

Yahriel Salinas-Reyes

The GEM Consortium, Ph.D. Engineering and Science Fellowship

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Education

Iowa State University of Science & Technology

Ames

Bachelor of Aerospace Engineering, GPA: 3.3

2023

Specialized in Micro-electro-mechanical Systems (MEMS) and Soft Matter Physics

Work Experience

Bayer Crop Science: Regulatory Group

Monsanto, MO

Scientist I & Data Engineer

01/2024- Present

- Engage in cutting-edge research and data engineering tasks within Bayer Crop Science's Regulatory Group, contributing to the advancement of agricultural science and technology.

DARPA: Recovering Rare-Earth Elements from E-Waste

Ames, IA

Research Assistant & Lab Technician

05/2022- 12/2023

- Executed pivotal roles in DARPA's mission to recover rare-earth elements from electronic waste, employing innovative research techniques and laboratory methodologies to address critical environmental and technological challenges.

The Microscale & Interfacial Fluid Physics Laboratory

Ames, IA

Experimental Systems & Automation Engineer

08/2021- 12/2023

- Demonstrated expertise in experimental systems and automation engineering at the Microscale & Interfacial Fluid Physics Laboratory, contributing to groundbreaking research in fluid dynamics and interfacial phenomena.

The Soft Matter Material Transport Group

Ames, IA

Undergraduate Researcher & Systems Engineer

08/2019- 05/2022

- Played a key role in the Soft Matter Material Transport Group's research initiatives, focusing on the design and optimization of multi-functional piezoelectric devices for aeronautical applications, showcasing skills in systems engineering and materials science.

Caltech The Kavli Nanoscience Institute: The Julia R. Greer Group

Pasadena, CA

Undergraduate Research Assistant

05/2021- 08/2021

- Contributed to research efforts at Caltech's Kavli Nanoscience Institute, collaborating with the Julia R. Greer Group on the development of hybrid nanocomposites and the investigation of viscoelastic behavior, highlighting capabilities in nanomaterials synthesis and characterization.

Boeing: Wind Energy & Development

Ames, IA

Boeing Aerospace Research Fellow

08/2021- 08/2022

- Served as a Boeing Aerospace Research Fellow, spearheading projects in wind energy research and development, with a focus on characterizing damping mechanisms in piezoelectric wind-energy harvesters, demonstrating expertise in aerospace engineering and renewable energy technologies.

Stanford University: Xiaolin Zheng Z-Energy Group

Stanford, CA

Undergraduate Research Assistant

05/2021- 08/2021

- Engaged in research endeavors at Stanford University's Z-Energy Group, investigating the application of machine learning techniques in scientific methodologies and prediction, showcasing proficiency in data-driven research and computational modeling.

Iowa State University of Science & Technology

Ames, IA

Information Technology Specialist & Data Scientist

08/2019- 05/2023

- Provided technical expertise as an Information Technology Specialist and Data Scientist at Iowa State University of Science & Technology, contributing to the implementation, monitoring, and maintenance of IT systems while leveraging data science techniques for analysis and decision-making.

Fellowship Awards

Program	Institution/Board	Year
<i>GEM Ph.D. Fellowship*</i> (Sci.&Eng.)	The National GEM Consortium*	2024-2029*
*Current <i>P.B.C.</i> (McNair Scholars)	Ronald E. McNair Postbaccalaureate Achievement Program	2021-2023
<i>P.B.C.</i> (Research Certificate)	Louis Stokes Alliances for Minority Participation (LSAMP)	2019-2021
<i>Cert.</i> (Order of The Engineer)	Engineering Accreditation Commission of ABET	2023

Key Projects

- 1. *Experimental Techniques: Flow Separation & Chemical Sintering*** **August 2019 - August 2023**
B.Tech / (Prof: Dr. Martin Thuo, Dr. Thomas Ward Iowa State University of Science & Technology
 - Developed hardware-software components and signal processing circuits for detecting flow instabilities in paper-based MEMS devices.
 - Conducted experiments to manufacture MEMS nanocomposites and modeled shear viscosity.
 - Aimed to simulate viscosity measurements at the thermal boundary for potential applications in aerospace.
 - Keywords: Systems Analysis, Interfacial Phenomena, Quantum Tunnelling Composites, Navier Stokes Equations*
- 2. *Damping Mechanisms in Piezoelectric Wind-Energy Harvesters*** **August 2021 - August 2022**
Research Fellow / Mentor -(Prof: Dr. Thomas Ward Dept. of Aerospace Engineering, ISU) Boeing Aerospace
 - Designed experimental setups and measurement-calibration systems for piezoelectric wind-energy harvesters.
 - Collaborated on solution algorithms and continuum mechanics of conductivity to optimize wind-tunnel experiments.
 - Objective was to define thermodynamic properties for enhancing wind-energy harvesting efficiency.
 - Keywords: Aerodynamics Analysis, Harmonic Response, Computational Methods, Energy Storage, Soft Matter Physics*
- 3. *Energy Absorption in Nano-Architected Hybrid Composites*** **May 2022 - August 2022**
Prof: Dr. Julia R. Greer of Materials Science, A. Mechanics, & Medical Sciences Caltech, Kavli Nanoscience Institute
 - Created nanocomposites with architectural features to enhance mechanical properties.
 - Investigated deformation mechanisms using dynamic mechanical analysis and scanning electron microscopy.
 - Developed a semi-empirical model to understand viscoelastic effects in hybrid nanocomposites.
 - Keywords: Nanoscience, Applied Mathematics, System Modeling, Continuum Mechanics, Energy Dissipation*
- 4. *Meta-stable Particles: Phase-change Materials and their Applications*** **August 2019 - May 2022**
Prof: Dr. Martin Thuo Dept. of Materials Science and Engineering, ISU NSF-LSAMP
 - Conducted research on meta-stable particles and their applications in phase-change materials.
 - Collaborated on developing novel materials with unique properties for various industrial applications.
 - Investigated the behavior of phase-change materials under different conditions for practical utilization
 - Keywords: Materials Science, Chemical Synthesis, Solid-State Physics, Advanced Materials, Applications*

Industrial Training

- 1. *Boeing Undergraduate Research Excellence in Engineering Internship*** **Dec 2020 - Dec 2021**
(B.Tech / Intern / Mentor: Dr. Thomas Ward)
 - Engaged in an intensive internship program at Boeing, gaining hands-on experience focused on wind energy harvesting, green technologies, & enhancing engineering excellence in aerospace applications. Collaborated with industry professionals on cutting-edge projects aimed at advancing aerospace technology and innovation.
- 2. *NASA Micro-G Neutral Buoyancy Experiment Design Teams Challenge*** **Oct 2021-Nov 2022**
(B.Tech / Design Team Lead / Mentor: Dr. Tomas Gonzalez-Torres)
 - Took part in a challenging design competition organized by NASA, focusing on developing innovative solutions for space exploration challenges. Worked in a multidisciplinary team environment to design, build, and test a prototype device, gaining valuable practical experience in problem-solving and teamwork

Relevant Research Projects and Experience

1. [Integration of Piezoresistive MEMS Sensors](#)

(Research Assistant / Mentor: Dr. Martin Thuo)

April 2020 - August 2021

Iowa State University

- o Explored the integration of piezoresistive MEMS sensors into computer technology, focusing on enhancing sensing capabilities in electronic devices. Yahriel contributed to experimental design and data analysis.

2. [Predictive Modeling of Olympic Triathlon Results](#)

(Research Assistant / Mentor: Dr. Xiaolin Zheng)

August 2021 - January 2022

Stanford University, Z-Energy Lab

- o Investigated predictive models using machine learning techniques to forecast Olympic triathlon results based on data collection, model training, and result interpretation, showcasing expertise in data-driven research.

3. [Energy Absorption in Nano-Architected Hybrid Composites](#)

(Research Assistant / Mentor: Dr. Julia R. Greer)

August 2022 - January 2023

The Greer Group, The Kavli Nanoscience Institute

- o Investigated energy absorption mechanisms in nano-architected hybrid composites and contributed to experimental designs, conducted mechanical tests, and analyzed data, demonstrating proficiency in scientific instrumentation.

4. [REU Site: \(LAUNCH-UAS\)](#)

(Research Assistant / Mentor: Dr. Thomas Ward)

May 2023 - August 2023

NSF Award No. 1757393

- o Mentored in the REU Site program focused on launching aerospace's underrepresented students into the next chapter, particularly in unmanned aerial systems (LAUNCH-UAS).

5. [Shear-Sensing Principals of Interfacial Viscous-Shear Flow](#)

(Research Assistant / Mentor: Dr. Thomas Ward, Dr. Martin Thuo)

August 2021 - January 2022

Boeing Aerospace

- o Developed experimental setups for studying shear-sensing principles in interfacial viscous-shear flow.
- o Analyzed fluid flow data and contributed to the development of understanding of interfacial stress/physics.

6. [Cutting-Edge Research in Agricultural Science and Technology](#)

(Scientist I & Data Engineer)

January 2024 - Present

Bayer Crop Science

- o Actively engaged in cutting-edge research in green science and technology at Bayer Crop Science.
- o Contribute to the advancement of agricultural practices and the development of biotechnological challenges.

Online Courses

- o Deep Learning: [Data Structures and Algorithms in Python](#) (May 2021), [Deep Learning with PyTorch: Zero to GANs](#) (Jan 2021), [Data Analysis with Python: Zero to Pandas](#) (Oct 2020)
- o MathWorks: [Machine Learning with Matlab](#) (June 2020), [Matlab Onramp](#) (May 20xx), [Deep Learning Onramp](#) (May 20xx), [Machine Learning Onramp](#) (May 20xx), [Deep Learning with Matlab](#) (May 20xx)

Course Work

1. Key Courses

(Core and electives)

August 2019-December 2023

Iowa State University: College of Engineering

- o Courses: Applied Mechanics & Physics, Materials Science & Engineering, Engineering & Polymeric Chemistry, Engineering Statistics
- o Foundations: Multi-Variable Calculus Continuum Mechanics, Mechanics of Materials, Dynamics & Differential Equations
- o Lab: Numerical & Graphical Techniques, Advanced Computing, Advanced Programming Languages in C++

Technical Skills

- o Programming Language: C, C++, Java, Python, CAD & FEA, ANSYS/ABAQUS, Computational Modeling
- o Web Technology: SQL, Windows OS, Linux OS, AWS Services, MATLAB & Simulink, SAS, Iot

Achievements/Awards

- o Finalist of The Fulbright-National Geographic Award, [Open Study/Research Award](#)
- o Complete funding confirmed upon admission to Ph.D. Program. [The GEM Ph.D. Engineering & Science Fellowship](#).

Declaration

I do hereby declare that all the details furnished above are true to the best of my knowledge and belief.

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I am writing to express my keen interest in the opportunities available within SPARCNET, particularly in alignment with the remarkable initiatives outlined in your program overview and research questions. With a background deeply rooted in aerospace engineering, coupled with a relentless pursuit of interdisciplinary exploration in neuroscience and computational sciences, I am eager to contribute to the cutting-edge research endeavors facilitated by SPARCNET.

Throughout my academic and professional journey, I have had the privilege to engage in a diverse array of research projects and collaborations, each fostering a unique blend of technical proficiency and innovative thinking. From exploring the adaptability of high-efficiency disposable piezoelectric devices to delving into predictive modeling using machine learning techniques, my experiences have equipped me with a versatile skill set primed for addressing the complex challenges posed by SPARCNET's research agenda.

Moreover, my involvement in prestigious programs such as the GEM Ph.D. Engineering & Science Fellowship and the NSF-LSAMP has further honed my abilities as a researcher and leader, instilling within me a deep-seated commitment to fostering diversity and inclusivity within STEM disciplines.

Enclosed is my curriculum vitae, which provides a comprehensive overview of my academic background, research contributions, and professional experiences. I am enthusiastic about the opportunity to bring my unique perspective and expertise to the SPARCNET community, and I am confident that my passion for scientific inquiry and collaborative spirit will make me a valuable asset to your team.

Thank you for considering my application. I look forward to the possibility of contributing to SPARCNET's groundbreaking research endeavors.

Looking Forward to Hearing From You,

Yahriel Salinas-Reyes

Attached: curriculum vitae