MICHAEL CLANCY

Engineering, Art, Computer Science

Portfolio: michael-clancy.com

About

Education

Ph.D. Biomedical Engineering | Rowan University 2025
GPA 4.0

B.S.E. Bioengineering | University of Pittsburgh 2020
Cum Laude

Relevant Courses

Signals and Systems, App. of Signal Processing, Data Structures, Adv. Mechatronics, Adv. Robotics

Probability and Statistics, Operations Research

Biochemistry, Organic Chemistry, Genetics, Microbiology, Physiology, Immunology

Certifications

C++ Certified: certified as advanced in data structures & algorithms, Coderbyte.com

Outdoor Emergency Care for the National Ski Patrol

Basic Life Support for Health Care Providers

Skills

Programming Languages:	Experience:
C++	Graduate Research
MATLAB	Undergraduate and Graduate Research, Coursework
Python	Independent projects, Coursework
Java	Coursework
Programs:	**Experience:**
SolidWorks	Graduate Research and Coursework
Arduino	Coursework

Awards

NSF I-Corps National Program Invitee and Completer ($50,000 in funding) 2022

Rowan University Project NEST Grand Prize Winner ($500 in funding) 2021

Undergraduate Research Fellowship Award ($4,000 in funding) 2019

Publications

F. Alruwaili, M. Saeedi-Hosseiny, M. Clancy, S. McMillan, I. Iordachita, M. Abedin-Nasab (2022) *Experimental Evaluation of a 3-Armed 6-DOF Parallel Robot for Femur Fracture Surgery,* JMRR.

M. Clancy, S. Sekhar, A. Batista, and P. Loughlin. (2020). *Extensions and Analysis of a Virtual Balancing Task for Studying Sensory-Motor Control.* Ingenium.

S. Canton, S. Dadi, M. Clancy. (2020). *Comparison of Screw Quantity and Placement of Metacarpal Fracture Fixation: A Biomechanical Study.* HAND.

Presentations

Robotic Parallel Mechanisms for robot assisted femur repair surgery, 2022 NJECC

Optimization of a 6-DoF 3-RRPS parallel mechanism for robot assisted surgery, 2022 LSF

Exploring Sensory-Motor Control Through Virtual Object Manipulation, 2019 BMES

Patents

Universal Adaptor for Intravenous Pole Attachments, Patent Application Number: 63020185

Industry Experience

Argo A.I. Data Analyst 2020 – 2021
Improved Argo A.I.'s Self-Driving System (SDS) machine learning data sets

National Ski Patroller Boyce Park, PA 2019 – 2021
Provided first aid to injured skiers, assisted in teaching new patrollers

Research Experience

Graduate Research Assistant 2021-Present
Dr. Mohammad Abedin-Nasab: Surgical Robotics Laboratory
Theoretical analysis and design of parallel mechanisms for surgical procedures

Keywords: Parallel Mechanisms, Inverse Kinematics & Dynamics, Optimization, Global Conditioning Index (GCI), Genetic Algorithms, Open & Closed Loop Sol.

Undergraduate Research Assistant 2019-2020
Dr. Patrick Loughlin: Sensory Motor Integration Laboratory and Engineering
Constructed somatosensory feedback systems using machine learning

Keywords: Machine Learning, Deep Learning, Neural Networks, Signal Processing, Control Systems, Simulation

Dr. John Fowler, Dr. Stephen Canton: Orthopaedic Robotics Laboratory 2019
Designed and performed testing to observe the efficacy of surgical techniques

Keywords: Biomechanics, Cyclic loading, Improving surgical techniques

Teaching Experience

Biocompatibility and Immunoengineering Graduate Teaching Assistant (TA) 2022
Assist with teaching lectures, Facilitate student learning and engagement

Mechanical Foundations of Engineering Graduate TA 2021
Create assignments and provide feedback, Facilitate student learning and engagement

General Chemistry I, II, and Bioinstrumentation Undergraduate TA 2018 - 2019
Proctor recitation and laboratory classes, Create and provide feedback on assignments

Volunteer Work

Volunteer at Humane Animal Rescue, Pittsburgh, PA 2017 - 2020
Animal Enrichment Volunteer

Volunteer at Bethel Mill Animal Hospital, Sewell, NJ 2022 - Present
Small Animal Volunteer

Independent Projects

Chess Engine: Python, heuristic minimax algorithm, better than 50% of competitive players
https://www.michael-clancy.com/chess-ai
Keywords: Minimax, Alpha-Beta Pruning, Recursion, “some” Dynamic Programming

Computer Generated Art: Python, art from white noise
michael-clancy.com/domain-warped-fbm
Keywords: Fractal Brownian Motion, Perlin Noise, Domain Warping, Artistic Renditions

Coursework Projects

Autonomous Car: Arduino, object avoidance and trajectory algorithm using sonar array
https://www.michael-clancy.com/autonomous-car
Keywords: Computer Vision, Path planning, Integration

Handheld 2D printer: LabVIEW, B&W printer, image dithering algorithm for image processing
Keywords: Image Processing, Integration, diffuse image dithering

Match Filter Voice Classification: MATLAB, distinguish voices with >90% accuracy
Keywords: Match Filtering, Signal Processing, Audio Classification, Voice Recognition

Two Hands: raw charcoal, black background, sketching portfolio
michael-clancy.com/charcoal-sketching

Automatic Tractography Segmentation Algorithm: MATLAB and R, auto segmentation of brain connections to classify neurological disorders
Keywords: High-Definition Fiber Tracking (HDFT), MRI, autonomous segmentation

Proportional Navigation Cruise Missile for Maneuvering Target Interception: MATLAB, PN, MCG
Keywords: Proportional Navigation, Midcourse Guidance, Terminal Guidance, simulation