Yahriel Salinas-Reyes | B.Sc. Aerospace Engineering

Computational (Software) Engineer & Research Data Scientist

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

Polk: Des Moines, 50316, Iowa, United States

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Date: 07/08/2024

Hiring Committee
Company, Location/Address
Inquiring about the [Role Applying For] Position

Dear Review Committee,

I am writing to express my enthusiastic interest in the [Role Applying For] position at [Company]. With a solid foundation in aerospace engineering and a diverse research background, I am eager to contribute to your new product development team and support the creation of innovative medical devices.

During my tenure as an Experimental Systems Engineer with DARPA, I was responsible for PCB design, circuit design and analysis, systems engineering, and developing software and operational research techniques. My research project, "Experimental Techniques for Flow Separation Detection and Chemical Sintering," involved designing hardware-software components (PCB design) and building signal processing circuit algorithms. I also manufactured MEMS nanocomposites and developed computations to model shear-viscosity at the thermal boundary for the Navier-Stokes Equations. These experiences honed my skills in designing, prototyping, and bench testing, which are directly relevant to the responsibilities outlined in your job description.

At Bayer R&D, I have gained extensive experience in regulatory science, transferring regulatory efficacy data, and assembling regulatory dossiers. This role has equipped me with a strong understanding of safety assessment, hazard identification, and risk management. My ability to work collaboratively with cross-functional teams and communicate complex technical principles to stakeholders ensures project success and alignment with regulatory requirements.

I am particularly drawn to [Company]'s commitment to improving healthcare through innovative technologies. My background in electrical engineering, combined with my experience in regulatory science, positions me well to contribute to the design, development, and evaluation of medical devices. I am proficient in circuit design and analysis, debugging hardware, and technical writing, and I am eager to apply these skills to support your robotic and computer-assisted product lines.

Thank you for considering my application. I am excited about the opportunity to bring my skills and passion for innovation to [Company]. I look forward to discussing how my background aligns with your organization's goals. Please feel free to contact me at (515) 314-4160 or yahrielsreyes@gmail.com to schedule a conversation.

Looking Forward to Hearing From You,

Yahriel Salinas-Reyes

Attached: curriculum vitæ

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Education

Iowa State University of Science & Technology **Ames, IA**
Bachelor of Aerospace Engineering, *GPA: 3.3* *2023*
Specialized in Nanoscience/materials, Computational & Mathematical Sciences, Theorerical Modeling & Experimental Verification

Career Overview

- With a B.Sc. in Aerospace Engineering ('23), my research background spans diverse areas of applied science & technology. Transitioning to the Regulatory Science Affairs domain at Bayer R&D, I have gained extensive experience in transferring regulatory efficacy data, assembling regulatory dossiers with bioinformatics & risk assessment data, and leveraging industry operational research techniques. I possess a robust business acumen, delivering critical insights and recommendations for pipeline decisions, bridging the gap between scientific research and strategic business objectives.

Technical Skills

- Programming: Python, R, Linux, .NET, C, C++, C#, Java/JavaScript, HTML/CSS, MATLAB, SQL, GO, AWS
- Other: Full-stack, IoT, PCB Circuit Design & Analysis, CAD & FEA, ANSYS/ABAQUS, Machine/Deep Learning
- Tech Stack: Git, Databricks, Bash (Shell) Scripting, Snowflake, TypeScript, Docker (CI/CD Tools), Conda, Pycharm

Fellowship Awards

Program	Institution/Board	Year
*GEM Ph.D. Fellowship** (Sci.&Eng.)	The National GEM Consortium: *Funding confirmed upon admission Ph.D. Program**	2024-2029*
Open/Study Research Award(Finalist)	The Fulbright X National Geographic Award: Bureau of Educational & Cultural Affairs	2024
ACCT Cert.(Order of The Engineer)	Engineering Accreditation Commission of ABET	2023
P.B.C. (McNair Scholars)	Ronald E. McNair Postbaccalaureate Achievement Program	2021-2023
Intern.(Boeing Research Fellowship)	Boeing: Undergraduate Research Excellence in Engineering Fellowship	2021-2022
S.F.P. (SURF Scholars)	Summer Undergraduate Research Fellowship at Stanford Univeristy('21) & Caltech('22)	2021-2022
P.B.C. (Research Certificate)	Louis Stokes Alliances for Minority Participation (LSAMP)	2019-2021

Work Experience

Bayer Crop Science, Seeds & Traits Safety: R & D Regulatory Science Toxicology Group **St Louis, MO**
Scientist I & Data Engineer *05/2024- Present*

- Operate in Automation/Deep Learning & provide digital/software solutions aligned with the RAG Pipeline to cross-functional teams in agricultural science and biotechnology, specifically, the Macromolecular Toxicology in the Seeds & Traits Safety Regulatory Science Group at Bayer.
- Responsible for full-stack development for Regulatory Affairs to consolidate GLP and transference of historical risk assessment data directly to global regulatory agencies before product launch.

DARPA: Recovering Rare-Earth Elements from E-Waste **Ames, IA**
Research Assistant & Lab Technician, NSF Award No. 1757393 *05/2022- 12/2023*

- Contributed to efforts in recycling at the point of disposal in direct development (phase I-III of R&D) of computer vision system, flow sensor technology, and experimental methods (validation) in rotating tank experiment to characterize mechano-chemical processes. Contributed to DARPA's mission to recover rare-earth elements from electronic waste.

The Microscale & Interfacial Fluid Physics Laboratory **Ames, IA**
Experimental Systems & Automation Engineer *08/2021- 12/2023*

- Demonstrated expertise in experimental systems and automation engineering, contributing to groundbreaking research in fluid mechanics/dynamics and interfacial phenomena. Focused on the PCB* design, development, and optimization of experimental apparatus and automation protocols, significantly enhancing research efficiency and data accuracy.

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 of experiments (DOE) and advanced development (phase II/III) of multi-functional piezoelectric devices for aeronautical applications and renewable energy. Statistical methods showcasing skills in systems engineering and materials science.

Caltech The Kavli Nanoscience Institute: The Julia R. Greer Group **Pasadena, CA**
Undergraduate Research Assistant *05/2022- 08/2022*

- 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. Tasked with mathematical modeling and experimental validation

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. Produced computational model for energy harvesting.

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-enabled sciences, deep learning methods, and computational modeling in data-driven research. Contributed to scientific communications.

Iowa State University of Science & Technology **Ames, IA**
Information Technology Specialist & Data Scientist *08/2019- 05/2023*

- Provided technical expertise and operated in cross-functional teams with effective communication of controlled data, contributing to the implementation, monitoring, and maintenance of IT systems while leveraging data science techniques for analysis and decision-making. Gained experience in full-stack development & CS infrastructure systems.

Key Projects within Regulatory Science & Bioinformatics

1. ***Risk Characterization of Toxicological, Hazardous, and Nutritional Bioinformatic Data*** **May 2024 - Present**
Regulatory Science Group in Seeds and Traits Safety Division / (Mentor: Dr. Kimberly Hodge-Bell) Bayer Crop Science

- Analyzed and interpreted bioinformatic data to assess toxicological, hazardous, and nutritional risks.
- Ensured compliance with global regulatory safety guidance such as the European Food and Safety Agency (EFSA).
- Developed risk characterization models to predict potential safety concerns.
- Collaborated with interdisciplinary teams to enhance data accuracy and reliability.
- *Keywords: Toxicology, Hazard Assessment, Nutritional Data, Regulatory Compliance, Bioinformatics*

2. ***Automation of Procedural Systems and Experimental Bioinformatic Data*** **May 2024 - Present**
GEM Fellow / Crop Field Protection Digital Solutions Automation & Pipeline Design Bayer Crop Science

- Implemented automation systems for procedural and experimental bioinformatic data management.
- Managed toxicological information and hazardous exposure assessments from field tests and trials.
- Integrated data from internal and external studies to support global clients.
- Enhanced efficiency and accuracy in data collection and processing.
- *Keywords: Automation, Bioinformatic Data, Toxicological Information, Exposure Assessments, Data Integration*

3. ***Data Mining and Automation Pipeline Design for Historical Regulatory Responses*** **May 2024 - Present**
GEM Fellow / R & D Regulatory Science Group Digital Solutions Automation & Pipeline Design Bayer Crop Science

- Designed data mining and automation pipelines to ensure data integrity.
- Analyzed historical regulatory response data for global scientific and food safety agencies.
- Developed systems to support the assembly of dossiers before product launch.

- Improved the accuracy and reliability of regulatory data submissions.
- *Keywords: Data Mining, Automation, Data Integrity, Regulatory Responses, Pipeline Design*

4. ***Development Operations (DevOps) for Historical Data Transfer and Compliance*** **May 2024 - Present**
GEM Fellow / Software & Data Engineering, Regulatory Macromolecular Toxicology Team *Bayer Crop Science*

- Managed the transference of historical data related to search query data of regulatory responses and submissions.
- Ensured compliance with strict global guidelines and document version management.
- Implemented cybersecurity measures to protect controlled data.
- Streamlined document management processes to enhance efficiency and security.
- *Keywords: DevOps, Data Transfer, Compliance, Document Management, Cybersecurity*

Research and Development 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, Computational Modeling & Analysis, 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 Absoption 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, NSF Award No. 1757393*

- 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*

Course Work

Key Courses **August 2019-December 2023**
(Fundamentals and Formal Methods) *Iowa State University: College of Engineering*

- **Courses**: Applied Mechanics & Physics, Materials Science & Engineering, Engineering & Polymeric Chemistry, Engineering Statistics, Machine-Learning/Data-Science, Finite Element Method, Bayesian Methods, Systems Engineering
- **Lab**: Numerical & Graphical Techniques, Advanced Computing/Programming, Advanced Data Structures & Algorithms

Online Courses

- **Deep Learning/CS:** *Digital System Testing & Testable Design, Theory & Applications of Data Structures and Algorithms* (May 2023), *Deep Learning with PyTorch* (Jan 2022), *Data Analysis with Python/AWS* (Oct 2021)
- **MathWorks/ML:** *Kernel Methods for Pattern Recognition & Analysis, Data Mining, Machine Learning with Matlab/Python (June 2023)*, *Machine Learning, TensorFlow & Computer Vision with Matlab/Python* (May 2022),

References

Reference I: Dr. Martin Thuo
Professor of Materials Science and Engineering
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Engineering Building I Raleigh NC 27695-7907
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Phone: (617)458-2363
Web:https://www.mse.ncsu.edu/thuo/

Reference II: Dr Thomas Ward
Professor of Mechanical and Aerospace Engineering
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Charlottesville, VA 22904
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Phone: (434) 924-3072

Reference III: Dr. Lequetia Ancar
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Ames, IA 50011-2103
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Reference IV: Dr. Julia R. Greer
Professor of Materials Science, Mechanics, and Medical California Institute of Technology Division of Engineering and Applied Science
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