New Hampshire
Department of Education

Learn Everywhere Program

Initial Application

EnCubeLabs
Incubating Entrepreneurs.

Nashua NH 03063
603 566 9638
rajnair@encube.co

Table of Contents

Table of Contents

APPLICATION

1.0 Applicant Information

[Ed 1403.01(a)(2)].

1. **Organization Name:** ENCUBE LABS LLC
2. **Name of Primary Contact:** RAJESH M NAIR
3. **Mailing Address:** 9 SAXFORD LN, NASHUA NH 03063
4. **Email Address:** rajnair@encube.co rajnair@alum.mit.edu
5. **Phone Number:** 603 566 9638

2.0 Purpose, mission statement, or both

[Ed 1403.01(a)(1)].

The mission of EnCube Labs is to nurture a million innovators and entrepreneurs globally from underserved communities.

EnCube Labs was founded on the belief that human potential is equally distributed globally, but access to learning and opportunities is not. We believe that the fastest way of deep learning is by applying acquired knowledge through hands-on project-based learning. This study is based on ten years of research on this subject by Rajesh Nair at MIT and the Asia School of Business (started by MIT in Malaysia) conducted over a hundred workshops in seven countries.

The Zero2Maker program is designed to build the student's self-efficacy or the confidence to face complex challenges and their ability to self-learn through applied STEM.
The Zero2Entrepreneur course is designed to build problem solving, solution development, and venture launching skills.
These courses

- are aimed at nurturing Innovators and Entrepreneurs from schools
- are equivalent to NH high school courses and can be available to students through NH Learn Anywhere
- are competency based and are offered in sequence.
- are administered as Online sessions so students from across NH can attend
- build design skills by providing personal Maker kits so students can practice at home
- help students create their project portfolio for university admissions/employment
- provide blockchain based Badges for certifying their demonstrated competencies based on sound evaluation
- have added benefits of training students as mentors so they can learn better through teaching and help build local ecosystems to improve STEM abilities in their schools
- trains students on finding/solving problems and launching ventures

3.0 Instructor Qualifications

A description of the demonstrated instructor qualifications required for the program(s) and a statement assuring that the instructor(s) satisfies those qualifications [Ed 1403.01(a)(3)].

The current instructor, Prof Rajesh Nair is an engineer, product designer, entrepreneur, and educator. He was the professor of Practice in Innovation and Entrepreneurship at the Asia School of Business, started by the Massachusetts Institute of Technology. His MS research at MIT was on ways to build innovators and entrepreneurs from children in underserved communities. His research and work in the last ten years have focused on teaching STEM through its application in technology, design, fabrication, and presentation. He developed the Zero2Maker course from his research and structured the process after nearly a hundred workshops conducted globally. He has Master's Degrees in Systems Design and Management (MIT), Manufacturing Engg (UMASS Amherst), and Electronic Product Design (Indian Institute of Science, Bangalore). He also received Bachelor's Degrees in Electronics and Communication(IISc, Bangalore) and Physics (Kerala Univ). He also completed teaching certification at MIT.
He started four companies in NH/MA and received the Entrepreneur of the Year award from NH High Tech Council in 2001 for Degree Controls Inc, a manufacturing company based in Milford, NH with a development center in India and offices in Tokyo and Beijing.
REF: https://rajeshnair.me ; http://zero2maker.org; https://encube.co

EnCube Labs will select, train, and qualify the instructors for this program. The qualifications required for selection are:

- Bachelor degree in Art, Science, Engineering
- Passionate about teaching and mentoring
- Basic digital literacy skills
- Clear police verification
- Good references
- Qualify skill test after the mentor training at EnCube Labs

The primary task of the instructor is to inspire the students to learn application of STEM in business problem solving through fun projects. The instructors may need to adapt to the learning patterns and topics of the students spontaneously and must demonstrate a strong can-do attitude. The instructor must have demonstrated design experience with technology and craft, and project-based learning. The EnCube Labs programs allow educators to learn along with students.
A feedback process with peer evaluation and training of the mentors ensures continuous improvement of the instructor's skills. New mentors will be trained by experienced mentors to carry the process and culture of innovation.

EnCube Labs will train all Instructors in design, fabrication, presentation, and mentoring and they will support courses as teaching assistants before they are fully approved to lead a session. Instructors will receive feedback from the chief instructor after each session for continuous improvement. The CVs of the instructors will be available for review by students, schools and parents as they are assigned to any program.

4.0 Criminal History Records

A criminal history records check policy that includes a statement affirming that the sponsoring entity shall not allow instruction or student contact by a person who has been charged pending disposition for, or convicted of, any violation or attempted violation of any of the offenses as outlined in RSA 189:13-a, V pursuant to a criminal history records check conducted by the department of safety as outlined in Saf-C 5703.06 through Saf-C 5703.11 [1403.01(a)(4)].

EnCube Labs shall not allow instruction or student contact by a person who has been charged pending disposition for, or convicted of, any violation or attempted violation of any of the offenses as outlined in RSA 189:13-a, V pursuant to a criminal history records check conducted by the department of safety as outlined in Saf-C 5703.06 through Saf-C 5703.11 [1403.01(a)(4)].

Parents will be informed of the qualifications, training status, and clearances of the mentors.

5.0 Instructional Program

For the proposed instructional program(s), identify the education, program, or opportunity from Ed 306.27*(v)* for which students completing the learn everywhere program shall receive high school credit(s) [Ed 1403.01(b)(1)(a)].

The Zero2Maker course will be offered as a TECHNOLOGY EDUCATION program.

NOTE: Technology/engineering education is the discipline devoted to the study of human invention and innovation and their influence on our natural and human-made environment. 306.47

The Zero2Entrepreneur course will be offered as a BUSINESS AND TECHNOLOGY course with focus on finding and solving challenges to capture value and create impact in the society through starting ventures.

Both the Zero2Maker and Zero2Entrepreneur courses shall receive high school credits as "Open Electives" as listed in Ed 306.27(v).

6.0 Program Outline

An outline of each program for which approval is sought, which includes goals, competencies, a detailed description of the course of instruction, and a description of expected student outcomes [Ed 1403.01(b)(1)(b)].

COURSE 1: Zero2Maker

ZERO2MAKER

Imagine • Create • Play

The Zero2Maker course is designed to introduce students to the application of science, art, and technology through the design of products. It offers experience in mechanical, electrical, and software design and hands-on experience in fabrication. The learning outcomes of this course are beyond just the hard skills of design and technology experience. It also builds soft skills such as teamwork, mentoring, and communication while enhancing their self-efficacy and self-learning abilities. This course is conducted as online-live sessions of the workshop followed by online challenge sessions.

The hard skills the students learn and apply are

- PROBLEM DEFINITION: Identifying and defining the problem to be addressed
- SOLUTION IDEATION: Going beyond conventional solutions to find innovative ideas
- USER-CENTERED DESIGN: Applying empathy as a tool to understand the needs of the user and designing a product with ease of use
- MECHANICAL DESIGN: Creation of parts through paper design and 3D CAD
- ELECTRONIC SYSTEM DESIGN: Creating microcontroller-based programmable electrical systems with input and output devices
- CODING: Writing software for the system to bring the behavior to the product
- FABRICATION: 3D printing, hand fabrication, product assembly
- PRESENTATION: How to make movies to express ideas, how to pitch with slides and prototypes

A critical component of the learning process is enhancing self-learning skills, building self-efficacy, and strengthening an entrepreneurial mindset, while also providing exposure to work skills like project management, collaboration, mentorship, and team building.

It is the first course in a two-part program in Making, Innovation, Entrepreneurship, and Building Entrepreneurial Ecosystems. Students learn these skills through designing and developing products. Each product developed by the students is used for measuring their mastery of these skills.

Through this process, students also learn soft skills such as teamwork, communication, mentoring, and empathy.

The modules are taught using a supplied Zero2Maker Kit that consists of microcontrollers, input-output devices, and basic electrical instruments & tools. Students use software tools like 3D CAD, video maker, ideation and mind mapping, to create and present their projects.

The students are assessed through pre and post-workshop surveys and are evaluated on their competencies based on three or more individual and team projects by instructors and peers.

Building a project portfolio is a critical element of the course that is helpful for their future academic admissions or job search.

Students may also stay on as mentors for students in subsequent offerings of the Zero2Maker course and help build an innovation culture in the schools.

LESSONS AND OUTCOMES

Lesson	Learning steps and Outcome The student has developed the ability to:
Mechanical Design & fab (Analog)	❑ Imagine 3D products. Sketch 3D volumes and shapes to dimensions ❑ Break up 3D design into 2D flat pieces, Cut and create pieces ❑ Assemble and test the product
Mechanical Design & Fab (Digital)	❑ Use basic features of 3D CAD tools to design simple parts ❑ Sketch product ideas on paper with dimensions. Design in CAD and verify ❑ Create output file for 3D printing and 3D print to validate design
Electronic System Design/ Coding/ Fab	❑ Understand basics of electronic systems: Input, Output, & Microcontroller ❑ Learn to use the Coding environment and write simple programs ❑ Understand coding components ❑ Understand logic and modify existing code for different product behavior ❑ Make circuit connections with breadboard, controller, wires, and devices
Ideation	❑ Work in teams to create unconventional ideas to solve a given challenge ❑ Go beyond safe and conventional ideas to explore
User Interface Design	❑ Understand the user's needs and limitations through engagement ❑ Design product or service for easy acceptance and use
Presentation	❑ Create videos to convey ideas and promote projects ❑ Present ideas through storytelling with slides and elevator pitching

COURSE PLAN

Unit	Session 1,2	Session 3,4	Session 5,6	Session 7,8	Session 9,10	Session 11,12
STUDENT PROJECTS	MINI PROJECT 1,2	MINI PROJECT 3,4	MINI PROJECT 5,6	PROJECT 1	PROJECT 2	FINAL PROJECT 3
Mechanical (Analog)Design & Fab						
Mechanical (Digital) Design & Fab						
Electronic System Design/ Coding/ Fab						
Presentation						
Ideation						
User Interface Design						
Hours per Week	5	5	5-10	5-10	5-10	10-12

COURSE 2: Zero2Entrepreneur

ZERO2ENTREPRENEUR

seek • solve • launch

The Zero2Entrepreneur is a follow-up course to the Zero2Maker course. This course introduces the process and application of the Design Thinking methodology to identify unmet human needs, evaluate their market potential, create solutions, capture value, and launch ventures through entrepreneurship.

Students work through multiple projects, with different communities, to learn to identify 'valuable' problems and solve them to create economic and social impact. The course builds the necessary skills and confidence to ‘approach a problem as an opportunity in disguise’ and capture its value through entrepreneurship.

The skills the students learn and apply are to:

1. EMPATHIZE: Find unmet human needs through applying empathy - the ability to understand a problem from the user’s view. Students master techniques to Observe, Engage, and Immerse in the user’s environment to identify and analyze user problems
2. DEFINE: Synthesizing observations and inferences to precisely define problems and stakeholders’ interests. Assess the value of solving the problem with social impact or financial potential.
3. SOLVE: Working in teams to develop unconventional solutions and evaluate them for feasibility, acceptability, and viability. Applying skills from the Zero2Maker course to create prototypes of products and services. Test solutions with user-types to understand ease of use
4. PLAN: Learning to apply business model development, financial modeling, and business plan presentation.
5. LAUNCH: Fund raising, reaching markets, building business teams, and launching ventures.

The Zero2Entrepreneur course offers a hands-on learning experience in finding and defining opportunities and creating solutions that could return high value. Students learn the elements of entrepreneurship over multiple projects. The goal of the course is not to launch startups but to offer students an opportunity to build the skill-set and mindset required to take on projects as entrepreneurs or perform as highly productive employees. The mindset and self-learning abilities allow students to choose career pathways in any field with confidence.

This course will be conducted as live-online sessions. Students will work on projects in teams and develop products and services to address problems they identify.

Students are also trained to mentor other students to build a nurturing innovation and entrepreneurship ecosystems in schools that attract and impact more children.

LESSONS AND OUTCOMES:

Lesson	Learning steps and Outcome: The student has developed the ability to:
Empathize	❑ Observe, engage, and immerse in the user's subculture ❑ Interview users to understand their unmet needs or challenges ❑ Develop inferences from observations and engagements ❑ Identify key stakeholders that have interest and influence on the problem
Define	❑ Define the problem based on the user types, causes, conditions, and pain points ❑ Evaluate the social impact and financial potential of solving the problem ❑ Create persona of typical users ❑ Define the business opportunity around the most valuable user case ❑ Identify stakeholders who have interest and influence on the problem
Solve	❑ Ideate solution approaches in teams ❑ Go beyond conventional ideas to find new, disruptive ways to solve problems ❑ Breakdown solutions into process/product flow of use ❑ Create prototypes and test with customer for feedback
Plan	❑ Create business models for solution delivery ❑ Define how to reach and keep the customer - product-market fit ❑ Prepare financial projection from business model ❑ Create and present a basic business plan
Launch	❑ Analyze skill requirements to build teams ❑ Pitch for raising funds for launching venture

COURSE PLAN:

Unit	Session 1,2	Session 3,4	Session 5,6	Session 7,8	Session 9,10	Session 11,12
STUDENT PROJECTS	**MINI PROJECT 1**		**MINI PROJECT 2**		**FULL PROJECT**	**FINAL PROJECT**
EMPATHIZE: Engage, Observe, Immerse						
DEFINE: Finding Unmet Human Need						
SOLVE: Ideation, Creating and testing Solutions						
PLAN: Business Model, Finance						
LAUNCH: Pitching, Funds, Team, Market						
Hours per Week	8	5	5-10	5-10	5-10	5-10

7.0 Student Progress

A plan for recording student progress in meeting expected student outcomes for each course of instruction [Ed 1403.01(b)(1)(c)].

Student progress is measured on a white to black belt scale with defined skill mastery for each level. The students receive blockchain-controlled badges that reflect these skill levels. They build their portfolio of projects exhibiting skills that the student may share for college admissions and employment.

Students receive:

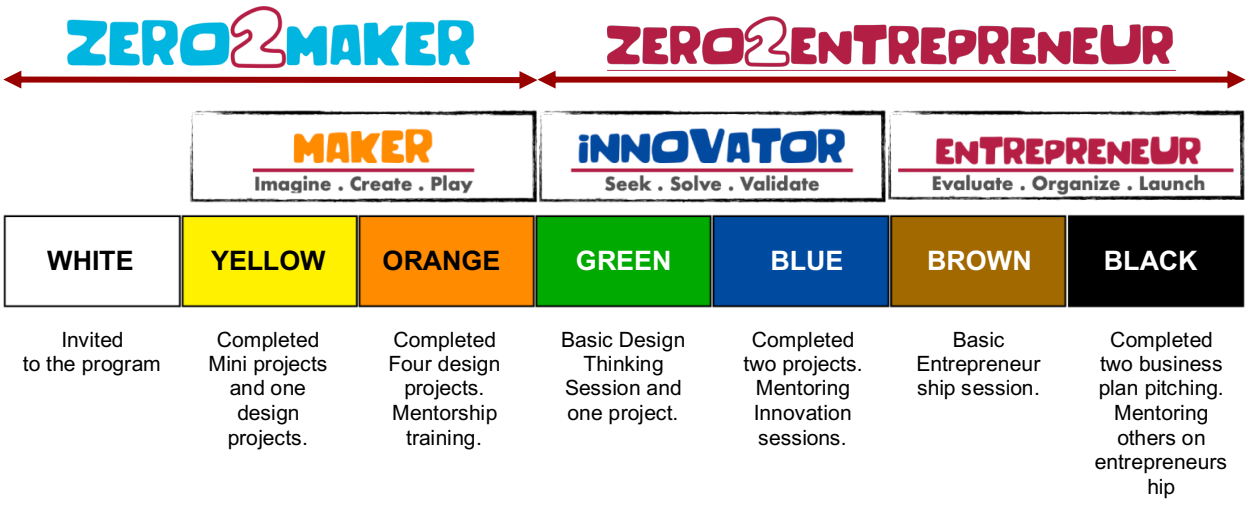
- a certificate of completion
- a merit grade for a school transcript
- a blockchain-backed badge with a list of qualifying skills, and
- an online portfolio of projects that establishes acquired skills

8.0 Student Assessment

A description of how the assessment of student learning outcomes will be done [Ed 1403.01(b)(1)(d)].

Each of the projects a student completes requires applying the eight skills listed before and exhibits mastery of each of the learning outcomes. The design and fabrication approach in each project and the final product is used to assess the skill level of the learning elements through self-review, peer review, feedback, group discussions, instruction evaluation, and project reviews.

Students receive certificates and badges (White to Black belt) for their skills learned during the two courses. Teaching others what one learns is a large part of the learning process. Higher belts are trained to mentor lower belts such that an ecosystem can be created in the school.



Learning Outcomes

The program leader and staff provide continuous feedback to students about their progress throughout the program. The skills and confidence are measured through self and peer assessments. Students receive a report of their skill level, leadership qualities, confidence, and communication abilities. Students receive their belt badges as they learn and mentor others in the ecosystem.

9.0 Credits

The number of credits each proposed course of instruction will fulfill [Ed 1403.01(b)(1)(e)].

Each of these courses would be designated as HALF credit courses.

10.0 Competency-based Grading

A description of the competency-based grading system to be used for each proposed course of instruction [Ed 1403.01(b)(1)(e)].

THE COMPETENCY FRAMEWORK

Skill and competency are built through practice. Through these two courses, students develop different products, solve problems, and develop business models with increasing complexity. The number and quality of projects completed and their presentation through videos and pitches constitute the primary grading system. The exact assessments and skills are evaluated through student surveys and peer feedback. Simple 'I Can' statements based on a scale of 1-10 are used to assess competencies. The professional development portfolio model is also used.

The four primary competencies evaluated through surveys and reviews are:

1. LEARNING AGILITY: The ability of the student to:
    a. Self-Learn new topics through conducting research
    b. Learn application of STEM concepts
    c. Digital fluency
2. SOCIAL ENGAGEMENT: The ability to:
    a. Collaborate with peers to work on projects
    b. Communicate concepts through videos and presentations
    c. Mentor, coach, and inspire peers to learn
    d. Lead and carry teams
3. INNOVATION SKILLS: The ability to:
    a. Identify valuable problems through empathetic engagement with users
    b. Think critically in analyzing challenges
    c. Develop solutions through ideation, design, fabrication and validation
    d. Create multi-disciplinary technical systems
4. ENTREPRENEURIAL ATTITUDES: Have qualities such as:
    a. Self-efficacy or the confidence to face unknown challenges
    b. Agency or the drive and the feeling of control over actions and their consequences
    c. Resilience or the ability to recover and learn from failures
    d. Ability to sense opportunity within a problem

11.0 Admissions

A description of methods for admission which shall not be designed, intended, or used to discriminate or violate individual civil rights in any manner prohibited by law [Ed 1403.01(b)(2)(a)].

EnCube Labs will follow transparent methods for admission which shall not be designed, intended, or used to discriminate or violate individual civil rights in any manner prohibited by law [Ed 1403.01(b)(2)(a)].

Admission to the Zero2Maker and Zero2Entrepreneur courses requires an online application that identifies the student and the school, and the necessary student information and agreements that require parental approval. All the applicants will be invited to an information session where any questions may be addressed. The students will be required to appear for an online interview before final admission into the program.

12.0 Local Educational Agency

A description of how the program will liaison with the local education agency (LEA) for students with an education plan pursuant to section 504 of the Rehabilitation Act [Ed 1403.01(b)(2)(b)].

At the time of enrollment, EnCube Labs will offer parents the opportunity to disclose any information regarding ongoing 504 education plan-related accommodations and modifications required for their child. With the parent's permission, EnCube Labs will contact the student's Local Education Agency (LEA) to coordinate recommended 504 accommodations and/or modifications in the Zero2Maker and Zero2Entrepreneur programs. Although EnCube Labs instructors are not explicitly certified to work with students with 504 plans, they are trained to be caring, patient and compassionate and work with the student's LEA representative to understand how to implement recommended accommodations and/or modifications. If EnCube Labs determines it is unable to provide the required accommodations and/or modifications for a student, the parents will be informed before committing to enrolling their child in the program.

EnCube Labs will appoint a point of contact and liaison with any school referring a student who has disabilities and learning differences. We understand that we have responsibilities to provide students with disabilities equal access and equal opportunities to participate in the Learn Everywhere Program, including by providing the student with accommodations outlined in their 504 or IEP plan, within the limitations of an online course.

13.0 LEA and Students with Disabilities

A description of how the program will liaison with the LEA for a student with disabilities, consistent with the student's IEP [Ed 1403.01(b)(2)(c)].

EnCube Labs gives all parents the opportunity to disclose any sorts of disabilities, including any related Individualized Education Program (IEPs). If requested, EnCube Labs will work with the parent to contact the student's Local Education Agency (LEA) to assist in the coordination of the student's IEP to include, but not be limited to, the required special education programs, support services, and least restrictive environment. EnCube Labs will also coordinate with the LEA in fulfilling the LEA's responsibility to provide any special education, related services, supplementary aids and services, accommodations, and modifications the IEP team has determined the student needs within the constraints of an online program. The provision of these services is not the direct responsibility of EnCube Labs

14.0 Rehabilitation Act

A statement that the applicant understands that it has certain responsibilities, pursuant to Section 504 of the Rehabilitation Act, if it receives federal funds, or the Americans with Disabilities Act, as amended, to provide students with disabilities with equal access and equal opportunities to participate in the learn everywhere program, including by providing the student with reasonable accommodations [Ed 1403.01(b)(2)(d)].

EnCube Labs understands that it has certain responsibilities, pursuant to Section 504 of the Rehabilitation Act, if it receives federal funds, or the Americans with Disabilities Act, as amended, to provide students with disabilities with equal access and equal opportunities to participate in the learn everywhere program, including by providing the student with reasonable accommodations [Ed 1403.01(b)(2)(d)].

15.0 Facilities

A description of facilities to be used for educational instruction and a description of how the facilities will meet the priorities of the program [Ed 1403.01(b)(3)(a)].

Students will receive a kit of materials that they require for the course. They will use these kits at school or home during classes and for their design homework. The minimum facilities needed for attending the course from home, such as computer, wi-fi, workspace, and power will be listed in the course documents. Mentors will be made available online with office hours so students can work effectively.

16.0 Health and Safety Laws

A statement affirming that the facilities shall comply with all applicable federal and state health and safety laws, rules, and regulations [Ed 1403.01(b)(3)(b)].

Not Applicable

17.0 Insurance

Disclosure of insurance, if any, which would cover the participants in the Learn Everywhere program [Ed 1403.01(b)(4)].

Will meet the applicable insurance requirements

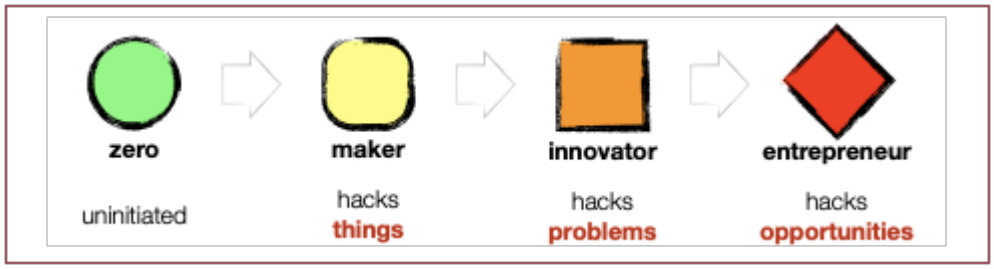
Research Behind the Approach

The Zero2Entrepreneur development framework was created over ten years of research by Rajesh Nair at Massachusetts Institute of Technology as a student and at the Asia School of Business as Professor of Practice in Innovation and Entrepreneurship. More than a hundred workshops done in seven countries for school students and youth from universities has shown that the skillset and mindset of Innovators and Entrepreneurs can be imparted through training.

Are Innovators and Entrepreneurs Born or Made?

Research has shown that innovators and entrepreneurs can be nurtured through building skills such as self-learning, critical-thinking and problem-solving while developing self-efficacy and agency in children early in their life. The raw abilities of children anywhere in the world are the same. The skillset and mindset that they learn in their school age largely determines their future life trajectory. This is particularly true for the children from under-served communities who do not consider entrepreneurship as a career path.

Entrepreneurship Development Framework



Zero to Entrepreneur Framework

This model focuses on five key stages:

1. ZERO: the uninitiated youth, with unrecognized potential, pursuing an ostensibly 'steady job';
2. MAKER: the creative thinker and doer, one who thinks outside safe spaces, connects disparate ideas, and designs and makes things.
3. INNOVATOR: a problem solver who can synthesize observations, and interactions to identify unmet community/human needs, and create and validate desirable solutions for social impact or financial gain.
4. ENTREPRENEUR: The value creator who converts a problem into a commercial opportunity through creating an organization, a team, suppliers, and sales channels, all from resources that she did not possess.
5. ECOSYSTEM: building a vibrant community, consisting of makers, innovators, and entrepreneurs as role models, that attracts new candidates and nurtures them through their developmental process of becoming a Pre-Entrepreneur.

Building Innovation & Entrepreneurship Ecosystems

The Zero2Entrepreneur program aims to build basic skills in design, problem-solving, technology, and value-capture through a series of workshops that instill the mindset and skills required to be innovators and entrepreneurs. The two sequential workshops and challenge sessions are designed to help them learn these skills and apply them to achieve mastery. These students, in turn, attract new candidates into the ecosystem and mentor them in their learning. The Z2M and Z2E programs proposed here will be conducted independently and aims to trigger the building of a sustainable and growing innovation ecosystem in the school.

CURRICULUM VITAE

RAJESH MURALEEDHARAN NAIR

9 Saxford Lane, Nashua, NH 03063
rajnair@alum.mit.edu
+1 603-566-9638 (Ph/WhatsApp)
Website**: www.rajeshnair.me**

BACKGROUND

- Ten years of experience in research and teaching in the field of innovation and entrepreneurship
- Trained as product designer, with 30 years of industry experience in developing more than a hundred products
- 25 years of experience in starting and running four for-profit startups and a non-profit organization.
- System Thinker, Design Thinking practitioner, Entrepreneurship coach, and Design & Making mentor. Catalyzed 50+ student startups from workshops
- Personal mission: To nurture a **Million Innovators and Entrepreneurs** in underserved communities

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA
Master of Science, Engineering and Management, System Design & Management 2014
Thesis: 'Catalyzing Entrepreneurs from the Ground Up in Rural India'

University of Massachusetts, Amherst, MA
Master of Science, Manufacturing Engineering
1989

Indian Institute of Science, Bangalore, India
Post Graduate Diploma, Electronic Product Design (Center for Electronics Design & Technology) 1986
Bachelor of Engineering, Electronics and Communications Engineering 1984

Kerala University, Trivandrum, India
Bachelor of Science, Physics 1981

EXPERIENCE

EnCube Labs. *USA & India* (encube.co)
Founder, CEO, Chief Mentor *2014-Present*

- Started this social enterprise to aid schools, universities and communities develop programs for early recognition and fostering of entrepreneurship abilities in students.
- Recognized as one of the ten most innovative companies in NH by Union Leader newspaper in 2021
- Executed workshops in Nashua, NH to expose students in disadvantaged communities to 'design and making' skills with support from Deshpande Foundation
- Conducted Innovation and Entrepreneurship bootcamps in US, India, South Korea, Malaysia, and East Timor

EntREsilience Research Program. *(Entresilience.com)*
Co-Investigator *2020-2022*
A study of resilience in entrepreneurs during the pandemic. This research is conducted in UK & China (Imperial College), Malaysia (EnCube Labs), Thailand (Mahidol Univ), the Philippines (De La Salle Univ). This program is supported by UK Research and Innovation.

Asia School of Business. *Kuala Lumpur,*
Professor of Practice, Director Innovation and Entrepreneurship center *2015-2020*

- Started a series of workshops to teach product design and digital fabrication skills in schools, colleges and communities in Malaysia
- Established ASB-Innovation & Entrepreneurship Center with the first FabLab in Malaysia on campus

TechTop Trust. *Trivandrum, India* *2006-Present*
Founder, Chair Trustee

- Started TechTop National Innovation Challenge in India for students from rural engineering colleges. Over the past 14 years more than 2500 student innovators were showcased and encouraged to consider entrepreneurship as a viable career option.
- Established the first FabLab in South India to conduct 3-day to 4-week long bootcamps

Massachusetts Institute of Technology. *Cambridge, MA*
Visiting Scholar, MIT-Tata Center/ MIT- Office of Digital Learning *2014-2019*

Degree Controls, Inc. *Milford, NH* *1996-2017*
Founder, CEO (1996-2003), Chairman, CTO (2003-2017)

- Bootstrapped the company from $60,000 initial founder's investment to $14.7m revenue and 120 employees in four years.
- Judged as the **Fastest Growing Company** in NH in 2002 by *New Hampshire Business Review*.
- Acquired and integrated two companies; a sensor manufacturer and a product test lab.
- Created AdaptivCool Division based on patented technology for green energy management in data centers
- Sold the company to a private equity group in 2017

Cambridge AccuSense Inc. *Shirley, MA* *1993-1996*
Cofounder, Engineering Head,

- Developed technology patents and related products such as lab instruments and sensors for airflow measurement that are now considered 'industry standard'.
- Led the technical team to innovate new products and grow the company from start to $2M in two years.
- Degree Controls acquired this company in 2003

Think A Magic Inc. *Nashua NH* *1994-1995*
Founder, CEO

- First solo startup experience. Developed and patented technology for infant care products. Failed to raise capital to launch. The company closed after a year.

TEACHING EXPERIENCE

- Bootcamps: Conducted more than 100 workshops on Design, Fabrication, Product Development, and Entrepreneurship in seven countries to more than 4000 students
- Asia School of Business, Kuala Lumpur: Taught the courses 'Zero2Entrepreneur' and 'Action Learning-Entrepreneurship Session'
- University of Rhode Island: Created and taught a 2-week long, hands-on bootcamp style course, since 2016, ENG326: Engineering Entrepreneurship, based on Maker-Innovator-Entrepreneur Framework for entrepreneurship attitude development. First course of its kind, leading to URI's efforts on establishing an Innovation & Startup center.
- Driving Strategic Innovation: Taught 'Maker' experience to senior executives at this executive education program offered by MIT-Sloan and IMD, Lausanne, Switzerland in Sep '15 (ASB, Kuala Lumpur) March '16 (IMD, Lausanne) and September '16 (MIT, Cambridge)
- MIT: Make-In-India: 4-week long hands-on bootcamp, sponsored by MIT, based on Maker-Innovator-Entrepreneur framework, for students from MIT and Indian universities. Four startups launched from the program. Last offered in summer 2015 in Kerala and in 2017 at IIT Delhi.
- ASB 48 Hour MakerFest: 2-day introductory program on 'Making', Digital Fabrication and Prototyping, offered for school students to adults. Conducted 30+ events in Malaysia, India, USA, Timor Leste, Indonesia, and Vietnam
- Innovation Intervention Bootcamp: An intense corporate innovation program with hands-on experience in design, problem identification, and solution development. Conducted for employees of AirAsia, Tata Consultancy Services, UOB-Singapore, and Axiata Corp, Malaysia.
- Entrepreneurship Bootcamp: Taught four intense, residential, hands-on programs from 2 to 6 weeks long, at rural Indian colleges that did not have any I&E initiatives, to study efficacy of the Maker-Innovator-

Entrepreneur framework of training. More than 20 student startups emerged from the program some are currently in operation.
- Design Thinking Workshops: Conducted on-site courses and online mentoring in Design Thinking for Emeritus from 2017-2019.

SOCIAL OUTREACH

- Conducted entrepreneurship online bootcamps and maker workshops in India, Malaysia, South Africa and US where students used their specially curated individual maker kits
- Launched Zero2Maker program for creating tomorrow's entrepreneurs to set up innovation ecosystems in seventeen rural government secondary schools in Malaysia and India in 2019
- Created an Zero2Entrepreneurship program in Dili, East Timor, to create young innovators and entrepreneurs in rural communities and building nurturing ecosystem in collaboration with East Timo government and UNDP.
- Building Self-Efficacy in Children from Inner City Communities: Conducted a 2-part workshop for under-privileged school children from refugee community in Nashua to influence their entrepreneurship outlook.
- Training Mentors for Rural Maker Labs in Libraries: Trained librarians from several state libraries in Malaysia to teach making courses to local children in a program funded by American Corner initiative of US Embassy.
- Building I&E Ecosystems in Malaysian Public Universities: Starting a 1-year program in 2018 for University of Malaysia Kelantan to build a sustaining student entrepreneurship ecosystem with support of Ministry of Higher Education. This is the first one of a future series of universities

POSITIONS

- Director, Corporate Board: (past) Universal Air Filters, Inc, Sauget, Illinois. Served for two years. Helped in sale of the company to a private equity group.
- Member: (past) Industrial Advisory Committee, Mechanical & Industrial Eng Department, University of Massachusetts, Amherst, MA USA
- Board Member: (past) New Hampshire High Tech Council, Manchester, NH, USA
- Chair Trustee: TechTop Charitable Trust, Trivandrum, Kerala, India
- Advisor: LuxTag, a startup in Malaysia working on authentication of luxury goods using blockchain technology.
- Board ***Member:*** Apli.ai, an employment platform for university students

RECOGNITION

- **Speaking Engagements:**
  - **UN General Assembly** (Sept 2018): "Creating 10x Entrepreneurs in Communities"
  - **TEDx Beacon Street** (2014)**:** 'Starting Up Entrepreneurs",
  - **TEDx UTP** (2017)**:** 'Creating Pre-Entrepreneurs"
  - **MIT System Thinking Conference:** Speaker "*A Systems-Based Approach to Creating Entrepreneurs and the Ecosystems that Sustain Them*" *2016*
- ***Tata Fellowship:*** Received fellowship from *MIT-Tata Center for Technology & Design* *2012-14*
- ***Entrepreneur of the Year*****:** New Hampshire High Tech Council. *2001*
- ***Entrepreneur of the Year Finalist*****:** Ernst & Young EoY New England Award. *2002*
- ***13 US Patents***: Airflow sensing, Thermal management, Green IT and Childcare products.
- ***Green IT Award:*** *Japanese Ministry for Economy, Trade & Industry* *2010*
  For technology from patent on data center cooling and thermal management
- **Design Thinking Course:** D-School, Stanford University *2016*

US PATENTS

1. Rajesh M. Nair, Vivek Mansingh, Raouf A. Ismail: *Gas flow and temperature probe and gas flow and temperature monitor system including one or more such probes*, Apr 30, 1996; **US5511415A**
2. Rajesh Nair: *Self learning diaper wetness detector and toilet trainer* Oct 22, 1996; **US5568128A**
3. Adam J. Cohen, Roger L. Holman, Rajesh M. Nair: *Digital, Back EMF, single coil sampling, sensorless commutator system for a D.C. motor*, Sep 30, 1997; **US5672948A**
4. Rajesh Nair, Roger Holman, David Gagnon: *Thermal management system*, Nov 20, 2001; **US6319114B1**
5. Rajesh Nair: *Intelligent internal fan controller*, Nov 20, 2001; **US6318965B1**
6. Rajesh Nair, Roger Holman, David Gagnon, Owen R. Mann: *Air flow sensor using measurement of rate of heat loss*, Jul 20, 2004; **US6763711B1**
7. Rajesh Nair: *Intelligent networked fan assisted tiles for adaptive thermal management of thermally sensitive rooms*, Apr 19, 2005; **US6881142B1**
8. Rajesh Nair, Izundu F. Obinelo: *Uniform heat dissipating and cooling heat sink*, Sept 13, 2005; **US6942025B2**
9. David M. Ellis, Rajesh M. Nair: *Pulsed thermistor sensor*, Apr 10, 2007; **US7201049B2**
10. Izuh Obinelo, Rajesh M. Nair: *Multi-stage blower*, Oct 14, 2008; **US7435051B2**:
11. Rajesh Nair: *Air flow controller for electrical equipment holder,* Nov 12, 2009; **US20090277622A1**
12. Rajesh Nair: *Airflow sensor for filter blockage detection*, Jun 1, 2010; **US7726186B2**
13. Rajesh Nair: *Heat exchanger for data center*, Mar 29, 2012; **US20120073783**

- END OF DOCUMENT –