ALYSHA IRVIN

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EDUCATION

University of Central Florida | Burnett Honors College
Bachelor of Science in Mechanical Engineering, Computer Science Minor
Relevant Coursework: Vibrations and Controls, Heat Transfer 2, Fluid Mechanics, Numerical Modeling Methods, Mechanical Systems Labor Science 1 (C), Computer Science 2 (Java), Intro to Discrete Structures, Object Oriented Programming (Java)

University of Central Florida | Burnett Honors College
Bachelor of Science in Biomedical Sciences
Relevant Coursework: Organic Chemistry II, Organic Laboratory Techniques I, General Microbiology, Quantitative Biological Methods, Mo Immunology, Medical Biochemistry

SKILLS

Software: SolidWorks, LabView, Microsoft Office Suite, OpenRocket, PuTTY, Git
Programming: JavaScript, C#, C, HTML/CSS, GNU Octave, Python, MySQL, MATLAB, Java
Certifications: NAR High-Powered Rocketry L1, CIW Business Associate

RESEARCH EXPERIENCE

Undergraduate Research Assistant | *Hybrid Materials for Surface and Bio Applications Lab*
Advisor: Kausik Mukhopadhyay
- Used scanning electron microscope analysis to assess correlation between pore size and compression test data for 5+ foam samples
- Created 15+ clay films and performed analysis using ATR-FTIR and XPS, identifying functional groups and elements within samples
- Constructed 20+ antimicrobial hemostatic polymeric foam samples for wound care of varying siloxates and inorganics composites
- Operated thermal imaging camera to monitor reaction time and temperature, evaluating the effect of varying ingredient concentrations

HONORS, AWARDS, AND GRANTS

First Place Overall, *University of South Florida: HackJam*
Student Research Grant, *University of Central Florida* | $1500
Judges Choice Award, *University of Central Florida Student Scholar Symposium* | $200
President's Honor Roll, *University of Central Florida*
Dean's List, *University of Central Florida*
Award of Excellence, *Universiy of Central Florida*

PRESENTATIONS

The Student Scholar Symposium, Orlando, FL, March 2022. Blum, K.; Hoang, L.; Irvin, A. "Self-expanding Polymeric Hemostatic Foam for T Care" (poster)

The Florida Undergraduate Research Conference, Orlando, FL, Februrary 2022. Blum, K.; Hoang, L.; Irvin, A. "Self-expanding Polymeric He Trauma and Wound Care" (poster)

TEACHING EXPERIENCE

Undergraduate Teaching Assistant | *University of Central Florida*
Course: Heat Transfer
- Held 8 weekly office hours in multiple sessions to provide individualized student support and reinforce material taught in lecture
- Created a comprehensive evaluation rubric for each of the 4 examinations, including detailed criteria for all assessment components
- Successfully conducted review sessions for 200+ students on assessment material, providing constructive feedback and partial credit

Team Leader | *University of Central Florida, Burnett Honors College* A
Course: Honors Symposium
- Led 15+ Burnett Honors scholars, providing guidance and networking to help them achieve personal, academic, and professional goals
- Facilitated weekly discussions and activities to develop skills in problem solving, leadership, professionalism, and work-life balance
- Coordinated events to promote community engagement and introduce members to 10+ campus organizations, societies, and resources
- Established and facilitated contact with 15+ industry professionals in various fields, providing students with the opportunity to network

Undergraduate Teaching Assistant | *University of Central Florida* J

Course: Solid Mechanics

• Developed 10 custom rubrics for homework and exams, ensuring a uniform evaluation of student work throughout the semester
• Successfully facilitated meetings between students, and teaching team to ensure that expectations and objectives were understood
• Graded 3500+ assignments and provided feedback for nearly 400 students over the course of the semester

INDUSTRY RELATED EXPERIENCE

X-Force Fellow | *DOD National Security Innovation Network* Ju

• Created documentation detailing cost-effective strategies for improving current market item designs to fit within project requirements
▪ Researched neutron and gamma shielding, signal attenuation, and noise reduction at cryogenic temperatures to design a custom cable
• Investigated various superconducting quantum interference devices (SQUIDs) to assess feasibility of retrofitting to project specifications
• Coordinated efforts with Naval Surface Warfare Center Crane and Department of Defense supervisors to ensure objectives were met

Mechanical Engineer | *NASA L'SPACE Mission Concept Academy* J

• Developed Mars lander with engineering and scientist teams, that was capable of traversing Mars' North Polar Layer Deposits (NPLD)
• Collaborated with team of 12 to write a Mission Concept and Requirements Review (MCRR) and Preliminary Design Review (PDR)
• Successfully presented PDR to NASA personnel with an overall score of 80% professionalism and 7% under the budget of $250,000,00
• Awarded certificate of completion and skill badges in risk management, project management, systems engineering, and heat transfer

PROJECTS

Autonomous Underwater Glider

• Team Lead of 6 to construct an autonomous underwater glider powered by a buoyancy engine with a range of 5 nautical miles
• Authored preliminary design and research document to identify user and sponsor requirements, using trade studies to select parts
• Developed a robotic system with path-planning, obstacle avoidance, data collection, and storage capabilities with a Raspberry Pi
• Utilized an inertial navigation system with integrated proximity sensors and machine learning algorithms to improve navigation accuracy

Lifeopoly: 3D Game

• Created a 3D game using Unity and C#, incorporating interactive user interfaces for both starting screens and in-game heads-up displays
▪ Implemented toggleable buttons that dynamically update with relevant information for each player throughout the game
• Utilized a route-following algorithm that coordinated with a randomized spinner mechanic to create an efficient movement system

E-Portfolio

• Developed an aesthetic electronic portfolio showcasing professional and academic achievements, involvement, and employment
• Designed an interactive and dynamic animation using HTML, CSS and JavaScript to provide an engaging experience for users
• Leveraged SVG to create complex and visually stimulating images, shapes, and patterns to add dimension to the home page
▪ Implemented a togglable light and dark mode feature, employing color and art theory to mazimize visual appeal

Cubedle: Web Application

• Created web application utilizing HTML/CSS and JavaScript to generate a 3D rotatable cube with 25 WORDLE problems on each face
• Constructed an algorithm to generate words that adhere to the constraints of the puzzle and print them to a text file
• Implemented an interactive keyboard that lights up depending on the accuracy of the letters entered in the puzzle

Awards: 1st Place Overall University of South Florida Hackjam

Knight's Bow Archery Website A

▪ Developed website prototype using Model-View-Controller (MVC) pattern in C# and HTML to streamline member signup process
▪ Implemented a SQL database to store member and admin views, enabling secure login authentication for increased view customization
▪ Utilized a full-stack framework using the LAMP stack, featuring implementation of Javascript, PHP, MySQL, HTML/CSS
▪ Successfully managed multiple connections with PuTTY and PSFTP to securely transfer program files

L1 High Powered Rocketry

• Designed a high-powered rocket using SolidWorks to create fin models and OpenRocket to run flight simulations to verify stability
• Assembled rocket in accordance with specifications and standards, to ensure safe and accurate operation
• Launched to an apogee of 2400 ft using an H219 motor with minimal damage and successful recovery
• Connected rocket to launching rail and firing wires, allowing for safe remote detonation and easier viewing for retrieval

LEADERSHIP

Mentor | *First Step*
- Mentored 7 freshman engineering students to prepare them for upcoming internship fairs, providing guidance on industry networking
- Guided students on how to best utilize extracurriculars to maximize their chances of landing internships
- Reviewed resumes and practiced elevator pitches with students to ensure they felt confident in their presentation skills
- Collaborated with mentor team of 31 to ensure all mentees receive ample opportunities and valuable feedback for a variety of sources

President | *Honors Congress* I
- Oversaw planning and implementation of 5+ successful recruitment events, increasing overall membership by 63.64%
- Collaborated closely with faculty members and volunteers to implement new methods of recruitment, leading to a 3-year high in signups
- Spearheaded successful membership drive that raised over $5,000 in sales through membership dues and merchandise sales
- Provided strategic direction to a team of 15 officers and 40 committee members, resulting in successful completion of team objectives

Student Committee Member | *University Honors Committee*
- Represented student body on committee with 15 faculty members, contributing input towards the curriculum and awards program
- Approved and reviewed proposed honors interdisciplinary seminars, providing constructive feedback to further development
- Applied excellent communication skills to effectively collaborate with faculty and offered a unique student perspective on decisions

Acting President | *Tau Beta Pi: Engineering Honor Society* M
Previous Position: Vice President
- Assisted in organizing the District 5 Conference by managing registration, tours, and meals for 50+ delegates and advisors
- Developed protocols and maintained records regarding officer board decisions to provide easy communication to over 150+ individuals
- Successfully initiated a total of 52 individuals, including 39 undergraduate students, 12 graduate students, and 1 eminent engineer
- Served as Acting President, communicating between TBP HQ, UCF, and FLD chapter via emails, forms, and other documentation

Director of Academic Affairs | *Honors Congress* I
- Successfully designed and hosted an undergraduate research fair connecting over 60 students to 11 research labs from various colleges
- Developed and implemented budget planning process to track expenditures by month, increasing budgeting efficiency by 22%
- Organized and ran academically focused events as committee leader of 4, with event attendance of up to 90 participants
- Spearheaded a mentorship program with over 50 participants, to facilitate meaningful connections within the honors community

President | *Knight's Bow Archery* I
Past Position: Vice President
- Facilitated interactions between officers and members of the organization to create a sense of unity and foster a supportive community
- Served as a founding officer, developing comprehensive procedures and protocols for both internal and third party facility operations
- Developed and managed over 50 range day and club events to provide individual coaching and practice opportunities for members
- Created a comprehensive website in C# and HTML in an MVC pattern to streamline signup process and centralize club information

ADDITIONAL EXTRACURRICULAR INVOLVEMENT

Member | *Knights Experimental Rocketry* S
- Launched a level one high powered rocket, from concept to completion, resulting in a successful launch
- Participated in aerostructures team meetings for NASA's Student Launch Program, assessing the design options of the team's rocket

Student Ambassador | *UCF Undergraduate Admissions* M
- Guided large groups of 20+ students and families through campus, detailing the university's academic programs and achievements
- Used personal experiences to assess individual student needs, recommending appropriate campus programs, resources, and activities
- Participated in a UCF Open House, offering guidance and tours to prospective families and providing a current student perspective

Relay for Life and Campus Involvement Committees Member | *Honors Congress*
- Provided support to two Directors, assisting with event setup and teardown, attending meetings, and submitting paperwork
- Successfully hosted 2 events with upwards of 70 attendants, working as part of a team of 4 other committee members

PROFESSIONAL AFFILIATIONS

Society of Hispanic Professional Engineers 2023 - Pre
National Association of Rocketry 2023 - Pre
Tau Beta Pi, The Engineering Honor Society 2022 - Pre