

# Columbia Engineering Innovation, Design and Entrepreneurship

2020 - 2021 Annual Review



Entrepreneurship remains an important central educational theme at Columbia Engineering. Throughout the academic year, the School hosts many activities and networking events to support its active startup community, including the Fast Pitch Competition, Columbia Venture Competition (CVC), Design Challenges and the Ignition Grants program, which funds ventures started by current students.

And for alumni, entrepreneurial support continues. The Columbia Startup Lab, a co-working facility located in SoHo, provides subsidized space for 71 Columbia alumni entrepreneurs to house and nurture their fledgling ventures. We are proud of our students and teams who continued their startup journey during the past year. Columbia alumni have been able to engage with students each step of the way during the process.

We thank you for your continued support and guidance.

Ivy Schultz, Director of Entrepreneurship Programs

# Columbia Entrepreneurship Community

This past school year, the SEAS Entrepreneurship Office launched **Ask Me Anything (#AMA)** to bring the Columbia campus community together in response to an online year. Thanks to the efforts of numerous alumni and community members, **#AMA** was able to create a space for students to directly interact with and learn from experienced industry professionals and researchers spanning topics from COVID-19 pivots to how to present your best pitch.



**Alon Grinshpoon**  
Founder & CEO  
echoAR



**Boyan Penkov**  
PhD EE, SEAS'20  
Columbia  
University

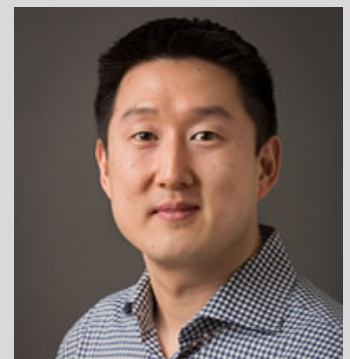


**Abby Lyall**  
VP  
Big Idea Ventures



**Lucas Schuermann**  
Founder  
Qu Capital

Throughout the 2020 -2021 school year, **Third Thursday** topics have ranged from "The Pandemic, Pivots & Entrepreneurs" to "Immigration and Entrepreneurship". Alumni and community members such as YB Choi have pitched in their time to give industry-side tips and interact with students.



**Third Thursday: The Pitch** featured YB Choi, SEAS'01. YB received his BS in Engineering Management Systems from Columbia University and is part of the Venture Capital team at Vulcan Capital.

# Start Me Up Bootcamp

SUMMER 2020

- TheH.itchApp (Event Connector)
- USCI Company (Online Shopping)
- Extrinsic Labs Inc. (Online Training)
- Local & Yonder (B2B Web App)
- JMS (AI for Employers)
- Ultrasonos (Ultrasound Diagnostics)
- Genus.ai (Email Software)
- Kiefer Robotics (Pest Elimination)

Over the course of 12 months, the **Start Me Up Bootcamp** supported 30 teams (81 students) in their customer discovery journey. The bootcamp is a launchpad for teams to apply to the NSF I-Corps program.

- Envirobe (Plastic Breakdown)
- The Conscious Loop (Sustainable Marketplace)
- MIA: Mask Infrared Assessment (Facemasks Manufacturing)
- Psicologia Conectada | Psychology Connected (LatAm Patient Connector)
- Disco (Audio Courses)

FALL 2020

SPRING 2021

- Bucephalus (E-Commerce)
- City Scanner (Maps for Pedestrians & Cyclists)
- UniTie (University Entrepreneurs)
- Wallet Max (Personal Finance)
- Echo (Social Networks)
- GreenCart (Environmental Browser Extension)
- HoopDuel (Basketball Pick-up)
- NeuroImpact (Car Accident Support)
- DeliverE (B2B Delivery)
- EmNet (Emergency Response in India)

- PythonFix
- EZ Health Inc.
- Democratize Machine Learning
- Hi-AI
- Bandhu
- BoreCharger
- Persapien

SUMMER 2021





The **Start Me Up Bootcamp** invites a select group of entrepreneurs gather for a two-week virtual program designed to build your successful startup. The bootcamp introduces participants to the Lean Launchpad methodology and techniques to direct customer discovery through field interviews as well as helps students and researchers identify new ways to apply research to solve global challenges.

“While being able to do customer discovery in person would have been great, doing it during COVID-19 from our homes, we were actually able to conduct many interviews with people from all over the country and world.

Since the bootcamp, our team has participated in a couple of accelerator programs – both in which we have been able to utilize the lessons learned, and work developed during our time at the bootcamp – we cannot recommend it enough!”

**WEREWOL**

# Bootcamp Reflections



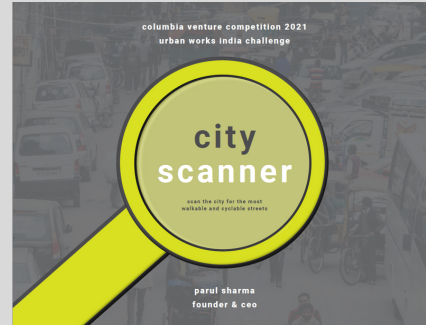
EmNet

*Saving Lives, by  
Saving Time*

"[The] experience was incredibly **enriching**, encouraging us to continually enhance and revisit our business model. With participants of all experience levels, the Bootcamp allowed us to learn from each other and receive **valuable feedback** from other entrepreneurs. Throughout the sessions, we made valuable connections through which we were able to share advice and resources.

Through the Bootcamp, we learned how to **construct and refine our business model canvas** as well as conduct efficient, valuable **customer discovery**. The several events and presentations throughout the Bootcamp were not only very informative but also intriguing. Although the Bootcamp was online due to the pandemic, the organizers ensured that we still **received all the resources and support we needed**."

**Preethi Prakash**  
**SEAS'24**  
**Co-Founder of EmNet**



"As a first-time solo founder with a newly formed startup at the time, the Spring 2021 StartMeUp Bootcamp was my first foray into customer discovery and business canvas development.

**Amidst the distressing situation of the COVID-19 pandemic in India, the weekly virtual Bootcamp classes came as a welcome push which kept me motivated.**

The warmth and approachability of the instructors made the cohort a welcoming environment right from the get-go.

The emphasis on customer interviews, presentation practice and the **hypothesize-interview-analyze-iterate** approach **enabled City Scanner to pivot from a D2C to B2B model and tailor better product-market fit**. It also led me to reach out to innumerable experts and potential customers, partners, and collaborators in a short span of time. It was the perfect start to my startup journey!"

**Parul Sharma**  
**GSAPP'15**  
**Founder & CEO of City Scanner**

# Startup Funding

## FAST PITCH



### **Fast Pitch**

Winners split \$5,000

#### **Undergraduates**

**Iris** | Easily-integrable remote IV-alarm monitoring systems

**OnTrack** | First AI Productivity Tool

**Cold Chain-ge** | Increasing access to vaccines through orally-dissolving films

#### **Judges:**

Joy Fairbanks

Helen Gurfel

Nelson Mills

Hayley Netherton

#### **Graduates/Alumni**

**EZ Health** | Telemedicine platform for non-native English speakers

**Werewool** | Biodegradable performance textile fibers with inherent color

**Envirobe** | Engineering Microbes To Infinitely Recycle Plastics

#### **Judges:**

Derek Brand

Leah Oppenheimer

Rishi Ratan

Michelle Ritter

## CVC



### **Technology Challenge**

Winners split \$50,000

**Colonai** | AI driven imaging to detect and decrease the risk of colorectal cancer.

**Sharper Sense** | Noninvasive nerve stimulation patch that enhances vision and hearing by reducing sensory noise

**Cold Chain-ge** | Increasing access to vaccines through orally-dissolving films

#### **Judges:**

Helen He

Ted Lockwood

Niko Theodosopoulos

Derek Brand

#### **Urban Works India**

Winners split \$35,000

**DeliverE** | Optimizes efficiency in delivery services in India by harnessing the power of electric vehicles

**EmNet** | Expedites care to emergency patients in off-site locations by building a network of trained medical professionals

#### **Judges:**

Ravina Aggarwal

Ioannis Kymissis

Rishi Ratan

## IGNITION



### **Ignition 2021**

Winners split \$17,500

**Hubbub Technologies** | Item rental service platform

**Iris** | Remote IV alarm monitoring system

**Alexandria** | Personalized art recommendations

#### **Urban Living Awards**

Winners split \$31,000

**Circles of Our Own** | Distance relativity for devices

**Novel Mask Team** | New disinfection method with IR light source, UCNPs, and lanthanide complexes

**Roviner** | Robot for Automated & Remote Space Sanitization

**BinIt** | Proprietary software platform for computers to track, tag, and analyze MRF waste

# Startup Funding Cont'd

## DESIGN CHALLENGES

### Fall 2020

#### **Engineering for Humanity**

*Winners split \$15,000*

#### **Climate Change**

##### **Sustainable: Stop-n-Swap |**

Redesigning long haul tracks with swappable batteries

#### **Vaccine**

##### **Creative: Cold Chain-ge! |**

Vaccines in orally-dissolving films

#### **Reducing Inequity**

##### **Healthy: Cambiando Las Reglas |**

Reusable sanitary pads for Andean women

#### **Promoting Social Interactions**

##### **Connected: Communic-aid |**

Communication aids for deaf people in hospitals

#### **Safer Medical Care**

##### **Secure: ViProtech PPE |**

Antiviral biofabric for intuitive reusable PPE

##### **Grand Prize: VaxFlask |**

Modularized vaccine vials

#### **Faculty Leads & Judges:**

Harry West, Scott Banta, Lydia Chilton, Sharon Di, Jingyue Ju, Sanat Kumar, Hod Lipson, Lauren Marbella, Aaron Moment, Kristin Myers, Mysore Nagaraja, Katie Reuther, Alex Urban, Venkat Venkatasubramanian, Alan West

As we aspire to have a positive impact on our world,

**Engineering for Humanity** is our collective vision. We are excited to offer opportunities to students to take action on this vision—to engage in a current challenge and enable students to dive into a problem and explore creative approaches and potential solutions—by participating in a Columbia Design Challenge along with peers. Teams conduct customer discovery while prototyping various solutions. Final presentations are held at the end of each challenge, with an audience of peers, faculty, alumni and mentors.

### Spring 2021

#### **Upcycling out of Microplastics**

*Winners split \$1,500*

Faculty leads: Aaron Moment & Sanat Kumar

##### **Best Overall: Polymasa |**

Upcycles ocean plastics for 3D printing

##### **Most Thorough: The**

**Plastics |** Microplastic tagging/separation from wastewater treatment plants

##### **Most Creative: The**

**Mechoplastics |** Sewage microplastics removal via MagnoFilter

### Summer 2021

#### **Blockchain Cyberdefense**

*Winners split \$1,500*

Faculty lead: Ronghui Gu

##### **Eclipse Defender |**

Stimulate blockchain security issues via R or other platforms

##### **Flash Loan Defense |**

Defend against flash loan attacks

##### **CyberCrew |**

Stimulate a decentralized exchange model that can defend triangular arbitrage

##### **TokenTest |**

PenTesting tool to test robustness of Bitcoin-like blockchain against deviant mining strategies



# SEAS Entrepreneurship Vignettes



**Nikos Theodosopoulos**

SEAS'84

Angel Investor  
New York Angels

"I have enjoyed collaborating with both students and professors at Columbia SEAS since 2013 mentoring/advising entrepreneurs and judging Columbia SEAS venture competitions. The entrepreneurial culture and prowess that have developed over the past decade has truly put Columbia in the forefront of entrepreneurial spirit and success.

Columbia is now a leader in entrepreneurship and startup creation in NYC and across the country. I personally have worked in the technology and finance industries since I graduated Columbia in 1984 and enjoy giving back to the university in as many ways possible including entrepreneurial efforts, interviewing college applicants, mentoring summer interns and in the annual giving day drives."

"It's an honor to be involved with supporting Columbia's entrepreneurship programs after they shaped so much of the early stages of my own entrepreneurial journey. I know first hand how difficult it can be to balance coursework with pursuing such interests and am continually impressed by the quality of ideas, early execution, and traction of student teams.

From Res Inc. my freshman year to my third venture-backed startup, I would frame entrepreneurship as a skill that is developed over time, similar to the many years spent honing knowledge in an undergrad's engineering discipline of choice. From the small areas of practice (pitching, developing a narrative voice for decks and business plans), to the large (building an MVP, collecting market data, closing a funding round), all add up over the course of a "career", just as projects, classes, and theses do for students.

Startups are more viable now than they have ever been: capital is more accessible than ever (with extremely competitive terms for seed and beyond), many new B2B companies provide incredible services that allow focus on core competencies, and remote work/recent events have made the talent market highly approachable. This is the perfect time to be a founder."



**Lucas Schuermann**

SEAS'19

Founder  
Qu Capital



# International Programs

## Startup Tunisia & Morocco



Helping youth thrive  
Using technology to  
Solve global problems

Designing Solutions for Cities in Crisis

## URBAN WORDS

INNOVATION CHALLENGE 2020-2021



COLUMBIA ENGINEERING  
The Fu Foundation School of Engineering and Applied Science

COLUMBIA GLOBAL CENTERS | MUMBAI

FOUNDATION  
WE CARE FOR THE FUTURE

"Solutions that make use of contemporary technology can play a critical role in addressing these needs, thereby making our cities and work environments sustainable and safe for all"

**Dr Ravina Aggarwal,**  
**Director of Columbia Mumbai Center**





# Startup Highlights

## Advance H2O

Data Informatics,  
Water Treatment

## Behold.ai

Computer Vision

## Bonbouton

Health, Hardware,  
IoT

## Boomi Environmental

Clean-Tech

## CocuSocial

Food Tech

## CodeCademy

Education, Coding

## deCervo

Sport Tech

## Epibone

Artificial Bone Growth,  
Tissue Engineering

## Folia Materials

Health, Water,  
Sanitation

## Graceful Ray

Object Capture

## GreenOre

Greenore Technology  
(CCUS)

## Kinnos

Disinfectant,  
Sanitation

## Ngineered

Cloud Infrastructure

## One Hot Labs

Machine Learning,  
Healthcare

## Qu Capital

Investments, Digital  
Assets

## Text IQ

Natural Language  
Processing

## Truedime

Students, Health  
Insurance

## Urban Leaf

Food Systems

## Vidrov

Computer Vision

## Voyant Photonics

LIDAR Chips

## Colonai

AI, Health

# Startup Highlight



Apoorv Agarwal  
'16SEAS  
Co-Founder & CEO

**MAY  
2014**



Text IQ is a B2B SAAS company deploying machine learning to uncover and contextualize sensitive data



**COLUMBIA**  
**ENTREPRENEURSHIP**  
**INNOVATION AND DESIGN**

"When we were a small company, the Columbia Startup Lab was helpful in attracting talent, they weren't just a part of our small team—they were a part of the larger CSL community as well."

**JUNE  
2019**

**\$12.6M**

TextIQ Raises \$12.6 million in Series A funding led by FirstMark Capital

**Forbes**

How AI Startup Text IQ Got Profitable By Shaving Millions Off Customers' Legal Costs



**MAY  
2021**



**Text IQ, a machine learning platform for parsing sensitive corporate data, raises \$12.6M**












Relativity, a global legal and compliance technology company, acquires Text IQ to Drive Leadership in AI



# Calendar of Events

2020 - 2021 Academic Year

## Fall

-  Summer Design Challenge
-  Start Me Up Bootcamp
-  Third Thursday: The Pandemic, Pivots and Entrepreneurs
-  Ask Me Anything with Boyan Penkov (Columbia PhD Electrical Engineering)
-  Third Thursday: The Pitch featuring YB Choi (SEAS'01)
-  Start Me Up Bootcamp
-  Ask Me Anything with Alon Grinshpoon (Founder and CEO of echoAR)
-  Ask Me Anything with Abby Lyall (VP, Big Idea Ventures)
-  Fast Pitch 2020 Competition
-  Third Thursday: LinkedIn Learning
-  Ignition

## Spring

-  Third Thursday: Immigration and Entrepreneurship
-  Ask Me Anything: Design Challenge
-  Perfect Your Pitch
-  Start Me Up Bootcamp
-  Columbia Venture Competition
- Technology Challenge: Upcycling out of Microplastics*
- Urban Works India: Transforming Cities for Sustainability & Safety*

### Legend

-  Mentorship
-  Networking
-  Funding
-  Ideation

# Programs & Events

2020 - 2021 Academic Year

## **Design Challenges**

Upcycling out of Microplastics

IBM Blockchain Design Challenge

## **Start Me Up Bootcamp**

Summer 2020

Fall 2020

Spring 2021

## **Third Thursday**

The Pandemic, Pivots and Entrepreneurs

The Pitch featuring YB Choi, SEAS'01

LinkedIn Learning

Immigration and Entrepreneurship

Perfect Your Pitch with a VC

## **Ask Me Anything**

Boyan Penkov (Columbia PhD Electrical Engineering)

Alon Grinshpoon (Founder and CEO of echoAR)

Abby Lyall (VP, Big Idea Ventures)

## **Fast Pitch 2020 Competition**

## **Columbia Venture Competition**

Technology Challenge: focus on product development, innovative design, and "builder" technologies

Urban Works India: Transforming Cities for Sustainability & Safety



## Acknowledgements

*Thank you for the tireless work put in by our many contributors across the Columbia Entrepreneurship community! Thank you to our alumni judges who worked tirelessly behind the scenes throughout the year to help evaluate and give feedback to each of our teams.*

[entrepreneurship.engineering.columbia.edu](http://entrepreneurship.engineering.columbia.edu)

[seaseship@columbia.edu](mailto:seaseship@columbia.edu)



*“Dean Boyce has had an incredible impact on my life. Without her support, I never would've been able to embark on this amazing journey I've had with Kinnos. She has done such a wonderful job transforming Columbia into a leader for impact on humanity and I'm so proud to be a Columbia alum.”*

**Jason Kang BS'16**  
**Co-founder and CEO, Kinnos**