KARTIKEYA BECTOR

(332) 250-3066 | kb3238@columbia.edu | linkedin.com/in/kartikeya-b/ | https://www.kartikeyabector.com

EDUCATION

Columbia University *New York, NY*
M.S. Mechanical Engineering (Robotics and Control Track), GPA: 3.62/4.00 Sep 2021 – (exp) Dec 2022
Coursework: Robot Learning, Human-Centered Design and Innovation, Mechatronics and Embedded Microcomputer Control, Robotics Studio, Introduction to Robotics, Data Science for Mechanical Systems, Evolutionary Algorithms

Delhi Technological University (DTU) *Delhi, IN*
B. Tech (Mechanical Engineering), GPA: 7.70/10.00 Aug 2017 - Jul 2021
Coursework: Mechanics of Solids, Manufacturing Tech., Adv. Manufacturing Processes, Production and Operations Management
Awards: Research Excellence Award for contributing to 10 research papers over 2 years in advanced manufacturing and composites

EXPERIENCE

Vimaan Robotics, Inc. *Santa Clara, CA*
Mechatronics Intern (R&D Department) Jun 2022 – Aug 2022
- Designed complex assemblies, proprietary components and adapters on SOLIDWORKS with GD&T – 3D printed for deployment
- Built electromechanical experimental setups, using 80/20s, 3D-printed and laser-cut parts, to determine lighting requirements in machine vision applications – wrote Arduino scripts to control the various components
- Developed Python simulation and lighting visualization program to test setup configurations for optimal camera exposure based on application – reduced testing time from 1 day to a few minutes; conceptualized in-house solution, cost reduced by 50%
- Automated data collection processes by writing OpenCV-python and v4l2-ctl script, increasing efficiency by 90% - also processed readability of collected data using Google API

Robotics and Rehabilitation Laboratory (ROAR) *New York, NY*
Graduate Research Assistant (mTPAD Project) Jan 2022 – May 2022
- Worked with mTPAD (mobile Tethered Pelvic Assist Device) – applies corrective lateral and diagonal forces to help improve irregular gait patterns of stroke patients with hemiplegia
- Created virtual environment on Unity (using C#) to do exergaming (exercise gaming) therapy
- Integrated HTC Vive (VR) with mTPAD for assistive feedback during exergaming for more effective physical therapy

Columbia University Robotics Club *New York, NY*
Analysis Team Lead (NASA Big Ideas 2022: Extreme Terrain Mobility Challenge) Nov 2021 – May 2022
- Supervised team of 5 undergrad and grad students to devise alternative rover locomotion modalities to traverse lunar craters (with slopes > 35°) and lava tubes in extreme thermal and lunar terrain applications (and later, Mars)
- Simulated and trained 16-parameter locomotion model on self-programmed physics simulator on Python (using VPython) by forming evolutionary algorithms to optimize gait and evolve gait-modulation for damage scenarios
- Designed and manufactured working demonstration of final micro-spine gripper

PROJECTS

Laika – The Dancing Robot Dog | Columbia University *New York, NY*
Robotics Studio Sep 2021 – Dec 2021
- Ideated, designed and manufactured dancing robot dog over the course of 12-weeks
- Created detailed CAD model on SOLIDWORKS and Fusion 360; fabricated body components using 3D printing and laser cutting
- Configured remotely controllable system to communicate with on-board RaspberryPi using SSH over Wi-Fi
- Programmed gait of robot using Keyframes method for 8 servo motors for robot to have 4 distinct dance moves. Presently teaching robot to walk on its own using PyBullet simulations and evolutionary algorithms

TECHNICAL SKILLS

- Languages and Libraries: MATLAB, Python, OpenCV, VPython, PyBullet, Pandas, PyGAD, C#, Unity, MiniTab, Linux
- Design: SOLIDWORKS, Fusion 360
- Mechanical: MFSP, 3D Printing, Laser Cutting, CAM, Milling, Turning

LEADERSHIP EXPERIENCE

International Conference on Advanced Production and Industrial Engineering *Delhi, IN*
Organizing Coordinator Aug 2019 - Jun 2021
- Managed cross-functional team of 50+ students in 6 locations pan-India to organize international conference (hybrid mode), attended by 1000+ delegates globally
- Executed digital and referral marketing strategy to increase reach of event to 15 colleges and 5K+ research scholars worldwide, resulting in 200% ($60K) increase in revenue