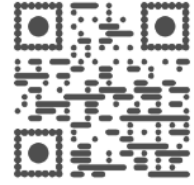




Stephen Rodan

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Career Objective

Bring latest advances in science, technology, engineering, and storytelling to coral reef restoration, ocean science, environmental protection, energy generation, and sustainable human development

Education

JAMES COOK UNIVERSITY (JCU) – CLASS OF 2022

M.Eng in Technology and Management

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) – CLASS OF 2016, GPA: 4.5/5.0

B.S.Eng. Mechanical Engineering, Subfield in Nuclear Physics, Concentration in Music

RELEVANT COURSEWORK

Advanced Asset Management, Product Engineering Process, Engineering Innovation and Design, Numerical Computation, Design and Manufacturing, Engineering Materials: Properties and Applications, Fluid Dynamics, Systems and Controls, Heat Transfer, Electronics for Mechanical Systems, Python Programming, Measurement and Instrumentation, Iterative Interaction Design, Thermodynamics, Mechanics and Structures, Ionizing Radiation, Quantum Physics, Nuclear Energy

Work Experience

BEYOND CORAL FOUNDATION, FOUNDER & PRESIDENT – 2019-CURRENT

Founder and president of a US-based 501(c)(3) focused on coral reef restoration, engineering, research, and laboratory development. Design small-scale laboratory and coral nursery for use in a future renovation of the lighthouse in Tulum, Mexico. Work with international universities and municipal governments in Quintana Roo, Mexico to improve coral restoration efforts along the Meso-American Reef. Build sculptures for public display to raise awareness of coral health and later be submerged as suitable habitat for coral. Create eco-tourism programs with a focus on restoration and scientific education. Produce documentaries and information for public education.

NASA JET PROPULSION LABORATORY (NASA-JPL) – 2017-2018

DIVISION OF SCIENCE AND INSTRUMENTATION, MECHANICAL ENGINEER

- Mechanical Engineer, fabricate a Dual Drive Actuator on the Sentinel-6 Advanced Microwave Radiometer (AMR-C). Assist with cleanroom assembly, inspection, and testing of Space Flight Hardware. Manage mechanical drawings. Purchase long-lead items. Create and maintain Material Identification and Usage List. Work closely with mechatronics experts.
- Contract Technical Manager, Supplemental Calibration Mechanism (SCS) for the Sentinel-6 AMR-C. Co-author two (2) subcontracts totaling \$14M for SCS Flight Hardware design, assembly, and test. Oversee subcontractor hardware development. Manage deliveries, submit purchase orders, and maintain professional relations with external companies.

- Instrument Integration and Testing Storyboard Lead for the Sentinel-6 AMR. Design test platform for High Resolution Microwave Radiometer. Create animated storyboard using SolidWorks Composer. Design high bay floor plan. Work closely with Mechanical Ground Support Equipment group.

MIT SEA GRANT, RESEARCH AFFILIATE – 2016-2019

Project leader for international research collaboration between MIT, the Australian Institute of Marine Science (AIMS), and James Cook University (JCU). Investigate, initiate, create, and supervise a summer research program for MIT engineering students to support ongoing research initiatives on the Great Barrier Reef. Project culminated in a short documentary and is ongoing.

U.S. DEPARTMENT OF ENERGY, ORISE SUMMER RESEARCH FELLOW – 2014

Research United States electricity sector to inform the Energy Policy and Systems Analysis (EPSA) Office of Finance, Incentives, and Program Analysis Department's understanding of the electricity market. Identify flaws in reporting system code and implement changes. Organize one-hour presentation to EPSA leadership with a supporting white paper.

MIT MEDIA LAB, UNDERGRADUATE RESEARCHER – 2013

Design, construct, and document Do-It-Yourself (DIY) Projects for project titled "Build-in-Progress." Work closely with Media Lab researchers and students to advance mechanical / electrical designs and create technical instruction manuals for the online community.

Technical Invention, Consulting, Engineering, and Speaking

CHARM, CORAL HUSBANDRY AUTOMATED RACEWAY MACHINE, INVENTOR – 2020

Inventor of a patent-pending apparatus and method to economically automate husbandry tasks in coral aquaculture. The Coral Husbandry Automated Raceway Machine (CHARM) is an attachment to the leading practices of growing coral ex-situ, on land, in aquaculture raceways. The device is a robotic machine utilizing robotics and computer vision to achieve high-throughput of healthy coral aquaculture for the uses of environmental restoration, research, resale, and manufacture.

CORAL RESTORATION CONSORTIUM (CRC), LEAD FOR ROBOTICS AND AUTOMATION – 2020

Co-lead of the Coral Restoration Consortium (CRC) Engineering and Innovation subgroup for Robotics and Automation. Assist with international collaboration and technology transfer to facilitate scientific and practical innovation in the field of coral reef restoration.

WING PORTAL, CHIEF ENGINEER – 2019

Chief engineer on a large-scale art sculpture of a 8,000 kg, 35-foot tall, 70-foot wingspan steel Phoenix on display at Burning Man 2019. Create engineering documents, run structural analysis, design anchor plan, organize electricity system, assemble sculpture in the high desert, manage over 40 volunteers, and communicate directly with the Burning Man Organization.

OCEAN RESCUE ALLIANCE, ADVISORY BOARD MEMBER – 2020

Advisor and team member to the Ocean Rescue Alliance and 1000 Mermaids Artificial Reef Project based in Ft. Lauderdale, Florida. Assist with the creation of artificial reef modules and facilitate the future site planning of artificial reefs in the Caribbean and Pacific tropical regions.

THE WONDERLAND PROJECT, ENGINEER AND EXPLORER – 2019-2020

Team member on an exploratory archaeology team using photogrammetry and LiDAR to capture caves and sinkholes (cenotes) in the Riviera Maya of Mexico. Design ROV and AUV robots to scan caves. Render cave images in a 3D Virtual Reality (VR) environment for the purposes of conservation.

BIG IMAGINATION 747, ENGINEER – 2017-2019

Design, fabricate, renovate, and transport a Boeing 747-300 airplane to be used as a venue at the Burning Man Festival in 2018 and 2019.

MIT LETTERBUG, TEAM ENGINEER AND SPEAKER – 2016

Invent and build a working alpha prototype of LetterBug, a product designed to alleviate the 95% Braille illiteracy rate among the 175,000 Americans who are visually impaired. Final product launch in front of over 3,500 people at MIT and around the world. Win first place, as voted by the audience.

Teaching Experience

JCU CLASSROOM ON THE REEF, TEACHER – 2016

Teach international students from secondary and tertiary schools about coral reef monitoring systems on a remote tropical island. Students create a suite of autonomous, real-time, and *in-situ* wireless sensor networks to collect biological, physical, and chemical data.

MIT ITERATIVE INTERACTION DESIGN, TEACHING ASSISTANT – 2015

Teaching assistant for MIT mechanical design course. Instructed a hands-on bootcamp in design where students work in groups to develop interactive physical computing projects. Give lectures on prototyping in mechanical and electrical design, CAD modeling, laser cutting, and 3D printing.

MIT ENGINEERING, INNOVATION, AND DESIGN, TEACHING ASSISTANT – 2014-2015

Teach students how to produce great designs, be a more effective engineer, and communicate with high emotional and intellectual impact. Provide techniques on how to present technical projects, sharpen creative thinking, critically analyze designs, and utilize iterative processes.

MIT OCEAN ENGINEERING EXPERIENCE, TEACHING ASSISTANT – 2013

Teach ocean engineering principles and how to construct remotely operated vehicles (ROVs) that measure ecological impacts associated to cogeneration power plant emissions. Create lectures on design cycles in engineering. Instructed and advised students on computer-aided design (CAD) modeling, computational fluid dynamic (CFD) analysis, Arduino coding, manual fabrication, design cycles, and prototyping methods.

Certifications

Coral Reef Restoration and Leadership, Australian Queensland Recreational Boating License, PADI Rescue Diver, CPR/First Aid, Emergency O₂ Administration, Class C Drivers License

Leadership and Community Volunteer Activities

OCEAN ALLIANCE MEXICO, CONSULTANT – 2019

Provide technical advice and policy recommendations to Mexican government officials and United Nation (UN) Environmental Policymakers. Create institutional alliances with Mexico and international partners (such as: USA, Honduras, Belize, Guatemala, Netherlands) for strategic implementation of UN Sustainable Development Goals (SDG).

HEEL/HARD ROCK HOTEL, BEACH CLEANUP, CONSULTANT – 2019

Developed a beach cleanup in Petempich, Quintana Roo, MX with HEEL, Hard Rock Hotel, INAPESCA, and local municipalities. Manage personal protection equipment, transport, and the organization of over 45 volunteers. Removed 500 lbs of recyclable trash from a turtle nesting area and sent to processing plant. Filmed, edited, and produced video for promotion of the program.

GLOBAL LAND, SPEAKER – 2019

Presented at a UN event organized by Friesland College in the Netherlands to talk about UN SDGs. Collaborate with research groups and institutions to devise engineering opportunities for students to work internationally.

ART WITH ME TULUM, SPEAKER – 2019

Speaker on three (3) panels regarding coral reef restoration solutions, sustainable development practices, and ecological design to the global community of Tulum, MX.

UNIFY TULUM, BOARD MEMBER – 2019

Board member for a non-profit eco-hub of environmentalists, biologists, and activists dedicated to the conservation and preservation of Tulum, Mexico

NASA URBAN SEARCH & RESCUE, SERGEANT – 2017-2018

Volunteer sergeant of NASA Urban Search & Rescue (USAR) squad who specialize in damage assessment, wild land fires, emergency medical, and search and rescue operations.

NASA EUROPA SCUBA, LEAD ORGANIZER – 2017-2018

Founded and managed a club of SCUBA enthusiasts within NASA-JPL. Organized multiple science-oriented dive trips around California, Costa Rica, and Mexico for over 20 persons.

MIT ENERGY CLUB, PRESIDENT – 2014-2016

Creator and Co-Managing Director for the inaugural MIT Energy Hackathon (2015). President of the MIT Undergraduate Energy Club (2015-16). Volunteer Director for the MIT Energy Conference (2016). Creator and Director of the MIT Energy Career Fair (2016). Co-Director of Finance for the MIT Energy Club (2014-15). Co-Director of Media, Marketing, and Volunteers for the MIT Energy Night (2014).

MIT GORDON ENGINEERING LEADERSHIP PROGRAM, PARTICIPANT – 2015

Selected for a year-long leadership program that develops next-generation technical leaders with the values, attitudes, and skills necessary to address engineering problems of today's society.

BOY SCOUTS OF AMERICA, EAGLE SCOUT – 2011

Project: design and construct a bluebird house nature trail for the Audubon Society.

References

Lance Milligan, NASA-JPL Mechanical and Thermal Subsystem Lead, <lance.J.Milligan@jpl.nasa.gov>

Bill Kert, NASA-JPL Project Acquisition Manager <william.d.kert@jpl.nasa.gov>

Sean Gilbert, MIT International Science and Technology Initiative <seang@mit.edu>

Dr. Carolina Bastidas, MIT Sea Grant College Program <bastidas@mit.edu>

Dr. Lyndon Llewellyn, AIMS Research Manager <L.Llewellyn@aims.gov.au>

Blade Kotelly, MIT Gordon Engineering Leadership Program <blade@mit.edu>

Skills and Interests

Computational Design, 3D CAD, Mechanical Drawings, Virtual Reality, Photogrammetry, LiDAR, Finite Element Analysis, Machine Vision, Artificial Intelligence, Robotics, Automation, Computer Coding, Python, C++, Web Dev, Sculptures, Structural Analysis, LED lighting, Electricity and Energy, Machine Shop, 3D Printing, Laser Cutting, Precision Machine Design, CNCs, Mills, Lathes, Angle Grinders, Plasma Cutters, Arc Welders, Band Saws, Grinders, Shears, Drill Presses, Chop Saws, Product Design, Product Development, Manufacturing Process, Systems Engineering, Electronics, Micro-controllers, Information and Sensing, Web Development, Photography, Video Filming, Editing/Producing, Public Speaking, Teaching, Music (Piano, Ukulele, African Drum, CDJ), World Traveling, SCUBA Diving, Hands-on DIY, Environment and Sustainability, Ecological Design, Woodwork, Carpentry.