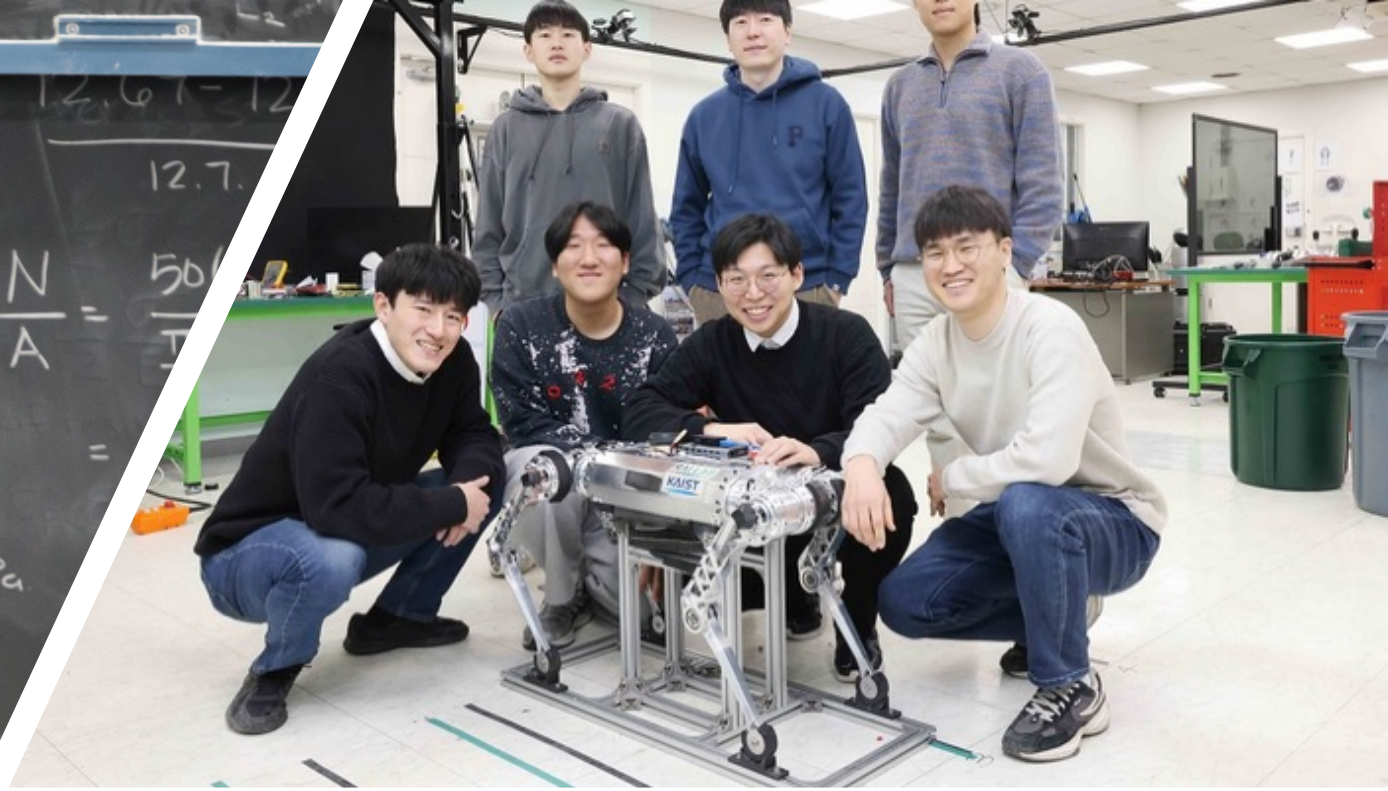
College Professors







Problem

- High rates of anxiety, depression, and stress are prevalent on campuses.

-The Mental Health Crisis Among Faculty and College Staff, National Education Association







1. Teaching evaluations have mostly negative consequences*.

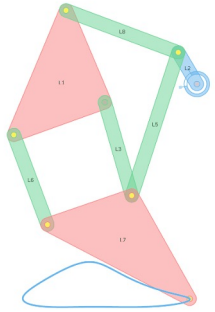
2. Developing curriculum is time consuming and unrewarding.*

***Source**: Customer Discovery Interviews in NSF I-Corps project "A Design Driven Educational Robotics Framework"

SnappyXO®

An Ecosystem of STEM Robotics Education Products





America's SEED FUND SBIR.STTR

SUNY RF The Research Foundation for The State University of New York

NSF I-CORPS NSF Innovation Corps

FUZEHUB

www.snappyxo.com

We have deep experience in STEM Education.



Anurag Purwar, PhD

CEO and Co-founder

Stony Brook University MECHAnismic IIT STARTUPS SENIOR MEMBER National Academy of Inventors



Josh Prentice

COO

Stony Brook University MECHAnismic IIT STARTUPS



Wei Liao

Systems Lead

Stony Brook University MECHAnismic



Jeff Ge, PhD

CSO and Co-founder

Stony Brook University MECHAnismic

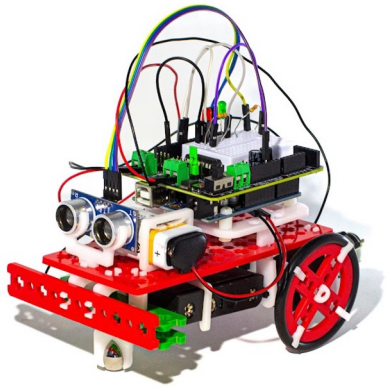
SnappyXO Ecosystem: Design-Driven STEM Robotics Eductation

MotionGen

SnappyXO | Builder

Software

Reference Hardware

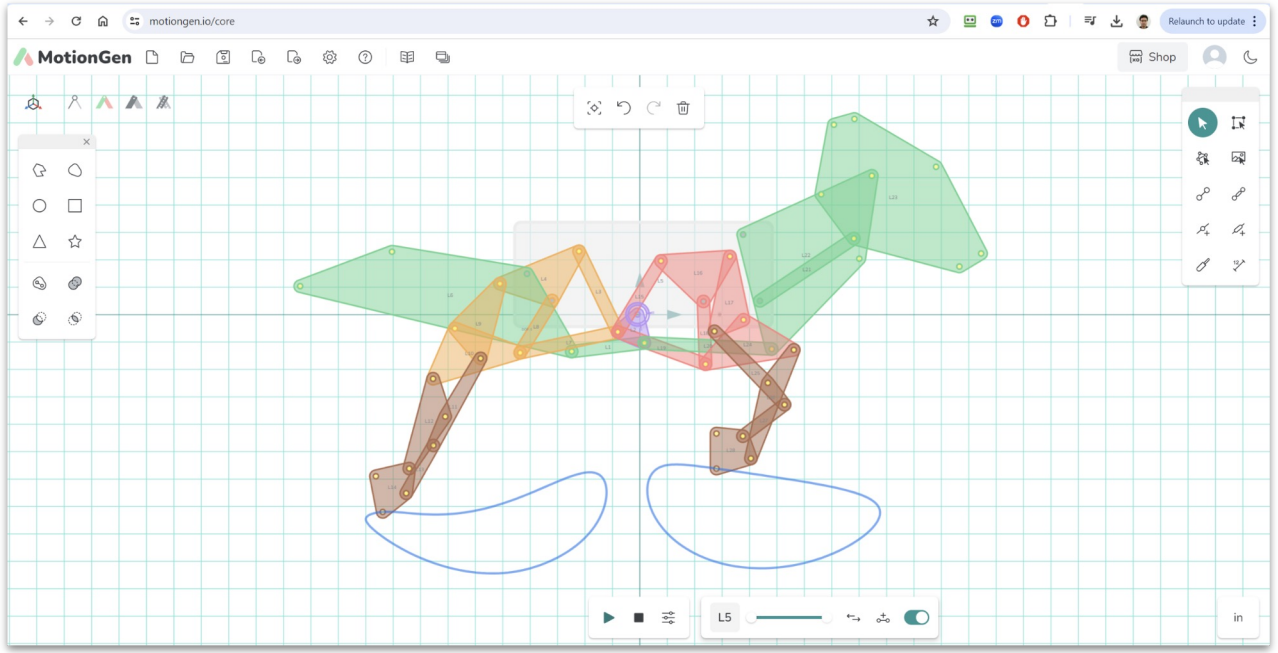


Curricula



MotionGen

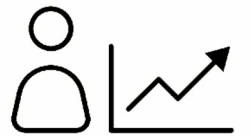
MotionGen is the world's first AI driven robot mechanism simulation and synthesis software.



Two Book Chapters, 16 Journal Papers, and 28 Conference Proceedings on theory and practice behind MotionGen



Jay Vogler is a famous Youtuber with over 500K subscribers.



Gaining ~100 users per day



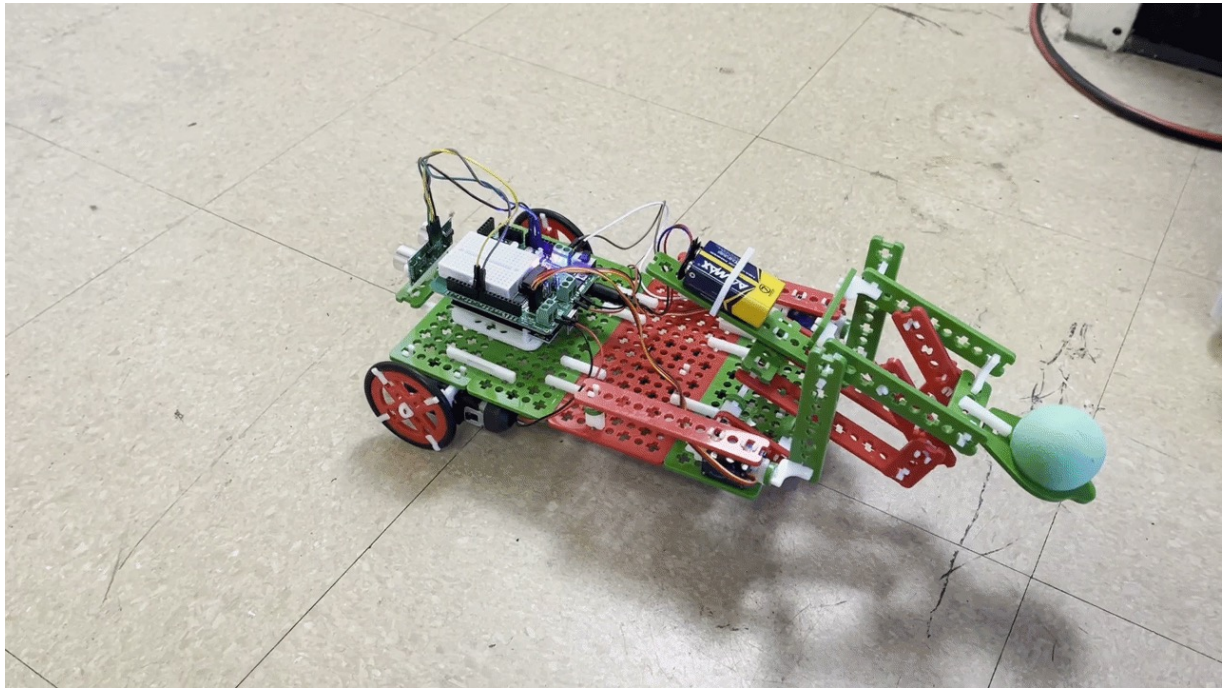
53,453 Users



150+ Countries

SnappyXO Reference Hardware

compatible with off-the-shelf electronics and open source microcontrollers

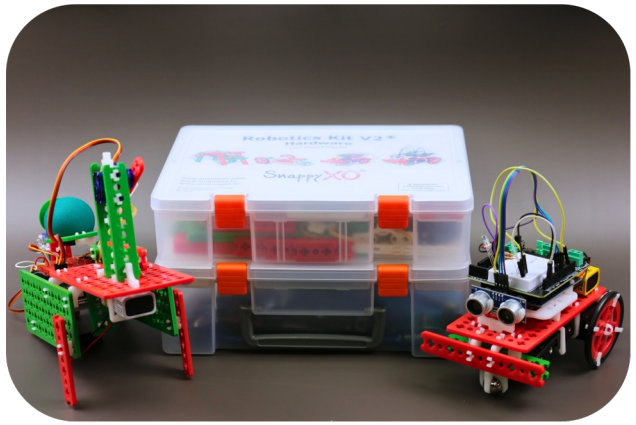


1. US Patent #10561958*
2. China Patent # 201680064453.8
3. India Patent # 201817016438 (Pending)
4. US Patent # D938527

*Under an exclusive license from the SUNY Research Foundation



Advanced Robotics Kit
$224

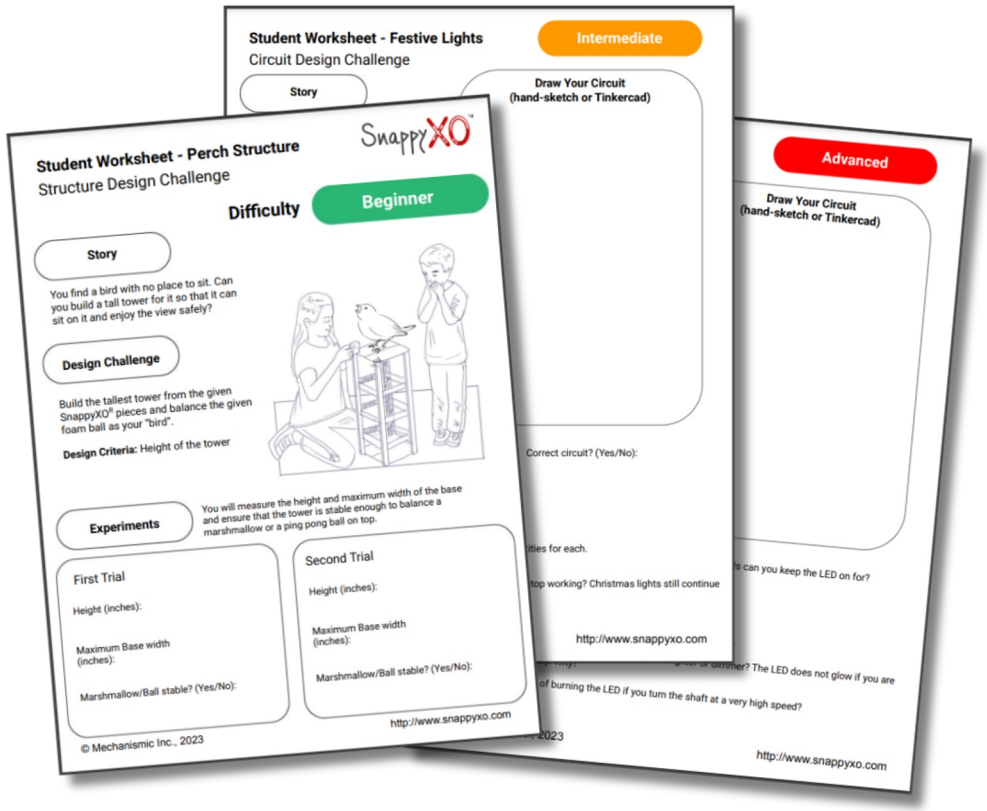


Robotics Kit
$149



Invention Kit
$99

Curriculum



Our state-of-the-art curriculum for K-12 and college was developed by professors of engineering and STEM education in accordance with ABET and NGSS standards.

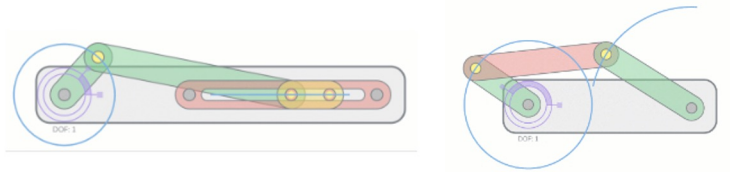
2.2 Types of Motion

Motion can be classified into different types such as linear motion, rotational motion, and oscillating motion.

Linear Motion
Motion in which an object travels in a straight line.

Rotational Motion
Motion in which an object rotates about a point.

Oscillating Motion
Motion in which an object moves back and forth about a point.



Can you identify which links in these animations are moving in 1) straight line, 2) rotation, and 3) oscillation?

IP Portfolio

1. Four hardware patents (three awarded)
2. 16 Journal Papers
3. Two Book Chapters
4. Neural Network Models and Datasets
5. Two trademark registrations
6. 28 Conference Proceedings

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Computational Creativity Via Assisted Variational Synthes of Mechanisms Using Deep Generative Models

Computational methods for kinematic synthesis of mechanisms for motion ge
lems require input in the form of precision positions. Given the highly nonlinea
problem, solutions to these methods are overly sensitive to the input—a small p
even a single position of a given motion can change the topology and dimensi
thesized mechanisms drastically. Thus, the synthesis becomes a blind iterat
maneuvering precision positions in the hope of finding good solutions. In t
present a deep-learning-based framework which manages the uncertain user
vides the user with a higher level control of the design process. The framewor
the input with missing information required by the computational algorithms.
starts by learning the probability distribution of possible linkage parameters w
erative modeling technique, called variational auto encoder (VAE). This facilit
salient features of the user input and relating them with possible linkage para
input samples resembling the inferred salient features are generated and fed t

ASME Journal of Computing and Information Science in Engineering
Online journal at:
https://asmedigitalcollection.asme.org/computingengineering

United States of America
United States Patent and Trademark Office

SnappyXO

Reg. No. 6,411,619
Registered Jul. 06, 2021
Int. Cl.: 9
Trademark
Principal Register

Mechanismic (NEW YORK CORPORATION)
Www.snappyxo.com
133 Village Hill Dr
Dix Hills, NEW YORK 11746

CLASS 9: structural parts for building robots for personal, educational and hobby use

FIRST USE 2-1-2016; IN COMMERCE 5-15-2018

THE MARK CONSISTS OF STANDARD CHARACTERS WITHOUT CLAIM TO ANY PARTICULAR FONT STYLE, SIZE OR COLOR

SER. NO. 87-736,219, FILED 12-28-2017

Deep Learning-Driven Desi of Robot Mechanisms

rwar[1]
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rook.edu

borty
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In this paper, we discuss the convergence of recent advances in deep (DNNs) with the design of robotic mechanisms, which entails the concep design problem as a learning problem from the space of design specificat eterization of the space of mechanisms. We identify three key inter-related p at the forefront of using the versatility of DNNs in solving mechanism desi first problem is that of representation of mechanisms and their design spec the representation challenges arise primarily from the non-Euclidean na The second problem is that of developing a mapping from the space of desi to the mechanisms where, ideally, we would like to synthesize both type a the mechanism for a wide variety of design specifications including path synthesis, constraints on pivot locations, etc. The third problem is that neural network architecture for end-to-end training and generation of m mechanisms for a given design specification. We also present a brief state-of-the-art on each of these problems and identify questions of pot the research community. [DOI: 10.1115/1.4062542]

Keywords: deep learning, kinematics, mechanisms, robotics, machine networks

US010561958B2

(12) **United States Patent**
Purwar et al.

(10) **Patent No.: US 10,561,958 B2**
(45) **Date of Patent: Feb. 18, 2020**

(54) **MODULAR FRAME CONNECTORS AND SYSTEM UTILIZING SAME**

(71) Applicant: **The Research Foundation for The State University of New York**, Albany, NY (US)

(72) Inventors: **Anurag Purwar**, Dix Hills, NY (US); **Qiaode Ge**, Smithtown, NY (US); **Apoorva Godse**, Stony Brook, NY (US)

(73) Assignee: **The Research Foundation for The State University of New York**, Albany, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/774,124**

(22) PCT Filed: **Nov. 7, 2016**

(86) PCT No.: **PCT/US2016/060793**
§ 371 (c)(1),
(2) Date: **May 7, 2018**

(87) PCT Pub. No.: **WO2017/079727**
PCT Pub. Date: **May 11, 2017**

(65) **Prior Publication Data**
US 2018/0326319 A1 Nov. 15, 2018

Related U.S. Application Data
(60) Provisional application No. 62/416,955, filed on Nov. 3, 2016, provisional application No. 62/416,946, filed
(Continued)

(51) **Int. Cl.**
A63H 33/10 (2006.01)
A63H 33/12 (2006.01)
F16B 5/06 (2006.01)

(52) **U.S. Cl.**
CPC ***A63H 33/101*** (2013.01); ***A63H 33/12*** (2013.01); ***F16B 5/0607*** (2013.01)

(58) **Field of Classification Search**
CPC A63H 33/062; A63H 33/101; F16B 5/00; F16B 5/06; F16B 5/0607; F16B 5/0614
(Continued)

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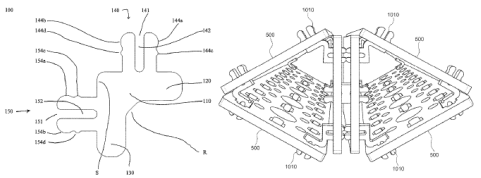
PCT/ISA/237 Written Opinion issued on PCT/US2016/060793, pp. 9.
(Continued)

Primary Examiner — Alexander R Niconovich
(74) *Attorney, Agent, or Firm* — The Farrell Law Firm, P.C.; John F. Gallagher, III

(57) **ABSTRACT**

Provided are a clip system and method for joining plates using the system of clips, with each clip including a base, a first protrusion, a second protrusion, a first pair of fingers, and a second pair of fingers, with the first protrusion and the second protrusion extending in opposite directions away from the base.

18 Claims, 10 Drawing Sheets



Revenue Model

Students purchase hardware kits

➡ Recurring Revenue

ARR for 200 classes
$5M

Students and Professors get a license to use our software and our curriculum.

MotionGen

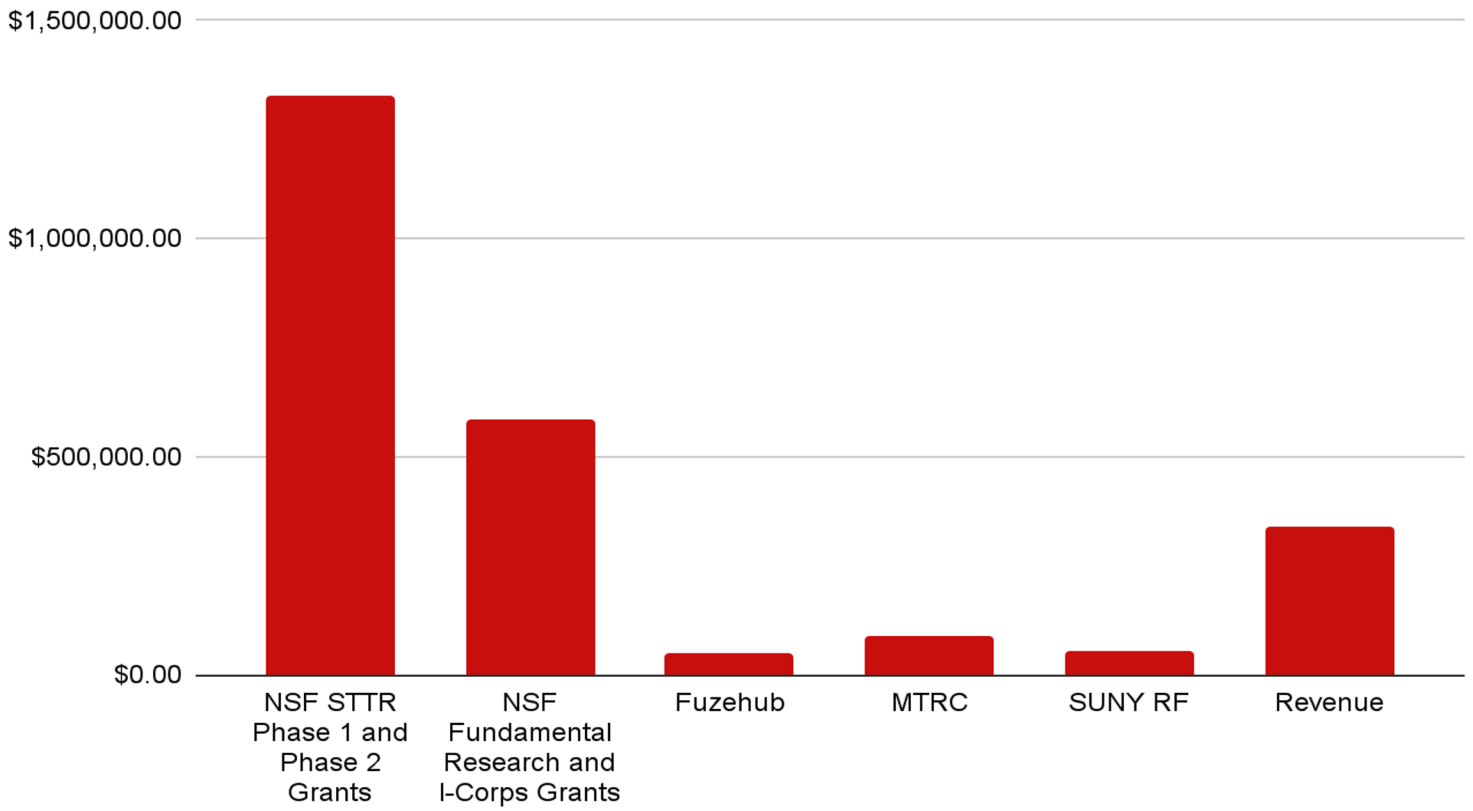
MicroBlue for Robot Motion Control over Bluetooth

SnappyXO Builder

Virtually Assemble Robots



$2.26M in Grants and Sales Revenue



*** NSF STTR Awards have a success Rate of 10-15%.**

- 2020 FuzeHub Commercialization Competition Award ($50K)

Manufacturing and Technology Resource Consortium (MTRC)
AT STONY BROOK UNIVERSITY

NSF CORPS NSF Innovation Corps

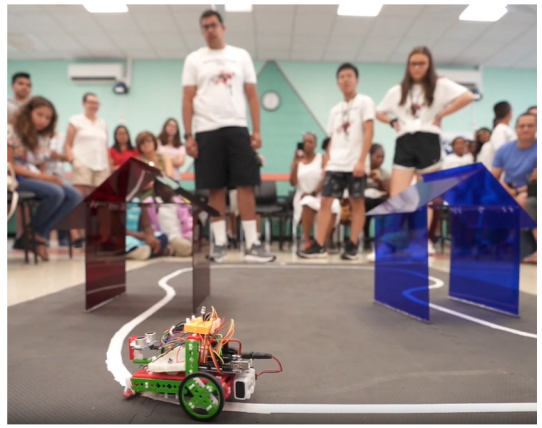
NSF America's SEED FUND SBIR.STTR

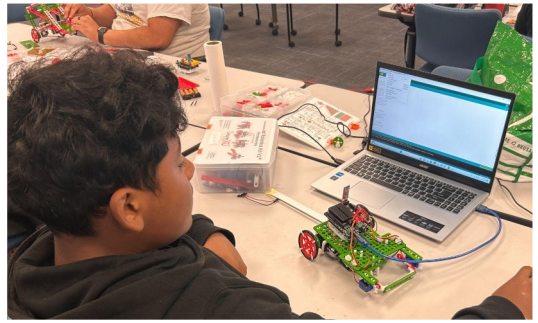
SUNY RF The Research Foundation for The State University of New York

FUZEHUB

Traction

- 53,453 users, 150+ countries
- Sold 2100+ beta robotics kits (without any advertising)
- 5000+ students using our kits
- Injection Molded 75% of parts in 2024



Actual photos of our products in use.



UT Austin students use MotionGen to design mechanisms.

Stony Brook University

THE UNIVERSITY OF TEXAS AT AUSTIN

TEXAS A&M UNIVERSITY

Tennessee TECH

OLD DOMINION UNIVERSITY

CARNEGIE MELLON UNIVERSITY PITTSBURGH PENNSYLVANIA 1900

SUNY OLD WESTBURY

Ask

We are asking for **$1.6M** to

1. Hire a full time sales team and establish a marketing budget: $900K
2. Continue development of hardware, software and curricula: $700K

NSF will provide a STTR Phase 2B match of $500k for $1M raise.

Recap and Contact

1. World's first AI driven robot mechanism design software.
2. Ecosystem of hardware, software and curricula.
3. Uniquely positioned to serve an underserved college market.



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Meet us on Demo Table # 2

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