Yahriel Salinas-Reyes | B.Sc. Aerospace Engineering

Data (Software) Engineer & Research Data Scientist, GEM Ph.D. Fellow

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

Polk: Des Moines, 50316, Iowa, United States

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Education

Iowa State University of Science & Technology: College of Engineering **Ames, IA**

Bachelor of Aerospace Engineering, GPA: 3.3 *2023*

Specialized in Nanoscience/materials, Computational & Mathematical Sciences, Theorerical Modeling & Experimental Verification

Course Work *(Fundamentals and Formal Methods)*

○ **Courses**: Applied Physics & Mathematics, Materials Science & Engineering, Engineering Chemistry, Engineering Statistics, Machine-Learning/Data-Science, Finite Element Method (FEA), Bayesian Methods, Signals & Controls

○ **Lab**: Numerical & Graphical Techniques, Advanced Computing/Programming, Advanced Data Structures & Algorithms

Career Overview

○ Dynamic R&D Engineer with 6+ years of experience in designing hardware/software solutions for operating systems, developing computational models for validation, and implementing innovative solutions across various engineering disciplines in front-end & back-end technologies. Skilled Programmer experienced in multiple programming languages.

○ Seeking admission to UT Dallas Cognition and Neuroscience PhD Program and Biomedical Engineering PhD Program, eager to transition R&D expertise into medical sciences & biotech development, looking to enter medical sciences & bioinformatics to provide clients high-performing technology to translate discovery to real-world application/ solutions.

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

Additional Technical Experience

Iowa State University of Science and Technology **Aug 2019-May 2023**

(B.Tech / Information Technology Specialist & Cloud Data Engineer / Full-stack Development)

○ Responsible for implementation, monitoring, & maintenance of IT computer systems (cloud platforms, networks, IoT).

Boeing Undergraduate Research Excellence in Engineering Fellowhips **Dec 2020 - Dec 2021**

(B.Tech / Research Fellow: Wind Energy and Harvesting / Mentor: Dr. Thomas Ward)

○ Research internship at Boeing, focused on wind energy harvesting, engineering instrumentation, & energy technology.

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 Fellowship 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
GEM Employer* / Intern: Technology Development Center / Scientist I & Data Engineer *05/2024- Present*

○ Operate in Automation/Deep Learning & provide digital/software solutions aligned to cross-functional teams in agricultural science and biotechnology, specifically, the R&D Division of Regulatory Science & Affairs Team at Bayer.

○ Responsible for full-stack development of archiving "system of record" data base 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, Risk Assessment, and Bioinformatic Data* **May 2024 - Present**
GEM Fellow, Regulatory Science & Affairs: Toxicology / (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 (toxicology, hazard ID, etc.).

○ Managed transfer of regulatory efficacy data, assembled regulatory dossiers, enhanced data processing speed by 40%.

○ *Keywords: Toxicology, Risk Assessment, 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 solutions, developed an automated dashboard and reduced report generation time by 30% .

○ Managed transference of toxicological information, hazardous exposure, and risk assessments from field tests & trials.

○ Integrated data from internal & external studies to support regulatory responses to global regulatory agencies (EFSA).

○ Enhanced efficiency of archiving knowledge documents and processing of SECRET data to generate regulatory dossiers.

○ *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 automation data mining pipelines for efficacy data, resulting in enhanced data processing speeds by 35%.

○ Analyzed historical regulatory response data for global scientific and food safety agencies (EFSA) for risk assessment.

○ Developed archive data-basing systems (full-stack) to support the assembly of dossiers before product launch.

○ Improved the accuracy and reliability of regulatory data submissions ensuring compliance with global guidelines.

○ *Keywords: Data Mining, Automation, Data Integrity, Risk Assessment, Regulatory Efficacy Data, 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 & risk assess efficacy.

○ Database design & optimization, increased system efficiency by 20% through the development of searchable database.

○ Deployed searchable database software solution and implemented cybersecurity measures to protect controlled data.

○ Developed database search/query tools, improved data retrieval times by 40% through advanced query optimizations.

○ *Keywords: DevOps, Data Transfer, Compliance, Document Management, AI Tools, Cybersecurity, Search Query*

Research and Development Projects

1. *Experimental Techniques: Flow Separation & Chemical Sintering*   **August 2019 - August 2023**
Prof: Dr. Martin Thuo, Dr. Thomas Ward / DARPA   *Iowa State University of Science & Technology*

○ Developed hardware-software components & signal processing circuits for detecting flow instabilities in MEMS devices.

○ Designed and conducted experiments to characterize rate of shear to build computational model of viscous forces.

○ Aimed to simulate viscosity measurements at the thermal boundary for potential applications in chemical sintering.

○ *Keywords: Systems Analysis, Interfacial Phenomena, Computational Modeling & Analysis, Navier Stokes Equations*

2. *Damping Mechanisms in Piezoelectric Wind-Energy Harvesters*   **August 2021 - August 2022**
Prof Dr. Thomas Ward Dept. of Aerospace Engineering, ISU   *Research Fellow/Intern, 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 characterizing & 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 i.e. increased strength, plasticity.

○ Probed energy dissipation with FEA, dynamic mechanical analyzer (DMA), & scanning electron microscopy (SEM).

○ Developed a semi-empirical model to understand viscoelastic effects in hybrid nanocomposites deformation mechanisms.

○ *Keywords: Nanoscience, Applied Mathematics, System Modeling, Continuum Mechanics, Energy Dissipation, FEA*

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 exploratory research on meta-stable particles and their applications in phase-change enabled materials.

○ Focused on developing mechano-chemical processes for novel materials with unique properties for industrial application.

○ Investigated the chemical synthesis of phase-change materials under different conditions for printing of conformal solid metal traces on non-adhering biological surfaces and heat-free biomimetic metal molding on soft substrates

○ *Keywords: Materials Science, Chemical Synthesis, Solid-State Physics, Advanced Materials, Industrial Applications*