

SoCal OASIS™ Internal Funding Award (SoCal OASIS™ IFA) 2024

Proposal title: _____

NOTE: Preference will be given to applicants who did not receive previous OASIS funding. **For previous recipients to be considered it is required that they have submitted the final research and budget report for the previous award if already expired.**

Please indicate under which pillar you would like your proposal to be considered:

Select one from pull-down menu:

Type of award applying for (please select one):

- "Medium SoCal OASIS™ IFA (total budget \$600,000): Twelve awards with budgets in the range of \$25,000 to \$50,000, two in each of the pillars will be awarded. Each proposal requires participation of at least two principal investigators (PIs). Co-participation of PIs from different departments or colleges is encouraged but not required.

- "Small SoCal OASIS™" (total budget \$600,000): Proposal with one or more PIs with budgets in the range of \$5,000 to \$25,000 will be awarded.

Total amount requested: _____

I. Personnel

A. Principal Investigator:

Last Name: _____ First Name: _____

Department: _____

School or College: _____

Phone: _____ E-mail: _____

Present Title: _____

B. CO-PIs: Names, titles, departments, colleges of all other personnel engaged on project. (Attach additional pages as needed.)

CO-PI: Last Name: _____ First Name: _____

Department: _____

School or College: _____

Phone: _____ E-mail: _____

CO-PI: Last Name: _____ First Name: _____

Department: _____

School or College: _____

Phone: _____ E-mail: _____

CO-PI: Last Name: _____ First Name: _____

Department: _____

School or College: _____

Phone: _____ E-mail: _____

CO-PI: Last Name: _____ First Name: _____

Department: _____

School or College: _____

Phone: _____ E-mail: _____

Additional application materials:

1. Application Form (.pdf)
2. Research Plan - No more than four pages narrative for the Medium Awards and no more than two pages for the Small Awards, single-spaced, 12-point font with at least one-inch margins all around. Proposals not complying with these page and space limitations will not be reviewed.
3. Typical proposals should include in their narrative: a brief introduction and objectives, specific aims, and anticipated results (if applicable).
4. Proposals should also contain a separate section, within the total allocated pages for the narrative, addressing the contributions of the proposed activities to one or more of the OASIS goals (Sustainability, Innovation, Social Inclusion, Education, and Workforce Development).
5. List of publications or creative works cited in the narrative, if any (no page limitations for this list).
6. Budget with breakdown of broad cost categories and brief justification (no more than two pages for budget and justification).
7. CVs (no more than two pages for each investigator).
8. Results of prior UCR internal seed grant(s) in the last two years, if applicable (one page max.).

APPLICATION SUBMISSION

Applications should be submitted through the "[EasyChair](#)" system.

Questions about the EasyChair application system should be directed to Marisela Martinez at vcredadmin@ucr.edu.

Transforming and Recycling 3D Printing Material Waste (PLA) into Sustainable Environmental Solutions

Principal Investigator: Dr. Raymond Uzwyshyn, Research Services, UCR Libraries

Co-Principal Investigator: Dr. Robert McKee, Bioengineering, College of Engineering

Support Staff: Brendon Wheeler, (M.Sc CS) Maker Services, UCR Libraries

Alvaro Alvarez, (MBA) Innovative Media Librarian, UCR Libraries

Areas of focus: Sustainability, Innovation, Workforce Development

In the past decade, 3D printing has revolutionized prototyping and manufacturing across various industries in the US and globally, but this innovation comes with an environmental cost. As technology becomes increasingly accessible, waste generated from failed prints and support materials poses growing environmental challenges. To address these issues, UCR Libraries have formed a collaborative interdisciplinary team of researchers, 3D printing material and process experts to develop an innovative solution for recycling PLA waste from 3D printing operations. While PLA (Polylactic Acid) is marketed as a biodegradable alternative to petroleum-based plastics, it requires specific conditions to decompose and still contributes to greenhouse gas emissions during production and disposal (Rezvani, 2021).

University of California Orbach Science Library generates significant plastic waste, with approximately 30% of their PLA filament becoming waste material, representing both environmental concerns and financial loss. The library's Creat'R Lab utilizes 120 KGs of PLA spooled filament annually, with 30% becoming waste. This represents not only thousands of dollars in material costs but also significant environmental impact. Each kilogram of PLA requires 2.2 kg of corn to produce and generates approximately 2 kg of carbon dioxide during recycling (BioSphere, 2023; Rezvani, 2021, Fig. 7).

The Research Objectives, Specific Aims and Anticipated Results of this project are to:

1. Design and develop an innovative, automated, technologically progressive first-of-its-kind 3D Printer PLA recycling system that can process waste filament into new, print-ready material while filtering out harmful components.
2. Create and validate quality control protocols to ensure recycled filament meets or exceeds industrial standards for 3D printing applications, recycling, and sustainability standards.
3. Investigate, research, and implement a comprehensive waste collection and processing workflow that can be suitable for scaling from the Creat'R Lab 3D Printer prototype to accompanying 3D Printer Centers on campus that have similar challenges.

4. Beginning with UCR's campus create and develop a regional waste collection processing network amongst other Universities labs and expand to surrounding academic, research and business centers in SoCal.

With this final objective for further development, the far-reaching anticipated results, specific aims and implications for this project extend beyond UCR's campus. A functional model PLA recycling system would be transformative for:

- Academic institutions with 3D printing facilities
- Industrial prototyping operations
- Research laboratories
- Maker spaces and innovation centers

With these factors in mind, this project advances several key **SOCAL OASIS goals**:

Sustainability: Our recycling system will significantly reduce plastic waste and the demand for new PLA production, directly supporting the United Nations' plastic pollution initiatives and sustainability goals (United Nations, 2024).

Innovation: We are developing novel automated recycling technology that builds upon and goes beyond basic preliminary European models, creating a more efficient and scalable solution for PLA waste management while investigating viability of IoT/QR tracking, mobile dashboard systems, AR/smartphone interfaces and AI-assisted sorting guidance.

Workforce development: This project will provide hands-on experience for graduate students in sustainable engineering practices while creating an innovative prototype for institutional waste management that can be replicated across academic and industrial settings and become a model for this type of sustainable entrepreneurial socio-economic endeavor.

Our project not only addresses immediate environmental concerns but also positions UCR as a leader in sustainable technology innovation. As the region's R1 university, UCR can pioneer sustainable solutions for the rapidly growing 3D printing industry. Economically, growth of the 3D printing market is expected to increase at **20.8% CAGR** (Compound Annual Growth Rate) with the industry projected to expand from **18 billion** (2024) to **\$29.4 billion** (2029) so timing is critical for developing sustainable solutions to plastic waste management (PR Newswire, 2024). This proposal addresses solutions for the pressing challenge of PLA (Polylactic Acid) waste as 3D printing operations expand. With a focus on beginning at UCR and eventually developing a scalable, regional solution this project has the potential to benefit academic institutions and industrial partners throughout Southern California and beyond.

Works Cited and Further Background

Andrade, M. F. C. de, Souza, P. M. S., Cavalett, O., & Morales, A. R. (2016, July 20). *Life cycle assessment of poly(lactic acid) (PLA): Comparison between Chemical Recycling, mechanical recycling and composting* - *Journal of Polymers and the environment*. SpringerLink.

<https://link.springer.com/article/10.1007/s10924-016-0787-2>

Bernstad, A., Chen, L. et al. (2021, March 9). *Plastic (PET) vs Bioplastic (PLA) or refillable aluminium bottles – what is the most sustainable choice for drinking water? A life-cycle (LCA) analysis*.

Environmental Research. <https://www.sciencedirect.com/science/article/pii/S0013935121002681>

BioSpherePlastic. (2023, March 22). *Polylactic acid: Bioplastic creates more CO2 equivalent than landfills*.

BioSphere Plastic. [https://biosphereplastic.com/information/polylactic-acid-bioplastic-creates-more-co2-equivalent-than-](https://biosphereplastic.com/information/polylactic-acid-bioplastic-creates-more-co2-equivalent-than-landfills#:~:text=Corn%20fields%20that%20are%20used,for%20usable%20sources%20of%20energy)

[landfills#:~:text=Corn%20fields%20that%20are%20used,for%20usable%20sources%20of%20energy](https://biosphereplastic.com/information/polylactic-acid-bioplastic-creates-more-co2-equivalent-than-landfills#:~:text=Corn%20fields%20that%20are%20used,for%20usable%20sources%20of%20energy).

Degradation rates of plastics in the environment. ACS Publications. (2020, February 3).

<https://pubs.acs.org/doi/full/10.1021/acssuschemeng.9b06635>

Kingsland, C. (2012, February 12). *Pla - Institute of Packaging Professionals*. www.iopp.org.

<https://www.iopp.org/files/public/KingslandCaseyMohawk.pdf>

LLC, B. R. (2024, October 10). *The 3D printing market explosion: Insights Into Global Opportunities and trends*. PR Newswire: press release distribution, targeting, monitoring and marketing.

<https://www.prnewswire.com/news-releases/the-3d-printing-market-explosion-insights-into-global-opportunities-and-trends-302273207.html>

Parker, L. (2019, April 4). *We Made Plastic. We Depend on It. Now We're Drowning in It. The miracle material has made modern life possible. But more than 40 percent of it is used just once, and it's choking our waterways*. ImphalTimes.com.

<https://www.imphaltimes.com/pdf/2019/September/4%20September%20Page%201.pdf>

Pet recycler updated version. PET recycler updated version by Shoaib Khan | Download free STL model | Printables.com. (n.d.). <https://www.printables.com/model/852567-pet-recycler-updated-version>

Pla recycling. Zeus. (2018, September 27). <https://www.zeusinc.com/solutions-and-services/pla-recycling/>

Rezvani Ghomi, E., Khosravi, F., Saedi Ardahaie, A., Dai, Y., Neisiany, R. E., Foroughi, F., Wu, M., Das, O., & Ramakrishna, S. (2021, June 2). *The Life Cycle Assessment for polylactic acid (PLA) to make it a low-carbon material*. *Polymers*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8199738/>

Taib, N.-A. A. B., Rahman, M. R., Huda, D., Kuok, K. K., Hamdan, S., Bakri, M. K. B., Julaihi, M. R. M. B., & Khan, A. (2022, March 6). *A review on poly lactic acid (PLA) as a biodegradable polymer - polymer bulletin*. SpringerLink. <https://link.springer.com/article/10.1007/s00289-022-04160-y>

Thingiverse.com. (n.d.-a). *3D printed open source multimaterial upcycler : Shred-buddy3d by Venturebit*. Thingiverse. <https://www.thingiverse.com/thing:2007009>

Thingiverse.com. (n.d.-b). *Extruder ecoset 3.0 by ECOset*. Thingiverse. <https://www.thingiverse.com/thing:4097173/files>

Toor, R., & Name. (n.d.). *The truth about the biodegradability of PLA Filament*. Filamentive. <https://www.filamentive.com/the-truth-about-the-biodegradability-of-pla-filament/#:~:text=While%20it's%20true%20that%20PLA,home%20compost%20or%20landfill%20environment>

United Nations. (2024). *Plastics – fueling oil demand, climate change and pollution*. United Nations. <https://www.un.org/en/climatechange/science/climate-issues/plastics#:~:text=What%20is%20the%20UN%20doing,to%20use%20and%20waste%20management>

Transforming and Recycling 3D Printer Material Waste (PLA) into Sustainable Environmental Solutions, SoCal OASIS Internal Funding Award Budget

Expense/Category	Price	Use
Plastic Shredder	\$4950	Plastic shredder will be used to shred plastic to smaller size, easier for melting and processing
Graduate Student Researchers (Computer Sci./Bio-eng., Business)	\$7524, \$3762 Per Student	Graduate Students will provide support the 3D recycling project through infrastructure, technology prototype development and business development related research
Heating Unit	\$12.50	The heating element will melt small bits of plastic to form a new spool of plastic that will be used in order to print more projects.
Containers	\$79.80 (20 at \$3.99/unit)	Each container will be used to store different colored materials, mixing can potentially ruin integrity of the PLA
Food processor	\$3272.5	The food processor will be used to reduce the size of particles made by the industrial shredder
Carbon Filtering Unit	\$107.99	Carbon Filter will clean air and make sure that there is no contamination of air quality
Power Supply	\$49.99	Equipment used to power device
Raspberry Pi	\$159.99	Used to control the movement of device as a whole, will contribute to automation of process
Stepper Motor	\$1000	These motors will act as a gate, sifter and auger to move plastic pieces through equipment to create a new spool of filament
Diameter Sensor	\$300	This will track the diameter of the newly spooled plastic
General Equipment Contingencies	\$1500.00	Equipment and Technology not yet accounted for in prototype development
Travel & Marketing (site visits, conference presentations)	\$6043.23	Use of funds for travel to visit regional partners, present on filament recycling prototype and investigate other possible regional partners.
Total:	\$25000.00	

Dr. Raymond John Uzwysyn

3110 Lime Street, Riverside, CA | (512) 521-6893 | ruzwyshyn@gmail.com
[Educause](#) | [LinkedIn](#) | [ResearchGate](#) | <https://rayuzwyshyn.net>

Education

Ph.D., Media Studies — New York University

MBA, IT Management — American Public University (Delta Mu Delta)

MLIS — University of Western Ontario

M.A., Media Studies — New York University

Certificates: Multimedia/Web Design, Business Information Systems

Professional Experience

Director of Research Services

University of California, Riverside Libraries | 2024 – Present

- Strategic vision for research faculty and student research support.
- Staff Supervision for Library Research Services including AI, GIS, Data Science, Robotics Lab and Makerspace.
- Emerging technologies, including robotics, Creat'r Lab and HPC/digital studios (STAR Lab).

Research Impact Coordinator (Full Professor)

Mississippi State University Libraries | 2022 – 2024

- Development of Open Access Online System & Research Collections
- Led initiatives on AI integration and research data management.
- Coordinated systemic methodologies for research impact.

Director, Research Collections and Digital Services

Texas State University Libraries (ARL) | 2014 – 2022

- Research Data Management, Learning Commons, 3D Printing Labs
Managed \$8.8M budget and oversaw 45 FTE staff.
- Spearheaded AI literacy programs and digital library ecosystems.

Director, Online Libraries & eLearning

American Public University System | 2011 – 2014

- Oversaw online learning resources and physical library operations.
- Supervised 22 staff and enhanced digital publishing initiatives.

Selected Publications (Full List: <https://rayuzwyshyn.net>)

New Horizons in AI for Libraries (Editor). [Section Introduction: Projects in Machine Learning and Natural Language Processing in Libraries \(Proof\)](#) ([Glossary Proof](#)). IFLA Publication Series. Walter De Gruyter (GmbH): Berlin, July 2025 (Forthcoming).

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[Building Library AI Infrastructures: Research Data Repositories, Scholarly Ecosystems and AI Scaffolding](#) (Draft). *New Horizons in AI for Libraries*. De Gruyter: Berlin, 2024 (Forthcoming).

Branham, R. Connoly, M. and Uzwyshyn, R. CloudSource is the Solution: New Paradigm Models, Analytic Methods and New Budgetary Possibilities. Proceedings of the Charleston Conference, 2024. (Forthcoming).

Selected Presentations (Full List: <https://rayuzwyshyn.net>)

[Artificial Intelligence: From ChatGPT to Autonomous Agents and New Multimodal Possibilities PPT](#). ([PDF](#)). St. Andrew's College. MB, Canada March, 2024.

[From Zero to Hero: 3D Printer Infrastructures for College and University Campuses](#). *Campus Technology Annual Conference*, Boston, MA, August 1-4, 2016.

[Enabling 3D Printer Infrastructures for the Digital Humanities](#). *Texas Conference on the Digital Humanities*. Austin, Texas. May 27, 2016.

Awards and Grants

- **Dynamic Unit Award** — IT Section. International Federation of Libraries Association (2024).
 - **Campus Technology Impact Award** — Texas State Digital Scholarly Research Ecosystem System (2021).
 - **Excellence Award** — ICEIT Best Paper Award, Oxford University (2020).
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Service and Leadership

- Chair, **AI/IT International Standing Committee** — IFLA (2024).
- Editor, **Trends and Issues in Library Technology** — IFLA (2021–2024).
- Board Member, **Texas Digital Library Symposium** (2016–2022)

IDENTIFYING INFORMATION:

NAME: McKee, Robert Alexander

ORCID iD: <https://orcid.org/0009-0004-9067-9930>

POSITION TITLE: Assistant Professor of Teaching (tenure-track)

PRIMARY ORGANIZATION AND LOCATION: University of California, Riverside (UCR), Riverside, California, United States

Professional Preparation:

ORGANIZATION AND LOCATION	DEGREE (if applicable)	RECEIPT DATE	FIELD OF STUDY
University of Delaware, Delaware, United States	Postdoctoral Fellow	07/2018	Biomedical Engineering
University of Notre Dame, Indiana, United States	PhD	06/2016	Biology
Saint Vincent College, Pennsylvania, United States	BS	05/2012	Biology

Appointments and Positions:

- 2021 – Present Assistant Professor of Teaching (Tenure-track), University of California, Riverside, Riverside, California, United States
- 2021 – Present Campus Faculty Director of Education Abroad, University of California, Riverside, Riverside, California, United States
- 2018 – 2021 Lecturer, University of California, Riverside, Bioengineering Department, Riverside, California, United States
- 2016 – 2018 Postdoctoral Researcher, University of Delaware, Biomedical Engineering Department, Delaware, United States
- 2012 – 2016 Graduate Research Assistant, University of Note Dame, South Bend, Indiana, United States
- 2012 Undergraduate Teaching Assistant, Saint Vincent College, Latrobe, Pennsylvania, United States

Products:

- McKee, R.A., Gerlach, G.F., Jou, J., Cheng, C.N., and Wingert, R.A. (2014). Temporal and Spatial Expression of Tight Junction Genes During Zebrafish Pronephros Development. *Gene Expr Patterns*. 16: (12).
- Kroeger, P.T., Pouretezadi, S.J., McKee, R.A., Jou, J., Miceli, R., and Wingert, R.A. (2014). Production of Haploid Zebrafish Embryos by In Vitro Fertilization. *J. Vis. Exp.* 14: (89).
- McKee, R.A., and Wingert, R.A. (2015). Zebrafish Renal Pathology: Emerging Models of Acute Kidney Injury. *Current Pathobiology Reports. Curr. Pathobiol. Rep.* 3(2): 171-181.
- McKee, R.A., and Wingert, R.A. (2016). Repopulating Decellularized Kidney Scaffolds: An Avenue for ex vivo Organ Generation. *Materials*. 9 (3): 190.
- McKee, R.A., and Wingert, R.A. (2016). Nephrotoxin Microinjection in Zebrafish to Model Acute Kidney Injury. *J. Vis. Exp.* (113): e54241.
- Chambers, J., McKee, R.A., Drummond, B.E. and Wingert, R.A. (2016). Evolving Technology: Creating Kidney Organoids from Stem Cells. *AIMS Bioengineering*. 3(3): 305-318.
- Morgan, J.T., Stewart, W.G., McKee, R.A., and Gleghorn, J.P. (2018). The Mechano-sensitive Ion Channel TRPV4 is a Regulator of Lung Development and Pulmonary Vasculature Stabilization. *Cel. Mol. Bioeng.*

Synergistic Activities:

1. Co-PI and Assessment lead of the UCR, California Institution of Regenerative Medicine Research Training and Mentorship Program (RAMP)
2. Established collaborations between multiple clinicians at Loma Linda Medical School for the purpose of sponsoring senior design projects
3. Function as the director of the BSL-2 Biomaker Space at UCR
4. Department of Bioengineering, Accreditation Board for Engineering and Technology (ABET) Coordinator
5. Created two courses on regulatory standards in bioengineering systems and heavily revised the senior design capstone experience in the department of bioengineering
6. Faculty advisor to the UCR student chapters of the Biomedical Engineering Society (BMES), Period. Club, and Bioengineering Interdepartmental Graduate Student Association
7. Application reviewer and interviewer for the Chancellor's Research Fellowship, Research Minigrant, internal Barry Goldwater Applications and Fulbright Scholars
8. University Honors Capstone Mentor

Certification:

When the individual signs the certification on behalf of themselves, they are certifying that the information is current, accurate, and complete. This includes, but is not limited to, information related to domestic and foreign appointments and positions. Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Brendon Wheeler

2423 Sweet Water Court, Chino Hills, CA, 91709

brendon.wheeler@ucr.edu

Professional Summary

Experienced Maker Services Coordinator with a strong background in computer science and a passion for educational technology. Proven track record in managing makerspaces, facilitating workshops, and leading innovative projects. Skilled in project development, teamwork, and leadership.

Education

Masters of Science, Computer Science, 2023

University of Southern California, Los Angeles, CA

Bachelors of Science, Computer Science with a concentration in Software, 2021

University of La Verne, La Verne, CA

Senior Project: "Auto Parts Database"

Professional Experience

Maker Services Coordinator, 2023 - Present

University of California, Riverside, CA

- Manage and supervise student employees in the UCR CreatR Lab.
- Facilitate workshops and coordinate with stakeholders to lead and organize events.
- Oversee the development and implementation of makerspace projects.

Instructional Technology Specialist, 2022 - 2023

University of La Verne, La Verne, CA

- Provided educational support with technology.
- Supervised the University of La Verne Makerspace.
- Assisted in the development of technology-based instructional materials.

Maker Space Technology Lead, 2017 - 2021

University of La Verne, La Verne, CA

- Participated in events and projects centered around the University of La Verne Makerspace.
- Collaborated with faculty and students on makerspace initiatives.

Skills

Technical Skills: C++, Python, HTML, Linux, Windows, MacOS

Soft Skills: Project Development, Organization, Management, Teamwork, Leadership, Initiative, Independence

Projects

Raspberry Pi Photo Booth, 2023 - Present

- Led a team of student employees to create a photo booth using a Raspberry Pi and Python.
- Integrated a DSLR camera for high-quality images.

Web Scraping Project, 2022

- Developed a web scraping algorithm using Python and Linux.
- Created a browser to predict words or phrases for searching publications.

Arduino Uno Air Hockey Table, 2019

- Repurposed brushless motors from e-waste and used an Arduino Uno microcontroller to create an air hockey table.
- Implemented a self scoring system using C++.

Arduino Uno Train Track, 2019

- Designed a train track arm with sensors, servo motors, and LEDs using C++.
- Engaged elementary school students with the interactive model.

Interests

Technology, Robotics, Coding, Computer Vision, Artificial Intelligence, Machine Learning, Data

ALVARO ALVAREZ

Innovative Media Librarian | (909) 559 - 3078 | alvaro.alvarez@ucr.edu

Innovative Media Librarian | Digital Scholarship Specialist University of California, Riverside

Academic Appointments

Innovative Media Librarian University of California Riverside (February 2020 - Present)

- Specializing in digital fabrication, virtual reality, and scholarly technology research
- Develop research partnerships, manage digital media programs, and support innovative technological initiatives

Education

Master of Business Administration Organizational Leadership and Information Technology
University of La Verne (January 2015)

Bachelor of Science Computer Science and Engineering University of La Verne (January 2006)

Research Interests

- Digital Media Scholarship
- Virtual Reality in Education
- Maker Technologies
- Digital Fabrication
- Technology-Enhanced Learning Environments

Research Contributions

Digital Fabrication and Maker Technologies

- Developed comprehensive makerspace services at University of La Verne and UC Riverside
- Created innovative workshops and training programs in 3D printing, digital media, and maker tools
- Facilitated open research practices by supporting digital output sharing and reproducibility

Virtual Reality and Digital Environments

- Developed virtual environment design for educational makerspaces
- Implemented VR tour presentations and research demonstrations
- Supported digital scholarship through advanced technological infrastructure

ALVARO ALVAREZ

Innovative Media Librarian | (909) 559 – 3078 | alvaro.alvarez@ucr.edu

Technical Expertise

Technical Skills: 3D Printing, Laser Cutting, Virtual Reality, CAD Software **Programming Languages:** Python, C++, PHP, Arduino **Software Proficiencies:** Blender, Unity, Fusion 360, Adobe Creative Suite, SPSS

Conference Presentations

- "3D Printing Revolution" - Keynote, Measurement in Science Conference (July 2023)
- "Creating Virtual Environments for Makerspaces and Education" - MIRA Conference (July 2021)
- "Digital Infrastructure is People" - UC Library Forum (October 2021)

Professional Service

University Committees

UC Riverside

- Library STEM Team (2024-Present)
- Digital Scholarship Working Group (2022-Present)
- Internal Events Committee (2023-Present)

Professional Memberships

- Raspberry Pi Certified Instructor
- American Library Association Member
- UC 3D Data Group

Research Grants and Awards

- Leadership roles in multiple hiring and strategic planning committees
- Recognized for innovative technology implementation in academic libraries

Language Proficiency

- English, Spanish (Second Language)